

REAUTHORIZATION OF NTIA

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS AND
TECHNOLOGY

OF THE

COMMITTEE ON ENERGY AND
COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTEENTH CONGRESS

FIRST SESSION

FEBRUARY 2, 2017

Serial No. 115-5



Printed for the use of the Committee on Energy and Commerce
energycommerce.house.gov

U.S. GOVERNMENT PUBLISHING OFFICE

24-883

WASHINGTON : 2018

COMMITTEE ON ENERGY AND COMMERCE

GREG WALDEN, Oregon
Chairman

JOE BARTON, Texas <i>Vice Chairman</i>	FRANK PALLONE, JR., New Jersey <i>Ranking Member</i>
FRED UPTON, Michigan	BOBBY L. RUSH, Illinois
JOHN SHIMKUS, Illinois	ANNA G. ESHOO, California
TIM MURPHY, Pennsylvania	ELIOT L. ENGEL, New York
MICHAEL C. BURGESS, Texas	GENE GREEN, Texas
MARSHA BLACKBURN, Tennessee	DIANA DEGETTE, Colorado
STEVE SCALISE, Louisiana	MICHAEL F. DOYLE, Pennsylvania
ROBERT E. LATTA, Ohio	JANICE D. SCHAKOWSKY, Illinois
CATHY McMORRIS RODGERS, Washington	G.K. BUTTERFIELD, North Carolina
GREGG HARPER, Mississippi	DORIS O. MATSUI, California
LEONARD LANCE, New Jersey	KATHY CASTOR, Florida
BRETT GUTHRIE, Kentucky	JOHN P. SARBANES, Maryland
PETE OLSON, Texas	JERRY McNERNEY, California
DAVID B. MCKINLEY, West Virginia	PETER WELCH, Vermont
ADAM KINZINGER, Illinois	BEN RAY LUJAN, New Mexico
H. MORGAN GRIFFITH, Virginia	PAUL TONKO, New York
GUS M. BILIRAKIS, Florida	YVETTE D. CLARKE, New York
BILL JOHNSON, Ohio	DAVID LOEBSACK, Iowa
BILLY LONG, Missouri	KURT SCHRADER, Oregon
LARRY BUCSHON, Indiana	JOSEPH P. KENNEDY, III, Massachusetts
BILL FLORES, Texas	TONY CARDENAS, California
SUSAN W. BROOKS, Indiana	RAUL RUIZ, California
MARKWAYNE MULLIN, Oklahoma	SCOTT H. PETERS, California
RICHARD HUDSON, North Carolina	DEBBIE DINGELL, Michigan
CHRIS COLLINS, New York	
KEVIN CRAMER, North Dakota	
TIM WALBERG, Michigan	
MIMI WALTERS, California	
RYAN A. COSTELLO, Pennsylvania	
EARL L. "BUDDY" CARTER, Georgia	

SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY

MARSHA BLACKBURN, Tennessee
Chairman

LEONARD LANCE, New Jersey <i>Vice Chairman</i>	MICHAEL F. DOYLE, Pennsylvania <i>Ranking Member</i>
JOHN SHIMKUS, Illinois	PETER WELCH, Vermont
STEVE SCALISE, Louisiana	YVETTE D. CLARKE, New York
ROBERT E. LATTA, Ohio	DAVID LOEBSACK, Iowa
BRETT GUTHRIE, Kentucky	RAUL RUIZ, California
PETE OLSON, Texas	DEBBIE DINGELL, Michigan
ADAM KINZINGER, Illinois	BOBBY L. RUSH, Illinois
GUS M. BILIRAKIS, Florida	ANNA G. ESHOO, California
BILL JOHNSON, Ohio	ELIOT L. ENGEL, New York
BILLY LONG, Missouri	G.K. BUTTERFIELD, North Carolina
BILL FLORES, Texas	DORIS O. MATSUI, California
SUSAN W. BROOKS, Tennessee	JERRY McNERNEY, California
CHRIS COLLINS, New York	FRANK PALLONE, JR., New Jersey (<i>ex officio</i>)
KEVIN CRAMER, North Dakota	
MIMI WALTERS, California	
RYAN A. COSTELLO, Pennsylvania	
GREG WALDEN, Oregon (<i>ex officio</i>)	

CONTENTS

	Page
Hon. Marsha Blackburn, a Representative in Congress from the State of Tennessee, opening statement	1
Prepared statement	3
Hon. Michael F. Doyle, a Representative in Congress from the Commonwealth of Pennsylvania, opening statement	3
Hon. Greg Walden, a Representative in Congress from the State of Oregon, prepared statement	67

WITNESSES

John M.R. Kneuer, Former Assistant Secretary for Communications and Information, Former Administrator, NTIA, President and Founder, JKC Consulting	7
Prepared statement	10
Answers to submitted questions ¹	71
Meredith Attwell Baker, Former Acting Assistant Secretary for Communications and Information, Former Acting Administrator, NTIA, President and CEO, CTIA	15
Prepared statement	17
Answers to submitted questions	73
Anna M. Gomez, Former Acting Assistant Secretary for Communications and Information, Former Acting Administrator, NTIA, Partner, Wiley Rein .	25
Prepared statement	27
Answers to submitted questions	77

SUBMITTED MATERIAL

Statement of the Electronic Privacy Information Center, submitted by Mr. Doyle	69
--	----

¹ Mr. Kneuer did not submit a response to questions for the record.

REAUTHORIZATION OF NTIA

THURSDAY, FEBRUARY 2, 2017

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:48 a.m., in room 2322 Rayburn House Office Building, Hon. Marsha Blackburn (chairman of the subcommittee) presiding.

Present: Representatives Blackburn, Lance, Shimkus, Latta, Guthrie, Olson, Kinzinger, Bilirakis, Johnson, Flores, Brooks, Collins, Cramer, Walters, Costello, Doyle, Welch, Clarke, Loebsack, Ruiz, Dingell, Engel, Butterfield, McNerney, and Pallone.

Staff present: Gene Fullano, Detailee, Telecom; Kelsey Guyselman, Counsel, Communications and Technology; Dan Schneider, Press Secretary; Evan Viau, Staff Assistant; Gregory Watson, Legislative Clerk, Communications and Technology; Alex Debianchi, Minority Telecom Fellow; David Goldman, Minority Chief Counsel, Communications and Technology; Jerry Leverich, Minority Counsel; and Lori Maarbjerg, Minority FCC Detailee.

OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mrs. BLACKBURN. Good morning, everyone.

We are delighted that you all are here and that you're joining us as the Communications and Technology Subcommittee is kicking off the 115th Congress.

I guess kick off is the right word to use because we are looking at the Super Bowl this weekend. So everybody pick your team.

Our subcommittee features a few new faces and also some familiar faces in new roles, and before we begin I'd like to take a moment for a brief introduction.

Mr. Lance is our vice chairman and he is going to be a valuable partner in all of our endeavors. His understanding on the issues and his experience as a senior member of this committee will be a great asset to us on the subcommittee.

I am also excited to introduce the new Republican members of the subcommittee: Mr. Flores, Ms. Brooks, Ms. Walters, Mr. Costello. We welcome their eagerness and their talents to these issues.

I want to congratulate Mr. Doyle, the new ranking member. He has been consistently active on these issues through the years. I am looking forward to working with him.

As I have so focused on these coms and technology issues I've appreciated the fact that Mr. Doyle kind of like me chose to opt himself in to the discussion on these issues and he is joined by three new members on his side.

I know that he is going to be ready to introduce them in a few moments. Let me begin with my opening statement. Get myself organized here.

As we continue the subcommittee's work, modernizing the laws around communications and technology and striving to promote innovation and investment it only makes sense to begin by taking a look at one of the agencies tasked with developing telecommunications policy.

The last NTIA reauthorization was adopted in, get this, 1992. It is far past time that we again reauthorize the agency and the first step in the process is to examine the role of the agency past, present and future in crafting policies that will achieve our shared goals.

We are pleased to have three witnesses today that can speak to their experiences as head of the NTIA. We are so grateful for your time and for your insights and I am certain they are going to give us the needed perspective on the work that the agency has done and also, hopefully, give us some good ideas on how to empower the NTIA going forward.

One of the biggest bipartisan priorities for the subcommittee over the years has been satisfying the demand for additional spectrum for commercial use.

As the FCC winds down the broadcast incentive auction, one of the last opportunities for reallocation of commercial spectrum to other commercial users we are again turning our focus to federally-held spectrum. The government holds a large amount of spectrum and we recognize that they require much of it for carrying out critical government missions.

However, we also want to be certain that the government is armed with the best technology and is using that spectrum as efficiently as possible. The dividend from this investment in our government agencies will be more spectrum to meet more broadband demands.

Broadband deployment is America's greatest infrastructure challenge of this decade and it is up to us to rise to the occasion of meeting this demand.

We will have long said that spectrum will need to be an all of the above solution and NTIA will be an essential player in any discussion moving forward. In addition to spectrum policy, NTIA plays a leading role in public safety and cybersecurity policy.

They serve as a liaison for interagency cooperation and standard setting in both of these areas promoting safer and more secure communications networks.

We have seen time and again in recent months how serious cyber threats are we will need to use all of our tools to combat these attacks, especially when it comes to critical infrastructure.

NTIA has the capability to bring together a diverse group of government stakeholders to address the problem and develop best practices. We must ensure that we empower them to be effective

and efficient in combating cyberattacks and promoting strong public safety networks.

The communication sector is vibrant, thriving, and the government agencies that handle these issues should reflect that.

Today, we are going to look at how to enable the NTIA to craft thoughtful telecom policy that promotes continued innovation and investment.

I thank our witnesses for their thoughtful testimony and I look forward to a robust discussion on this important agency and at this time I yield 5 minutes to the ranking member.

[The prepared statement of Mrs. Blackburn follows:]

PREPARED STATEMENT OF HON. MARSHA BLACKBURN

As we continue this subcommittee's work modernizing the laws around communications and technology, and striving to promote innovation and investment, it only makes sense to begin by taking a look at one of the agencies tasked with developing telecommunications policy. The last NTIA reauthorization was adopted in 1992. It is far past time that we again reauthorize the agency, and a first step in the process is to examine the role of the agency, past, present, and future in crafting policies that will achieve our shared goals.

We are pleased to have three witnesses today that can speak to their experiences as heads of NTIA. I'm certain they will provide us with valuable perspective on the work that the agency has done, but also hopefully give us good ideas as to how to empower NTIA going forward.

One of the biggest bipartisan priorities for this subcommittee over the years has been satisfying the demand for additional spectrum for commercial use. As the FCC winds down the broadcast incentive auction, one of the last opportunities for reallocation of commercial spectrum to other commercial users, we are again turning our focus to federally held spectrum. The government holds a large amount of spectrum, and we recognize that they require much of it for carrying out critical government missions. However, we also want to be certain that the government is armed with the best technology, and is using spectrum as efficiently as possible. The dividend from this investment in our government agencies will be more spectrum to meet broadband needs. Broadband deployment is America's greatest infrastructure challenge and we must rise to the occasion. We have long said that spectrum will need to be an "all of the above" solution, and NTIA will be an essential player in any discussion moving forward.

In addition to spectrum policy, NTIA plays a leading role in public safety and cyber security policy. NTIA serves as a liaison for interagency cooperation and standard setting in both of these areas, promoting safer and more secure communications networks. We have seen time and again in recent months how serious cyber threats are, and we will need to use all tools at our disposal to combat these attacks—especially when it comes to critical infrastructure. NTIA has the capability to bring together a diverse group of government stakeholders to address the problem and develop best practices. We must ensure that we empower NTIA to be as effective and efficient as possible in combatting cyber attacks and promoting strong public safety networks. The communications sector is vibrant and thriving, and the government agencies that handle these issues should reflect that. Today, we will look at how to enable NTIA to craft thoughtful telecommunications policy that promotes continued innovation and investment. I thank our witnesses for their thoughtful testimony and look forward to a robust discussion on this important agency.

OPENING STATEMENT OF HON. MICHAEL F. DOYLE, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

Mr. DOYLE. Well, I want to thank you, Madam Chair, for holding this hearing and I want to congratulate you on your new role. I look forward to working with you and having a productive partnership and I am glad you like opt in. I do, too.

I also want to thank my colleagues on the committee for giving me this opportunity and introduce our two new members, Raul Ruiz from California and Debbie Dingell from Michigan—both good members and I think will be good members for this committee.

I want to thank the outstanding panel that's here today. We look forward to your testimony. As the chair said, we are here today to discuss reauthorizing the National Telecommunications and Information Administration, an agency charged with providing the president and the executive branch with fact-based expert policy recommendations on telecommunications, information, and internet issues.

NTIA is also responsible for managing the federal government's use of spectrum and it has been instrumental in clearing government-held spectrum and making it available for commercial use.

In the process, tens of billions of dollars have been raised for the federal government. NTIA is also working with federal agencies to find new and creative ways to share underutilized spectrum resources and that's important because maximizing our finite spectrum resources will be critical as we move to the fifth generation wireless networks and beyond.

NTIA's Institutes for Telecommunication Sciences located in Colorado are key to this mission. Last year, the funding for this lab was 23 percent below the president's request. Our lack of investment here could have serious implications for this agency's ability to accomplish its mission.

We want to ensure that this agency has the authority, the tools, and the personnel it needs to do its job. NTIA also plays a critical role in convening government agencies, industry experts and academics to tackle complex problems through their multi-stakeholder process.

This process has been used to address evolving issues such as cybersecurity, the internet of things, UAVs, and many others.

This is a well-managed, orderly, and inclusive process that enables the federal government to thoroughly grasp and effectively address complex issues, and more than that, this agency has repeatedly proved its worth beyond just clearing spectrum.

Under the leadership of our panel, NTIA ran the DTV converter coupon program and the BTOP program to deploy broadband infrastructure and stood up FirstNet, the public safety broadband network authority.

They have learned valuable lessons along the way. BTOP is now Broadband USA, a program to help communities expand broadband and promote its adoption.

My hope is that as we talk about infrastructure investment in this country we look to agencies like NTIA which have extensive experience in this area to help manage and direct these investments for our future.

My hope in reauthorizing NTIA is that we empower this agency to continue doing its job and that they continue to have a seat at the table and continue to provide fact-based advice to the president and others.

Madam Chair, I'd like to ask unanimous consent to enter this letter from the Electronic Privacy Information Center into the record.

Mrs. BLACKBURN. So ordered.

[The information appears at the conclusion of the hearing.]

Mr. DOYLE. Thank you, and I would like to yield the remainder of my time to my colleague, Ms. Matsui.

Ms. MATSUI. Thank you very much, Mr. Doyle, for yielding me time.

Today's digital economy demands that we bolster the invisible infrastructure supporting wireless connectivity. Spectrum is the building block for innovation.

Working with NTIA we made significant progress in the last 8 years to free up federal spectrum for commercial use. Congressional oversight and cooperation from the administration was critical. As a result, we made 300 megahertz of spectrum available for the wireless broadband.

We must have continued leadership from both branches of government including leaders at the agencies like the Department of Defense to expand this progress.

We all know there is much more work to be done. The United States must lead the world in 5G and I look forward to working with my colleagues to free up more of our nation's airwaves for the wireless economy.

We have always been a nation of innovators and our spectrum policies should be no exception. With that, I yield back to the ranking member.

Mrs. BLACKBURN. The gentleman yields back his time.

Chairman Walden is not here for his opening. Is there any member that would choose to take a portion of his time? Then let me reserve that in case he makes it up and at this time—Mr. Pallone had requested time. Is that not correct?

Mr. DOYLE. Could I claim his time to yield for one more minute?

Mrs. BLACKBURN. Absolutely you can claim the time and yield.

Mr. DOYLE. Thank you, Madam Chair. I appreciate it.

Is there any member of the subcommittee that would like to have time?

Mr. RUIZ. Chair.

Mr. DOYLE. Yes, I'll yield to Mr. Ruiz.

Mr. RUIZ. Thank you, Chairwoman and Ranking Member.

In today's digital age, access to broadband internet is not a luxury. It is a great equalizer that gives millions of Americans the opportunity to pursue their education, find a job and achieve their dreams.

But the fact is there are severe disparities in the deployment of broadband in my district and across the U.S., felt most acutely in rural areas and on tribal land.

The National Telecommunications and Information Administration, or NTIA, has been instrumental in closing this digital divide and I am pleased to be here today to discuss how we can build upon their successes to better serve our constituents. And particularly, I want to highlight NTIA's Broadband USA initiative launched in 2015 which empowers local communities and tribes to expand their broadband capacity and promote broadband adoption through online and in person technical assistance, regional workshops and guides and toolkits with best practices for achieving success.

This is a program that supports local solutions supported by evidence-based best practices and technical assistance and is a model that we should all be able to support.

I thank the ranking member again for the opportunity to speak briefly about this critical program and look forward to working together with the members of this subcommittee to find solutions that move our nation forward into the digital age.

Thank you, and I yield back.

Mr. DOYLE. Thank you. I'd like to yield some time to Ms. Dingell, too.

Ms. DINGELL. Thank you, Ranking Member, for yielding to me and I'd like to thank the chairman for holding this hearing today.

I know this subcommittee oversees much of the new technology that's reshaping our great nation and NTIA in particular has helped usher in this new era of connectivity through its work supporting broadband deployment and clearing our airwaves. Every day new high-tech marvels are unveiled, including connected and automated vehicles, which I care a great deal about, which have the promise of reducing energy consumption and saving lives on the road.

The continuing technological revolution is creating many new jobs and bringing other benefits to society. But for all the good this innovation brings to consumers in our economy, we have to ensure that no American is left behind in this new technological era.

As this transition occurs, we have got an obligation to use every tool at our disposal to create jobs and get people back to work. We are going to need to train Americans for the new jobs that need filling and if any agency's up to the task of helping to solve this problem I know NTIA is.

Keeping Americans on the job is critical to this new economy. It's going to be a major focus for me on this subcommittee. I thank the ranking member and yield back the time.

Mr. DOYLE. Thank you. Does anyone else seek time?

Mr. McNerney.

Mr. MCNERNEY. Well, again, I thank the ranking member.

The NTIA is the agency that's going to be advising the president on internet policies, on privacy and security. These are really important functions, especially in the age of our internet of things—the IoT.

So I really advocate for a strong agency that has the resources to do the research and to develop policy recommendations that will make internet more competitive and will keep America's lead in the internet activities and telecommunications activities.

So we have a couple of issues like the broadband map, I think, which needs to be updated so that we have the proper information, security and privacy. Very, very important.

I've worked with the chairwoman of this committee on this issue and I look forward to working with you again on that. But again, I advocate that we have a strong NTIA to help us move forward working with the administration.

Mrs. BLACKBURN. Gentleman yields back.

Mr. DOYLE. I yield back. Thank you.

Mrs. BLACKBURN. And this concludes our member opening statements. I do remind all members that you've got 5 days for submitting those opening statements.

They are all going to be made a part of the record and we know that several of our members are on the member bus coming back from the prayer breakfast and they are not here at this time.

We want to thank our witnesses for being here with us today and for taking their time and for submitting that testimony early. That's always a good thing.

Our panel features three witnesses who are testifying today in their capacity as former administrators of the NTIA.

They are the Honorable John Kneuer, who served as the assistant secretary of commerce for communications and information and administrator of NTIA from February 2006 to November 2007. Welcome.

The Honorable Meredith Attwell Baker, who served as the acting assistant secretary of commerce for communications and information and acting administrator of NTIA from November 2007 to January 2009. Welcome.

And Ms. Anna Gomez, who was the acting assistant secretary of commerce and acting administrator of NTIA from February 2009 to June 2009. Ms. Gomez continued to serve the NTIA as deputy assistant secretary and deputy administrator of the NTIA until 2013.

We appreciate all of you, each of you being here today and preparing for this. We will begin the panel with you, Mr. Kneuer. You are now recognized for 5 minutes to give an opening statement.

STATEMENTS OF THE HONORABLE JOHN M.R. KNEUER, FORMER ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION, FORMER ADMINISTRATOR, NTIA, PRESIDENT AND FOUNDER, JKC CONSULTING; THE HONORABLE MEREDITH ATTWELL BAKER, FORMER ACTING ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION, FORMER ACTING ADMINISTRATOR, NTIA, PRESIDENT AND CEO, CTIA; ANNA M. GOMEZ, FORMER ACTING ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION, FORMER ACTING ADMINISTRATOR, NTIA, PARTNER, WILEY REIN

STATEMENT OF JOHN M.R. KNEUER

Mr. KNEUER. Thanks very much.

Good morning, Chairman Blackburn, Ranking Member Doyle, members of the committee. It was indeed my privilege to serve at NTIA as both the Deputy and the Assistant Secretary from 2003 to 2007.

Since that time in private life I have served as a board member, a consultant, and an advisor to various companies and institutions that have an interest in telecommunications and technology markets.

But I want to stress I am here today in my personal capacity and all of my views are my own.

So while NTIA has developed a diverse portfolio of issues over time, its core mission can really be broken down into two functions:

the policy coordination and policy advisory for the president function and as the manager of the federal government spectrum.

Because of this dual responsibility, NTIA occupies an important intersection of telecommunications policy in industry as well as our national and homeland security.

But to be most effective I think any reauthorization statute should focus NTIA on those areas where its core competency can be leveraged to maximum effect.

With regards to policy coordination and development, under the existing statute NTIA administrator serves as the president's principal advisor on telecommunications policies pertaining to the nation's economic and technological advancement and to the regulation of the telecommunications industry.

This is a very, very broad mandate that can be read to include essentially policy area that affects the telecommunications and technology markets.

However, in my experience at NTIA I think it's at its most effective when it focuses its policy coordination efforts on those areas of its unique responsibility, namely, this intersection of commercial and government interests.

Now, one very obvious example is with regard to cyber. Cybersecurity is an issue that cuts across commercial interest as well as very important government equities. By providing the perspective of industry and the experience that NTIA has there into the inter-agency process, NTIA can help bridge the gap between the executive branch interests and executive branch entities that have national and homeland security responsibilities and the key private sector interests that also support our collective cyber defenses.

Similarly, NTIA can serve as a conduit from government agencies with cyber experience back into the private sector so they have that information flow as well.

With regards to spectrum management, I think as Secretary-designee Ross stated in his confirmation hearing testimony, the Department of Commerce has to work with Cabinet departments to free up more spectrum to meet our critical demand for broadband, and it's not just broadband but it's also autonomous vehicles, the internet of things, the range of spectrum-dependent industries that are proliferating across the economy. All have spectrum demand and we need to manage that properly. But this doesn't have to be a zero sum transaction where industry's gain is agency's loss.

With thoughtfully crafted policies, Cabinet departments, and agencies benefit both from commercial industry technological developments that produce not only spectrum efficiencies but also new mission critical capabilities for government services, and then the revenue from spectrum auctions can also be used to fund these critical government facilities and ease budget pressure.

Because of its exposure to both industry and government agencies, NTIA can help ensure that the spectrum relocation results in both positive benefits for industry and the government, and I think it had been mentioned by multiple comments the ITS labs in Boulder can also help with cutting edge research in that regard.

There are, however, limits to NTIA's authority. As a sub-Cabinet agency in a single department it's beyond NTIA's authority to dic-

tate to other Cabinet departments their spectrum and capital budget allocations and resources.

However, there is one section of the existing authorizing statute that I think should be examined for potential clarification in any future reauthorization.

Under existing law, NTIA is authorized to advise the director of OMB on the development of policies relating to the procurement and management of federal telecommunication systems.

In the past, this authority has been effective in combining NTIA's expertise with OMB's government wide authority to promote spectrum efficiencies. I think there is untapped potential in that relationship.

So, again, I appreciate the opportunity to testify and I'll remain available to the committee as you consider the authorization of this agency and I'll look forward to any questions.

[The statement of Mr. Kneuer follows:]

Testimony of John M. R. Kneuer
House Energy and Commerce Committee
Subcommittee on Communications and Technology
February 2, 2017

Good Morning Chairman Blackburn, Ranking Member Doyle, Members of the Committee.

It is an honor to be back here before the Committee, my name is John Kneuer. From 2003 to 2007, it was my privilege to serve first as the Deputy Assistant Secretary, and then to be appointed by the President and confirmed by the Senate as the Assistant Secretary of Commerce for Communications and Information and Administrator of the National Telecommunications and Information Administration ("NTIA").

Since leaving government in 2007 I have worked in the private sector as a board member, consultant, and advisor to companies and institutions with interests in domestic and international telecommunications and technology markets. However, I am appearing before you today in my personal capacity and my testimony and comments are my own.

While NTIA has developed a diverse portfolio of issues over time, its core mission can be broken down into two functions on which I will focus my testimony – telecommunications policy coordination, and federal government spectrum management.

As the principal advisor to the President on telecommunications policy, NTIA has exposure to and expertise in the broad trends and inputs that impact the economic and technical success of our telecommunications and technology markets.

As the manager of the federal government radio spectrum, NTIA has expertise in the operational needs and technologies deployed by federal agencies for our national and homeland security and scientific research.

Because of this dual responsibility, NTIA occupies an important intersection of telecommunications policy and industry, and our national and homeland security. But to be most effective, any reauthorization statute should focus NTIA on those areas where its core competency can be leveraged to maximum effect.

Policy Coordination and Development:

Under the existing authorizing statute the NTIA Administrator serves as “the President’s principal adviser on telecommunications policies pertaining to the Nation’s economic and technological advancement and to the regulation of the

telecommunications industry.”¹ This is a very broad mandate that can be read to include essentially any policy area that affects the telecommunications and technology markets. However, in my experience NTIA is at its most effective when it focuses its policy coordination efforts on the areas of its unique responsibility – the intersection of commercial and government interests.

To take one obvious example, cyber-security is an issue that cuts across commercial interests as well as important government equities. By providing the perspective of industry into the inter-agency process, NTIA can help bridge the gap between the executive branch interests with national and homeland security responsibilities and key private sector interests so that they all support our collective cyber-defenses. Similarly, NTIA can serve as a conduit from government agencies with cyber responsibilities to the private sector to ensure that information flows in both directions to maximum affect.

Spectrum Management:

As Secretary-designate Ross stated in his confirmation hearing testimony, the Department of Commerce has to work with other cabinet departments to free-up more spectrum to meet our critical demand for broadband and other emerging technologies such as autonomous vehicles and the Internet of Things (IoT). However, this doesn’t need to be a zero sum transaction where industries gain and

¹ 47 U.S.C. 902(a)(D).

agencies lose. With thoughtfully crafted policies, Cabinet Departments and agencies can benefit from commercial technological developments that produce not only spectrum efficiencies, but also new mission critical capabilities for government services. And revenue from spectrum auctions can also be used to fund these new technologies, easing budgetary pressures. Because of its exposure to both industry and government agencies, NTIA can help ensure that spectrum relocation results in positive benefits for both industry and government. And the NTIA labs in Boulder Colorado can also help in performing cutting edge research and providing technical clarity to what can be sometimes contentious policy debates.

But, there are also limits to NTIA's authority. As a sub-Cabinet agency of a single Department it is beyond NTIA's authority to dictate to other Cabinet Departments how they should allocate their spectrum and capital resources. However, there is one section of the exiting authorizing statute that should be examined for potential clarification in any future re-authorization. Under existing law, NTIA is authorized to "advise the Director of the Office of Management and Budget ("OMB") on the development of policies relating to the procurement and management of Federal telecommunications systems."² In the past this authority has been effective in combining NTIA's expertise with OMB's government-wide authority to promote spectrum efficiencies in government spectrum use. I believe there is untapped potential in this or similar authority to achieve further efficiencies to the benefit of both the private sector and the federal government.

² 47 U.S.C. 902(a)(E).

Again, I appreciate the opportunity to testify before you this morning, and I will remain available to the Committee as you consider the authorization of this important Agency. I will be happy to answer any questions.

####

Mrs. BLACKBURN. I thank you, and Ms. Baker, you're recognized for 5 minutes.

STATEMENT OF MEREDITH ATTWELL BAKER

Ms. BAKER. Terrific. Good morning. My name is Meredith Attwell Baker and I'm President and CEO of CTIA.

I first wanted to offer my congratulations to both Chairman Blackburn and Ranking Member Doyle on your new roles. We applaud your longstanding commitment to ensuring that all Americans have access to global-leading communications.

As the head of an association that cares deeply about spectrum policy and as a previous acting administrator of NTIA, it's an honor to be a witness at this subcommittee's first hearing.

Your focus today on the reauthorization of NTIA rightfully underscores the importance of this organization to so many of our shared and bipartisan objectives.

Serving alongside my colleagues at NTIA was a distinct honor. I have the highest opinion of the extremely talented and surprisingly small staff. From the digital television transition that I helped lead to the AWS-1 and AWS-3 auctions they helped enable, NTIA plays a critical role in our nation's communication future in close collaboration and with guidance from this committee.

While NTIA serves many important functions, I want to focus my remarks on spectrum. As a nation, we need to have advanced communication networks to support mission critical government programs and we need to continue to lead the world in commercial wireless services.

NTIA plays a unique role seeking out win-win situations for government and commercial users. They leverage new technologies and auction revenues to provide government agencies more efficient and effective systems.

In doing so they provide our industry with access to critical new spectrum to better serve all of us. I hope this reauthorization process can help empower NTIA to advance its mission and ensure government and commercial users have the communications resources they need. I believe we can benefit from the lessons learned from prior reallocation efforts to strengthen NTIA's role.

First, we should ensure that NTIA has the technical resources and expertise it needs to serve as an impartial mediator of future spectrum disputes.

For example, I hope we focus on NTIA's engineering lab, ITS, and its ability to do cutting edge research with both government and commercial partners. The lab has always played an important role in AWS-1 and AWS-3 reallocation efforts.

Similarly, NTIA should be able to provide agencies with the R&D support needed to evaluate potential sharing and reallocation efforts. Hand in hand with those technical resources, NTIA would benefit from greater transparency tools to better hold agencies accountable for their spectrum use and to simplify this committee's important oversight role.

In my mind, given the importance of our sector to the economy it is also overdue to elevate the NTIA administrator to an Under Secretary level to better reflect their role as the president's principal advisor on communications.

Strengthening NTIA now is particularly important. We are about to have a revolutionary breakthrough in the next generation of wireless, known as 5G. These networks will be 10 times faster and five times more responsive than today's networks.

They will be able to support 100 times more wireless devices, from beacons to wearables, and that will unlock powerful benefits in communities of all sizes from Clarksville, Tennessee to McKeesport, Pennsylvania.

America's wireless industry is ready to make significant new investments to bring these benefits to communities all over the country.

One recent study estimates that wireless operators will invest \$275 billion over the next decade to deploy 5G. That investment is projected to create a new 5G job for every 100 Americans—three million total jobs.

In local communities, increased 5G connectivity will mean officials can more quickly respond to emergencies. It will make our roads safer. Smarter energy solutions will lower our monthly bills and mobile health care systems will instantly connect patients with doctors. The speed with which these benefits reach all Americans will largely depend on decisions made here in Congress at NTIA and at the FCC. We need an infrastructure policy to support denser networks with new small cells, hopefully a future topic for another hearing soon.

And we need a plan for 5G spectrum with a clear pipeline of new commercial spectrum under NTIA's steady hand. The wireless industry is ready to invest in what's next.

We hope this committee will continue its record of helping make that happen, help us create jobs and, most relevant for today, help empower NTIA to provide for all Americans' communications needs.

Thank you.

[The statement of Ms. Baker follows:]

Testimony of
Meredith Attwell Baker
President and CEO
CTIA – The Wireless Association®

on
"Reauthorization of NTIA"

before the
House Energy & Commerce
Subcommittee on Communications and Technology

February 2, 2017



Chairman Blackburn, Ranking Member Doyle, and members of the Subcommittee, thank you for inviting me to share CTIA's perspective on the reauthorization of the National Telecommunications and Information Administration ("NTIA"). I was fortunate enough to be at NTIA for nearly five years, and I can say, without a doubt, that it was a wonderful place to work. NTIA has undertaken some critical jobs, including the DTV transition, and they continue to do outstanding work with a small staff. I'm proud to have spent time there. And I'm happy to provide the Committee with some thoughts on how to empower NTIA to continue doing its great work.

First, CTIA appreciates the Committee's leadership on wireless issues and your continued engagement in making additional spectrum available to fuel the robust and growing American wireless market. We are on the cusp of a revolutionary breakthrough in the next generation of wireless technology, known as "5G" or "Fifth Generation." These networks will be 10 times faster and five times more responsive than today's networks. They will be able to support 100 times more devices, beacons, and wearables. This will unlock powerful benefits in communities of all sizes, but these exciting new developments in wireless networks cannot be achieved without additional spectrum resources. Because of NTIA's role in spectrum management, it is appropriate that the Subcommittee carefully consider, as part of the reauthorization process, how it can empower the NTIA to even more effectively partner with federal agencies and with the wireless industry to make additional capacity available for our Nation's networks. Additionally, the Subcommittee should consider how it can encourage NTIA to leverage tools it already has to best manage spectrum use.

NTIA has done, and continues to do, outstanding work in the spectrum space with a small and dedicated staff. CTIA appreciates that in addition to NTIA's spectrum management function, NTIA plays a significant role in a wide variety of other issues of importance to the American economy and the wireless industry,

including broadband deployment siting, online privacy, copyright protection, cybersecurity, international spectrum collaboration, and telecommunications research and engineering. The goal should be to ensure that NTIA can continue to serve its critical role in the future to benefit all Americans.

The Need for Spectrum. Spectrum is a vital national resource. It is the lifeblood of the wireless communications ecosystem, which in turn is a critical driver of our Nation's economy. In the three years ending in December 2015, U.S. wireless carriers invested on average over \$32 billion per year in their networks.^{1/} Spectrum licensed to U.S. wireless carriers generates more than \$400 billion annually in economic activity,^{2/} and this is without taking into account the other sectors of the American economy that the wireless ecosystem enables. According to one recent survey, 9 out of 10 small businesses in the U.S. today are reliant on wireless. In fact, wireless spectrum is an economic force-multiplier. Every 10 megahertz of spectrum made available adds \$3 billion to the U.S. Gross Domestic Product and supports approximately 202,000 new jobs.^{3/} Further, future deployment of 5G wireless networks is projected to produce an additional \$500 billion of economic growth and create \$160 billion in benefits and savings through smart city solutions.^{4/} Wireless operators will invest an estimated \$275 billion over the next decade to deploy 5G across America, and that investment is projected to create 3 million new jobs – almost one new job for every 100

^{1/} See *Americans' Data Usage More Than Doubled in 2015*, CTIA (May 23, 2016), <http://www.ctia.org/resource-library/press-releases/archive/americans-data-usage-more-than-doubled-in-2015>.

^{2/} See Coleman Bazelon and Giulia McHenry, *Mobile Broadband Spectrum: A Vital Resource for the U.S. Economy*, THE BRATTLE GROUP, 2 (May 11, 2015) ("Brattle Group Report"), http://www.ctia.org/docs/default-source/default-document-library/brattle_spectrum_051115.pdf.

^{3/} See *Wireless Quick Facts*, CTIA, <http://www.ctialatest.org/industry-data/wireless-quick-facts> (last accessed Jan. 27, 2017).

^{4/} *Smart Cities: How 5G Can Help Municipalities Become Vibrant Smart Cities*, ACCENTURE STRATEGY, at 1 (2017), https://newsroom.accenture.com/content/1101/files/Accenture_5G-Municipalities-Become-Smart-Cities.pdf.

Americans.^{5/} As more industries embrace digital and wireless technologies, increases in productivity are expected to add \$2.7 trillion to the U.S. economy by 2030. In short, spectrum availability has a direct and substantial impact on consumers and the American economy.

That is why it is so important that as a country we continue to ensure that there is sufficient spectrum available to meet the well-documented growing consumer and business demands for wireless capacity. The growth is staggering. In fact, Americans used 25 times more mobile data in 2015 than they did in 2010. And by 2020, it is projected that number will be six times higher than the 2015 record levels. By any measure, the demand for wireless services is exploding and to keep up with the demand, increased spectrum is necessary.

The migration to 5G networks makes the spectrum conversation even more critical. Build out of 5G networks, which will depend on the deployment of tens of thousands of small wireless facilities – such as small cells and Distributed Antenna Systems – in order to increase coverage, densify networks, and boost capacity, will require more spectrum. These new systems will facilitate very high speed and low latency services and will support high capacity networks, touching every sector of our economy. They will enable increased machine-to-machine communications, an even wider variety of consumer devices, and Internet of Things applications including wearables, fitness and healthcare devices, self-driving cars, and home and office automation. In local communities, increased 5G connectivity will mean officials can more effectively spot and respond to crime, emergencies or natural disasters. It will make roads and public transit systems safer. Smarter energy solutions will lower utility costs for businesses and families. Mobile healthcare solutions will instantly connect urgently ill patients with doctors, regardless of where they live.

^{5/} *Id.*

NTIA's Critical Role. But, spectrum is a limited and finite natural resource. Some spectrum is available for commercial use, and this is the spectrum that wireless carriers, broadcasters, satellite TV providers and Wi-Fi devices employ. That spectrum is managed by the FCC. Other spectrum is available for federal agencies to fulfill their critical missions and is managed by NTIA. The FCC continues to review ways that the spectrum over which it has authority can be repurposed to meet the skyrocketing demand for capacity. And, industry has continued to upgrade its networks to make more intense use of the spectrum available to it. Recently some of the so-called high-band spectrum that will be used for 5G networks was previously underutilized, if not unused, and recently designated by the FCC for mobile terrestrial use. And now, with Congress' help, the FCC will convert 70 megahertz of TV spectrum for wireless broadband use through the broadcast incentive Auction, providing the wireless industry more spectrum than the AWS-3 auction did two years ago. It is rare for a single auction to include this much spectrum. By all accounts, the Incentive Auction will be a success and pay great dividends in our nation's effort to lead the world in 5G services

However, there are limited additional opportunities for the FCC to make more spectrum available on its own. That is why NTIA's role is so important – more so than ever before. Because NTIA is in charge of federal agencies' use of spectrum it can use that role to determine whether spectrum can be more efficiently used, freeing up additional bands for commercial use.

In light of the extraordinary value of spectrum to private and public entities, NTIA must have the prominence and resources to perform its critical tasks. It would therefore make sense to elevate the NTIA Administrator's title from what is now an Assistant Secretary position, to an Undersecretary level position. This would also be consistent with the Undersecretary title of NTIA's sister agency, the head of National Institute of Standards and Technology. We need to ensure that

federal agencies have the sufficient spectrum for their critical needs, and that the commercial market has access to the spectrum assets necessary to meet consumer demands. A stronger NTIA Administrator will be a more successful arbiter of these private and public spectrum needs.

There are many cases where federal agencies can make more efficient use of spectrum by upgrading technology, combining with other federal communications systems, or even using commercial services. This is a process that has worked very successfully. For instance, in the AWS-3 auction, NTIA made 40 megahertz of what was in large part Department of Defense spectrum available for commercial use. Due to continued coordination between NTIA, the FCC, industry, and federal agencies like the Department of Defense, that spectrum is being put to productive use by wireless carriers today, meeting consumer and business demands and growing our economy, all at no loss to the federal systems' operations. Indeed, the process of making federal spectrum available to commercial users has been a win-win for both parties. I should also note the critical role this Committee has played to facilitate reallocations and "win-win" results for commercial and government users.

Additionally, through the congressionally-created Spectrum Relocation Fund, federal agencies are able to upgrade their systems when they relocate to other spectrum and, based on a recent amendment to the Fund, are able to conduct research and planning to increase their spectrum efficiency. The Spectrum Relocation Fund provides positive incentives for federal agencies to invest in new and innovative technologies needed to support efficient spectrum use and potential reallocation, and this Committee can take steps to further enhance this system.

Congress Can Infuse more Transparency into NTIA Process. Because spectrum is such a valuable resource, there is great interest from Congress, federal agencies, and private industry into the actions of NTIA. NTIA would benefit from

greater transparency tools to better hold agencies accountable for their spectrum use and needs as well as simplify this Committee's important oversight role. For instance, NTIA released a report in November 2016 evaluating several spectrum bands now used by federal agencies that hold significant potential for commercial use. This "Quantitative Analysis" was a useful process that required evaluation of federal spectrum use. Congress can further direct NTIA to issue similar reports in the future on a more regular basis, and create mechanisms to provide greater awareness into the timing and status of key spectrum priorities. This kind of transparency will help all spectrum-using entities to better understand the interagency spectrum review process and provide more certainty for future planning. **Congress Should Encourage NTIA to Leverage Tools Already Available to Best Manage Federal Spectrum Use.** Congress can also encourage NTIA to make greater use of the tools NTIA already possesses to make additional spectrum available. For instance, NTIA has the Institute for Telecommunication Sciences – known as ITS – NTIA's lab in Boulder, Colorado. The ITS engages in important studies to determine the most effective means of making federal spectrum available for commercial use. In the context of sharing AWS-1 and AWS-3 spectrum, for example, the ITS helped determine the level of protection required for incumbent licensees, which facilitated greater access to federal spectrum by commercial users while protecting critical government uses.

From an industry perspective, it is helpful to have an independent, unbiased lab with a deep knowledge base and expertise to examine highly technical issues. Congress should encourage NTIA to find new ways to use the ITS and determine if there are other tools that would be helpful in the exercise of examining new federal bands of spectrum for commercial use.

*

*

*

The wireless industry is ready to invest in what's next. As a new Administration and a new Congress begin their work, we have a simple ask: help us invest. Help us create jobs. Through NTIA's reauthorization, Congress has an opportunity to recognize the critical role NTIA plays in making additional, much needed spectrum available for commercial wireless use. Help empower NTIA to serve the critical role it must to benefit all Americans' future communication needs. And help us ensure that America remains the global leader in wireless innovation. We look forward to working with each of you as you consider actions to encourage investment and innovation in the wireless ecosystem, strengthen the Nation's economy, and maintain America's position as a wireless leader. Thank you for the opportunity to be a part of today's hearing.

Mrs. BLACKBURN. I thank you.

Ms. Gomez, you're recognized for 5 minutes.

STATEMENT OF ANNA M. GOMEZ

Ms. GOMEZ. Good morning, Chairman Blackburn and Ranking Member Doyle, distinguished members of the subcommittee. Thank you for the opportunity to appear before you to share my thoughts regarding the important work NTIA performs.

I had the honor to serve as NTIA's deputy administrator from 2009 through March 2013 and a short stint as acting administrator as well. I am proud to have served our nation alongside the many committed professionals at NTIA and the Department of Commerce.

Given technology's large and growing contribution to our broader economy, sound policy that supports investment and innovation is critical. NTIA has an important and often underappreciated portfolio in this regard.

First and foremost, Congress and through this committee's efforts in 1992 enshrined NTIA's authority to serve as the president's principal advisor on telecommunications.

As such, NTIA is responsible for formulating the administration's telecommunications and information policy, a role that has grown in importance and breadth with the evolution of a digital economy.

NTIA enables the federal agencies to have access to spectrum to meet their mission needs and has played an integral role in making additional spectrum for wireless broadband uses. NTIA also provides valuable research and analysis to inform efforts to identify additional spectrum efficiencies and potential opportunities to increase spectrum access for all users.

With increasing demand for wireless technologies showing no signs of abating, the need for an experienced and knowledgeable manager of our federal agency spectrum resources is ongoing.

NTIA also play an important role in developing internet policy. American businesses in the digital space both large and small depend on an online ecosystem that has the confidence of all users.

NTIA should continue convening multi-stakeholder processes to address policies that affect the internet and it's also very important that NTIA be at the table in policy discussions both domestically and internationally related to practices that may affect the digital economy and that it continue its strong voice in the internet domain name system.

NTIA has also focused on increasing broadband access and adoption. The Broadband Technology Opportunities Program helped build lasting projects that increase access and adoption of broadband throughout the country.

NTIA also co-chairs the Broadband Opportunity Council, an interagency effort to produce recommendations to increase and do remove barriers to broadband deployment, competition, and adoption.

And through its Broadband USA program NTIA sponsors a series of publications, webinars, and conferences designed to help stakeholders overcome broadband access and adoption obstacles.

NTIA also helps ensure that the nation's telecommunications resources adequately support the needs of public safety.

NTIA administers grants to promote Next Generation 911 and works with FirstNet, an initiative that is near and dear to my heart. I believe strongly in its mission to provide broadband services to all first responders.

NTIA also works with NIST on the public safety communications research program whose laboratories provide research, development, testing, and evaluation to foster nationwide interoperability in communications.

These highly valuable programs will help provide the nation's public safety the technology they need to keep their communities and themselves safe.

In conclusion, NTIA should continue its important role coordinating federal policies in areas such as spectrum, broadband, internet policy, public safety, and research. In an area like technology policy where there are many agencies with overlapping jurisdiction, it is critical to have an agency like NTIA to shepherd interagency activities and to bring some thought and rigor to priorities and interagency coordination so there is less duplication of effort.

One example is with policies regarding the internet of things. Myriad agencies have oversight over different components of the IoT. IoT implicates spectrum policy, cybersecurity, privacy concern, among others.

In the absence of a central approach to governance, we risk having inconsistent and burdensome requirements. NTIA can and should play an important role in convening and guiding the numerous agencies and ensuring consistent federal policies that promote innovation.

NTIA also should continue its efforts to identify barriers to broadband deployment and to push interagency efforts to streamline processes or eliminate requirements that show down that deployment. In addition, NTIA is well positioned to manage any grants or other infrastructure funding that would promote broadband access and adoption. Any new program would benefit from the NTIA's prior expertise and experiences.

I want to thank you again for allowing me to share my thoughts with you this morning and I look forward to answering any questions you may have.

[The statement of Ms. Gomez follows:]

**Testimony of Anna M. Gomez
Partner, Wiley Rein LLP
Former Deputy Assistant Secretary for Communications and Information for
the National Telecommunications and Information Administration,
U.S. Department of Commerce**

**Before the
U.S. House of Representatives
Committee on Energy & Commerce
Subcommittee on Communications and Technology
Reauthorization of NTIA
February 2, 2017**

Chairman Blackburn, Ranking Member Doyle, distinguished Members of the Subcommittee, thank you for the opportunity to appear before you to share my thoughts regarding the important work performed by the National Telecommunications and Information Administration (NTIA) and its dedicated staff.

From January 2009 through March 2013, I had the honor of serving as NTIA's Deputy Administrator, including a stint as Acting Administrator from February 2009 through June 2009. I am proud to have served our nation alongside the many committed professionals in the Department of Commerce and at NTIA.

Given the large and growing contribution of technology to our broader economy, sound technology policy that supports investment and innovation is critical. As former NTIA Administrator Strickling said in December, "tech policy

is now intrinsically and irrevocably linked to our country's overall economic prosperity.”¹

NTIA has an important and often under-appreciated portfolio in this regard. First and foremost, Congress -- through this Committee's efforts -- in 1992 enshrined NTIA's "authority to serve as the President's principal advisor on telecommunications policies pertaining to the Nation's economic and technological advancement and to the regulation of the telecommunications industry." As such, NTIA is responsible for formulating the Administration's telecommunications and information policy, a role that has grown in importance and breadth with the evolution of our digital economy.

Congress has entrusted NTIA with many responsibilities:

- NTIA advises the U.S. government and works with private-sector and civil society stakeholders on Internet policies, including convening multistakeholder processes to address challenges in this field such as cybersecurity and privacy questions. NTIA represents the Administration in discussions and negotiations regarding Internet governance.

¹ Remarks of Assistant Secretary Lawrence E. Strickling, *The 5G Wireless Future and the Rule of the Federal Government*, Remarks to the Hudson Institute (Dec. 16, 2016), available at <https://www.ntia.doc.gov/speechtestimony/2016/remarks-assistant-secretary-strickling-5g-wireless-future-and-role-federal>.

- NTIA works, in coordination with other agencies, to ensure the free flow of data across borders.
- NTIA plays a key role in public safety communications. It works with FirstNet in implementing the Middle Class Tax Relief and Job Creation Act of 2012. NTIA will have a key role in the future of the nationwide interoperable public safety broadband network.
- NTIA has experience managing various federal grant programs for broadband, public safety, and Next Generation 911.
- NTIA conducts research and testing in radio frequency science and technologies through its Institute for Telecommunication Sciences.

I would like to briefly address some of these responsibilities in further detail.

Spectrum Policy

Spectrum has been described as “the currency of the wireless industry,” but in reality it goes much further. Wireless is the backbone of 21st century education, commerce, and government. Our dependency on wireless networks and the spectrum that powers them continues to grow at an exponential rate. We are in the midst of a virtuous cycle, where the availability of wireless networks, with increasing speed and reliability, encourages the development of new and innovative edge technologies, in turn spurring further investment in our wireless

networks. For this level of innovation to continue, however, we must be able to deliver the spectrum needed to power the wireless technologies of the future.

NTIA's role as our country's federal agency spectrum manager helps provide the proper framework for the development of tomorrow's technologies. The agency has played an integral role in working to make additional spectrum available for wireless broadband uses. It utilizes the resources of the Office of Spectrum Management and the Institute for Telecommunication Sciences to meet these demands. The Institute for Telecommunication Sciences provides valuable research and analysis to inform the Office of Spectrum Management as NTIA works to identify additional spectrum efficiencies and potential opportunities to increase spectrum access for all users.

With increasing demand for wireless technology showing no signs of abating, the need for an experienced and knowledgeable manager of our federal agencies' spectrum resources is ongoing.

Internet Policy

The U.S. must ensure continued trust in the privacy and security of the Internet, which is necessary to facilitate the continued free flow of information around the world. American businesses in the digital space, both large and small, depend on an online digital ecosystem that has the confidence of potential users

and customers. It is imperative that the Department of Commerce, and namely NTIA, is at the table in policy discussions related to practices that may affect the digital economy.

NTIA's objectives are "to advance inclusive multistakeholder methods of developing information policy and preserve an open, interconnected global Internet that supports continued innovation and economic growth, investment, and the trust of its users."² NTIA represents the Administration internationally, including serving as member of the U.S. delegation to International Telecommunication Union (ITU) conferences and as an active participant of the Internet Corporation for Assigned Names and Numbers' (ICANN's) deliberations. NTIA should continue its strong voice to ensure all stakeholders, including the U.S. Government, have a voice in the domain name governance system.

As the challenges of Internet-related policies continue to evolve and present themselves, it is critical to have a strong NTIA that can help the U.S. Government represent U.S. interests in setting productive policies that allow for continued innovation and growth in the global digital economy.

² U.S. Department of Commerce, *The Department of Commerce Budget in Brief: Fiscal Year 2017* 131, available at <http://www.osec.doc.gov/bmi/budget/FY17BIB/AllFilesWithCharts2.pdf>.

Broadband

NTIA over the past decade has had a strong focus on increasing broadband access and adoption in a number of ways. The agency invested more than \$4 billion in grants through the Broadband Technology Opportunities Program (BTOP). These funds helped build sustainable infrastructure, establish public computer centers, and develop digital literacy training. While this program is winding down, it invested in lasting projects that increase access and adoption of broadband throughout the country. Recently, NTIA also Co-chaired the Broadband Opportunity Council – a collaboration of 25 federal agencies and departments that work with industry stakeholders to better support the needs of communities seeking broadband investment. I understand NTIA continues to work on increasing interagency coordination in this area. Through its BroadbandUSA program, NTIA also continues to sponsor a series of publications, webinars, and conferences designed to help stakeholders overcome obstacles to broadband access and adoption.

Public Safety

NTIA helps ensure that our nation's telecommunications resources adequately support the needs of the public safety community.

The Middle Class Tax Relief and Job Creation Act of 2012 helped implement a key recommendation of the bipartisan 9/11 Commission by creating the First Responder Network Authority, or FirstNet, and charging it with deploying, maintaining and operating a nationwide, interoperable public safety broadband network. FirstNet is an initiative near and dear to my heart. Working closely with Administrator Strickling, I was personally very involved in standing up FirstNet, and believe strongly in its mission to provide broadband services to all first responders. NTIA continues to have a role in the roll-out of FirstNet through grants to states for planning, as well as oversight of FirstNet's fees and the State Alternative Plan Program.

NTIA is also charged with administering grants to promote Next Generation 911 at public safety answering points across the country in coordination with the National Highway Traffic Safety Administration.

Conclusion

NTIA should continue its important role coordinating federal policies in areas such as spectrum, broadband, Internet policy, public safety, and research. In an area like technology policy, where there are many agencies with overlapping jurisdiction, it is critical to have an agency like NTIA to shepherd interagency

activities, and bring some thought and rigor to priorities and interagency coordination so there is less duplication of effort for the private sector.

One example is with policies regarding the “Internet of Things” (“IoT”). NTIA can spearhead a coordinated federal policy to encourage the growth and development of the IoT. Myriad agencies have oversight over different components or uses of IoT devices. IoT implicates spectrum policy, cybersecurity, and privacy concerns, among other issues. These are just some of the areas in which NTIA has expertise and can show leadership. In the absence of a central approach to governance in technology policies, such as with IoT, we risk having inconsistent and burdensome requirements that threaten the health of the sector, innovation and interoperability of systems. NTIA can and should play an important role in convening and guiding the numerous agencies and ensuring consistent federal policies that promote innovation.

NTIA also should continue its efforts to identify barriers to broadband deployment, and to push interagency efforts to streamline processes or eliminate requirements that slow down infrastructure deployment, such as environmental reviews or access to federal lands.

Many Congressional leaders have stressed that any Infrastructure plan should include broadband projects. While the details of the plan have not yet been announced, I believe NTIA is well-positioned to manage any grants or other

funding that would promote broadband access and adoption. Any new program would benefit from the expertise and experiences NTIA staff developed while managing BTOP.

In remarks late last year, Administrator Strickling provided some advice on future efforts to expand broadband access and adoption. For example, he recommended making sustainability a top priority. As Administrator Strickling observed, “It makes little sense to utilize tax dollars to provide the capital to construct a project, if the project cannot generate the operating revenue needed to sustain that network in the future.”³ He also recommended ensuring that dollars are provided to organizations that have a proven record of building and managing a broadband network and give them the flexibility to design sustainable projects.

NTIA has the experience and skills necessary to put these principles into action and make better, faster broadband networks more ubiquitous than ever.

Thank you again for allowing me to share my thoughts with you this morning. I look forward to answering any questions you may have.

³ See Remarks of Assistant Secretary Lawrence E. Strickling, *Transforming Communities: Broadband Goals for 2017 and Beyond* (Nov. 30, 2016), available at <https://www.ntia.doc.gov/speechtestimony/2016/remarks-assistant-secretary-strickling-transforming-communities-broadband-goals>.

Mrs. BLACKBURN. The gentlelady yields back and we thank you all for being here.

We will now move to questions and Mr. Kneuer, I would like to begin my 5 minutes of questions with you.

As I've reviewed the testimony from each of you and we have looked at the number of different funds, and you alluded to this in your testimony and all of you did actually, how it is spread out over different agencies. And I know Commissioner O'Reilly at the FCC has also commented on his concerns with the way sometimes we don't have one hand knowing what the other hand is doing or the agency across the street hasn't coordinated.

And so as you were saying, Ms. Gomez, you end up with this duplication of effort. What I'd like to hear from you is how best can NTIA work to coordinate those funds and you touched on this when you talked about advising the OMB director.

And then what would you propose for them as they look to coordinate those funds and utilize those dollars to the maximum?

Mr. KNEUER. Sure. I think, as you pointed out and Mr. O'Reilly pointed out, lack of coordination is a fundamental challenge and problem where you've got so many different pools of money under different control.

But I think there is also not just different institutions managing these pools of money. They sometimes have slightly different views and agendas. So some of these pools of money are for loans versus some are for grants, some are focused on underserved areas versus unserved areas.

I think the path is, and particularly as you consider reauthorization of NTIA, taking a broader look and collaborating with other committees of jurisdiction, working with the executive branch, working with OMB to the extent possible to bring these under a single area of planning and oversight so that the money that we are spending is focused, it's accountable.

It gets to with the highest priority on unserved area, places that really have no opportunity to take part in the broadband economy whether it is tribal lands or very rural areas but a consolidation and coordination of effort and I don't know if it'll be possible to make a singular place of focus. But the challenge is going to be to tighten it up as much as possible.

Mrs. BLACKBURN. OK. So singular point of focus—if that's the goal then is NTIA the best place to house that?

Mr. KNEUER. In the executive branch I would certainly think that.

Mrs. BLACKBURN. You would say so? OK. That's great.

Mr. KNEUER. You've got still the other options under the FCC. But NTIA, having the function of working directly with the FCC, is the one place in the executive branch that has the expertise. I think the logical locus would be NTIA.

Mrs. BLACKBURN. OK.

Ms. Gomez, I saw you making notes so I know you have something you want to add.

Ms. GOMEZ. Actually, I was just making notes on what you said. But I agree that coordination is very important. One of the things that NTIA did with BTOP was it—as part of its stage of reviews of grants was to make sure that it got input from industry and

from the local governments and from others to make sure there was not duplication of efforts or that they were not targeting already served areas. There is always room for improvement but I do think it's a good role for NTIA.

Mrs. BLACKBURN. OK.

Ms. Baker, I want to ask you a little bit about the 5G deployment. I see this is siting, utilization of health care informatics. I am from Nashville. This is something that people are working on every single day.

This is something we want to go quickly and I am about out of time and I really want to get through this. Is there anything that NTIA can and should do that would help facilitate the 5G deployment? And about 30 seconds on that because I've got one more item.

Ms. BAKER. Absolutely. I am glad you asked the question. We can talk about health care in the future. But I think the core functions that NTIA serves to streamline siting would be very helpful, streamline and simplify siting these small sites that need to be put up for 5G is critical for the rapid deployment—

Mrs. BLACKBURN. OK.

Ms. BAKER [continuing]. And I think we are going to need more spectrum so we need to work on a spectrum pipeline for commercial wireless.

Mrs. BLACKBURN. That is terrific. I appreciate that, and what I want each of you to submit, since I am out of time, if you were the one with the pen and the pad working out the reauthorization of the NTIA and modernizing the agency, what would you see as the five critical items and what did you see as the biggest stumbling blocks?

If you'll submit that for the record then I will turn and yield 5 minutes to Mr. Doyle.

Mr. DOYLE. Thank you very much.

Ms. Baker, I believe that spectrum like roads and bridges are part of our critical infrastructure and I am starting to work on some legislation to free up at least an additional 20 megahertz of federal spectrum below 3 gigahertz available for commercial use. Would that be something your association and industry would support?

Ms. BAKER. Absolutely. I think the low-band spectrum is really critical. I think the FCC has done a good job this summer in bringing forth some high-band spectrum. But if you look at a place like Montana that hasn't been sited there is been a recent low-band spectrum that's been released there that has caused the deployment of siting in Montana.

So I think that's—it is very important for the future that we have low, middle and high-band spectrum.

Mr. DOYLE. Great.

Ms. BAKER. So we absolutely support that.

Mr. DOYLE. Well, Madam Chair, maybe that's something we can make part of this reauthorization or perhaps as a standalone or one of the proposed infrastructure packages. I'd certainly be interested in working with you on that if you're interested. Thank you.

Ms. Baker and Ms. Gomez, you both worked on spectrum issues. How important do you think it is that NTIA lab in Colorado is fully

funded and tell us a little bit about what types of research the lab does and what role they play in freeing up federal spectrum and do you see that as critical to the future of federal spectrum policy?

Ms. BAKER. I'll be happy to go first.

As I mentioned in my testimony, I think ITS is a critical part of future questions in spectrum. I personally think that spectrum is a scarce resource. It's becoming more and more difficult as we move forward.

Some place like ITS can help us figure out how we can share where spectrum is critical and where it can be geographically shared or some other sort of sharing. It was very helpful in AWS-1 as well as AWS-3 to figure out how to move critical government agencies' missions to different spectrum.

Mr. DOYLE. Ms. Gomez.

Ms. GOMEZ. I agree. ITS, which is the Institute for Telecommunication Sciences, served as a valuable resource to NTIA's Office of Spectrum Management in identifying spectrum and how it's being used.

They perform spectrum surveys that assist with this kind of planning that we are talking about. Their deployable team and measurement system go to sites.

They identify sources of interference. They, as Meredith mentioned in her opening statement, performed spectrum occupancy measurements in support of the AWS auction preparations, which helped industry better understand the nature of the federal operations.

They perform system to system measurements. Basically, they are an objective and neutral arbiter of these issues—technology issues, technical issues—as we move forward with trying to identify more spectrum and trying to get more efficient usage of the spectrum we have today.

Mr. DOYLE. Thank you. Let me ask you also, Ms. Gomez, as we look at the challenges of repacking stations as part of the incentive auction, do you believe that public telecommunications and facilities program if funded could play a role in assisting public stations and making the investments necessary to continue operating?

Ms. GOMEZ. Yes. As you know, that program was defunded some years ago and but it would have, if it were still funded, been able to provide valuable support to these public television stations.

Mr. DOYLE. And let me ask you all, too, during your time at NTIA what benefit did you see to having an agency act as an inter-agency coordinator on telecommunications and what can Congress do to strengthen that role to ensure that NTIA has a seat at the table when government agencies are discussing technology and telecommunications issues?

If you could each just take maybe 10 seconds because I have one more question.

Ms. GOMEZ. So NTIA is in this unenviable role of trying to herd other federal agencies, not just with spectrum but with other policies, and pull them away from their own missions to try to provide resources for the administration's telecommunications policy and spectrum policies.

So anything Congress can do to help bolster NTIA's position vis-à-vis those other agencies would be very helpful.

Ms. BAKER. I think NTIA's coordinating and convening role is critical. I think three things really will help NTIA. I think an elevation of title to Under Secretary helps. I think transparency as to what they are working on will help and I think that being able to play the traffic cop for NTIA is also a very critical function that they perform.

Mr. DOYLE. And let me just close by saying that, Ms. Baker, I received a letter from not only your association but several associations and I know this isn't relative to NTIA reauthorization but asking us to use the Congressional Review Act to repeal FCC's privacy order.

I just want to say for the record that I was disappointed to get that letter from these associations and that you would urge Congress to use such a blunt and untested tool to remove privacy protections for hundreds of millions of Americans. I think there is a better way to work on that issue and I look forward to doing that with you.

Thank you, Madam Chair.

Mrs. BLACKBURN. Mr. Lance, you're recognized for 5 minutes.

Mr. LANCE. Thank you very much, Madam Chair.

To the entire panel, the Spectrum Pipeline Act updated existing law to ensure federal agencies have the necessary resources to undertake research and development activities that would result in freeing up more spectrum for commercial mobile broadband.

The act provides very specific instructions on when and how the federal agencies may gain access to the \$500 million provided under the act.

To the distinguished members of the panel, how do you think NTIA could further safeguard the expenditure of this R&D fund so that it funds activities that would truly improve the efficiency and effectiveness of federal spectrum use?

Mr. KNEUER. There was originally money for similar purposes in the Commercial Spectrum Enhancement Act as part of the relocation funds for agencies.

So agencies would get some of the auction revenue for relocation purposes and I think one of the challenges with that process is that agencies had expenditures they wanted to make that they believed would give them the ability to be more efficient going forward but it wasn't tied directly to their immediate relocation efforts.

They were looking for spending money on tools that they could apply in multiple scenarios with multiple different projects.

I think the money in the Pipeline Act sort of fills that purpose. I think for it to be most useful, again, it's coordination, having some ability to test, OK, how is that money being spent and, again, I think the ability for NTIA to be effective in an arbiter of that is leveraging their relationship with OMB, that you can export the expert judgment of NTIA into the agency with the authority that can green light those projects, which would be OMB.

Mr. LANCE. Very good.

Ms. Baker.

Ms. BAKER. So I think John is right. I think one of the lessons that he's learned is that the spectrum relocation fund shouldn't just fund the move.

It should fund the planning that goes into what a future move should be and how that should be coordinated. So I think that's one of the lessons that we have learned that I think has been very good. I think that also the qualitative analysis that NTIA has done has been very good. But I think it's this committee that usually instructs.

If you pick two targets that NTIA can fulfill then and focus on, I think that oversight of this committee has really been critical to future spectrum allocations.

Mr. LANCE. Thank you.

Ms. Gomez.

Ms. GOMEZ. I would say that the Spectrum Relocation Fund and the changes that were made in the Pipeline Act actually have helped motivate the agencies to think ahead and to plan. So it's an important process and I do think it was very important to provide the funding for that planning.

The technical panel that reviews these investments, so to speak, is already providing a lot of rigor to the process in determining the funding is being utilized for the reasons that it should be and I would not want to add more process to that, given that you have the voice of NTIA, OMB and the FCC as part of that process.

Mr. LANCE. Thank you.

Ms. Gomez, you noted that the NTIA plays a critical role in public safety communications including a role in the future of the FirstNet public safety broadband network.

NTIA's role in public safety communications and in the FirstNet is relatively new. The last time NTIA was authorized there wasn't a FirstNet.

Given that fact, on what should we focus as we reauthorize NTIA regarding this critical component, moving forward?

Ms. GOMEZ. NTIA works with FirstNet. FirstNet is an independent agency but it's housed within NTIA, and then NTIA has some responsibilities that go hand in hand with FirstNet's responsibilities.

It is the one that approves or provides grants to the states. If states decide not to participate in the FirstNet deployment then NTIA is the one that will run that process and they will also be the ones that approve spectrum leases for any states that choose not to participate in the FirstNet deployment within the states.

So I think that NTIA will continue to have responsibilities to its overseers to respond to its particular role within the larger endeavor. It needs to support FirstNet to the greatest extent possible. It's a large undertaking. It's unprecedented. So this committee's oversight and support would be very important to it.

Mr. LANCE. Thank you very much.

Madam Chair, I yield back two seconds.

Mrs. BLACKBURN. Way to go. We are running on time today.

Mr. Loeb sack, 5 minutes.

Mr. LOEB SACK. Thank you, Madam Chair.

I do want to thank the subcommittee for holding this hearing today and thank the witnesses for your expert testimony regarding the important role NTIA has to play in our nation's technology policy.

And again, I note that I can't believe it's been since 1992, although knowing how Congress works I guess it's not surprising. But so many things have changed since that time. And so I really appreciate the chair's request that you provide in writing those five items regarding modernization.

I think that makes complete sense, and then we can all have access to that so we know what we are talking about because so many things have changed, as Mr. Lance just said, with respect to FirstNet.

We didn't really have any of that. We didn't have a lot of things in 1992. But I also want to make sure that I emphasize that when we do the reauthorization, assuming that we get there and that may be a big assumption, but when we get there make sure that we provide the funding for that reauthorization too because just going briefly over what NTIA does there is so much that it does and so the funding is going to be absolutely necessary.

I am from southeast Iowa. I continue to harp on rural broadband. I'll do that until my dying days, no doubt, even when I am not in Congress and, of course, yesterday we had a great rollout of our bicameral bipartisan Rural Broadband Caucus.

We all know that upwards of 49 percent of rural America really isn't adequately provided for when it comes to sufficient broadband.

And we really know that, obviously, around the country, the beginning of the 21st century we have to have that kind of coverage out there in rural America. Rural America simply will not survive, let alone thrive if we don't have broadband.

Everybody on this committee knows that. I appreciate even the folks who are from the urban areas here who do support this expansion of rural broadband.

There has been a lot of talk on the infrastructure front, as we know, with the new president. I think we have bipartisan support for significant infrastructure improvements around the country and we are talking perhaps as much as \$20 billion for broadband development.

And I guess I'd like to ask all three of you, if you could, to weigh in. What are the lessons learned from NTIA's role in supporting broadband infrastructure development in the past?

How can these programs be updated to bring more broadband to underserved communities, assuming that we—and, again, it may be a big assumption but assuming in the coming months perhaps we get a pretty significant infrastructure investment in broadband.

Can you speak to that, all of you, please?

Mr. KNEUER. Sure. I think one of the stats that Meredith referenced, close to \$300 billion in new cap ex from industry over a decade.

These industries are spending an enormous amount of money and they have incentives to spend a great deal of money. But that incentive is tied to places where they've got enough population density for their returns—

Mr. LOEBSACK. Exactly.

Mr. KNEUER [continuing]. On capital. So the challenge is to closely monitor and evaluate where those market failures exist.

Mr. LOEBSACK. Right.

Mr. KNEUER. All of these companies are in competition with one another. The value of the network increases to the extent it can reach other places. It's more valuable to us in Washington, D.C. if we know that we can reach people in every part of rural America.

So there is certainly a will and a desire to spend private money. There is a manifest will and desire to lever the private money with government expenditures in those places that we can identify and I think it's going to be a combination of leveraging those two pools of capital in a focused way so that the money gets to people where it's needed and new incentives for the private sector to counter those market failures that may not be direct expenditures of grants but it could be tax benefits and other things. But it's measuring, focusing, and being deliberate about it.

Mr. LOEBSACK. Thank you.

Ms. Baker.

Ms. BAKER. So I think, as you know, I was privileged to be at the Rural Caucus roll-out—

Mr. LOEBSACK. Thank you for being there.

Ms. BAKER [continuing]. And I support both the House and Senate bipartisan Rural Caucus. It's a wonderful endeavor to see and very important.

As you said, 1992 is the last reauthorization. 1997 was when Steve Jobs first introduced the smart phone, and so that was 10 years ago.

The computing power of the smart phone led to our 3G networks and in the 10 years that's now led to our 4G networks and what we have now is these data driven very fast and what I am talking about for 5G, which is coming probably in the next, we have trials all over America, 10 times faster network is going to be gigabit fast.

So it will actually be a substitute for your wired broadband. So I think we need to be careful when we define broadband to make sure that we encompassed the fast growth of these networks and how quickly they are turning over and improving.

I do want to say that the most important thing that NTIA can do and that we can do as in oversight and as an industry is to streamline the siting to make sure that these networks can roll out fast.

Mr. LOEBSACK. Thank you.

Ms. BAKER. And they will also need more spectrum.

Mr. LOEBSACK. Thank you.

Ms. Gomez. If that's OK, Madam Chair.

Mrs. BLACKBURN. Oh, yes.

Ms. GOMEZ. OK. Some of the lessons that we learned, the importance of a broad perspective in the community—we want to make sure that we have both the deployment and the adoption and so those economics are very important.

Secondly, the importance of sustainability—we don't want to have stranded investments. You want to make sure that it actually continues and one of the big successes of the BTOP program is that 98 percent of its projects continue to operate today.

And then, finally, making sure that whoever gets funding, whether through the Universal Service program or through other

grants, has the institutional knowledge and structure that it's going to be able to succeed.

That's also part of sustainability. So these are all important lessons learned.

Mr. LOEBSACK. Thank you for indulging, Madam Chair.

Mrs. BLACKBURN. And the gentleman yields back, and Mr. Shimkus.

Mr. SHIMKUS. Thank you, Madam Chairman. Thank you also for holding this hearing in our conference and I think really on both sides part of our responsibility is just oversight and then the focus on addressing reauthorization of agencies is key. So your expertise is welcome and we look forward to moving forward. So it's the focus.

So you all have been here before. We have worked with you closely for many, many years. So it's—for those of us who've been up here it's comfortable and we have got great trust and faith in your expertise in your sector.

So let me start by going to Meredith. The committee received the management plan developed by NHTSA and NTIA for administering \$115 million in grants to update public safety. You all know that I've been involved with Anna on the public safety 911 stuff.

It appears that most of the actions are generic agency actions that each agency could perform separately or jointly. What specific expertise or contribution does NTIA bring to the table apart from what NHTSA brings to the table? Does the burden of coordinating with a separate agency outweigh the benefits of the added perspective of the second agency?

Ms. BAKER. Good question.

Mr. SHIMKUS. Yes.

Ms. BAKER. Yes. I would say I think one of the most important things NTIA does is its convening role and I think some of the joint roles, whether it's been public safety interoperability with Department of Homeland Security or NHTSA, the future of these networks is health care.

The future of these networks is Connected Cars. The future of these networks are financial institutions. So I think communications will cover every part of our lives and so this convening role only gets more important for NTIA.

Mr. SHIMKUS. So I think that it's better to talk and maybe lose a little efficiency there but in the long run that's a better process?

Ms. BAKER. I think it's important for—we have a Connected Car Coalition that we work with the auto industry. I think it's important because our jurisdictions have traditionally been so different but yet our lives are now intertwined. I think it's important for us to understand both the history and the future of the industries.

Mr. SHIMKUS. Thank you.

Anna, could you discuss your experience and role of NTIA in the International Telecommunications Union?

When I was doing other things involved in the sector I was not that excited about that. But there are some benefits that I am going to try to raise.

As you know, this is an organization where international spectrum allocation decisions are made which to me makes it seem fair-

ly important that the U.S. participate in a robust way to maintain a voice in those decisions.

In your view, does the United States benefit from its membership in ITU and is it important that we have a forum like ITU?

Is it able to accommodate our commercial, defense, and other interests and does NTIA have the appropriate authority and tools to participate in this new regime?

In international discussions I think this might be more important. Do you want to comment on those?

Ms. GOMEZ. Yes, absolutely.

NTIA is very involved at the ITU both on the spectrum side for allocations. NTIA works closely with the FCC, with the Department of State to represent the federal agencies' interests and the administration's interests.

It also participates in other areas, including internet governance. So yes, NTIA's role is very important and it should continue.

The ITU is important to both the health of our spectrum management system as well as for companies, for example, that build to standards and to be able to have interoperability—global interoperability so that they can continue to participate in the global economy and not have that hindered by lack of participation.

The U.S. voice at the ITU is very strong and it needs to continue to be strong to reflect the status of our economy versus, I guess, everyone else.

Mr. SHIMKUS. Thank you very much, Madam Chairman.

I am finished and I yield back.

Mrs. BLACKBURN. Gentleman yields back 53 seconds on the clock. We are doing well. Mr. Ruiz, you're recognized 5 minutes.

Mr. RUIZ. Thank you very much.

In 2009, the NTIA was tasked with administering \$4 billion in grants to increase broadband access and adoption in underserved and unserved areas of the country.

I understand the NTIA invested \$3.3 billion into infrastructure projects, which 98 percent of those funded projects still operating and serving communities across the country.

I represent a remarkably diverse district with 11 tribal nations, underserved, desert farm worker communities like Thermal and Mecca, small desert communities like Chiriaco Summit and rural mountain communities like Anza. So no one solution will address the broadband needs of the people and the geography that I serve.

So, Ms. Gomez, in your testimony, you referenced the Broadband USA initiative and how NTIA is using this program to continue helping communities and tribes across the country increase their access and adoption of broadband. Can you elaborate on how Broadband USA might be able to help the diverse set of communities I represent and in particular how tribal governments might be able to benefit from the Broadband USA initiative?

Ms. GOMEZ. What NTIA did was as it starts winding down its BTOP program it has the staff that has this great expertise and knowledge now in both how to deploy infrastructure in unserved and underserved areas including tribal areas, as you mentioned, and also how to ensure adoption because, you know, if we build them and they don't come that's not a good thing.

So we have this great staff now that has this technical expertise so their goal is to provide as much technical assistance as possible.

Mr. RUIZ. How does a tribe or a school district get this support? What do they have to do?

Ms. GOMEZ. Well, first of all, NTIA puts together webinars. They put together seminars. They can reach out to the NTIA or NTIA can do the opposite in order to make sure that they go to locations where these tribes are.

They've put together a toolkit specifically for tribal broadband deployment and NTIA also, through the Broadband Opportunity Council, is working with the Department of Interior to also have programs to reach out to the tribes on these issues.

Mr. RUIZ. Thank you.

So on another topic, as an emergency medicine physician your testimony on the First Responder Network Authority, or FirstNet, was equally near and dear to my heart and in trauma situations communications between first responders and physicians in the emergency department can be critical to the survival and well-being of a patient.

So what have you done and what is NTIA doing to ensure FirstNet's network deployment is patient centered and focuses on improving outcomes and saving lives?

Ms. GOMEZ. FirstNet's mission is to deploy this network but there is no requirement that any public safety entity actually participate in it.

So FirstNet has very wisely paid a lot of attention to the needs of every segment of the first response community and they need to continue to do so.

They are engaging currently and will continue to engage in consultation with each state and territory to make sure that those needs are met because the only way they succeed is if in fact public safety sees the value of the network.

Mr. RUIZ. And so what can Congress do to help EMS systems engage with FirstNet and help foster that kind of relationship and promote those services?

Ms. GOMEZ. I think communication is very important. What we find is that the state at the high level is very engaged in FirstNet but it's not necessarily at the very local level.

So the more we can reach into those localities and make sure that they understand that this is a resource and that they need to have a voice with the state point of contact that works with FirstNet on these issues the better.

Mr. RUIZ. Well, it kind of sounds like a visit to my district would be warranted and we can get all the stakeholders together and start talking about how we can help build that relationship.

Ms. GOMEZ. Yes. I am sure FirstNet is watching.

Mr. RUIZ. Good. I yield back my time.

Mrs. BLACKBURN. At 41 seconds. We are rolling. OK.

Mr. Latta.

Mr. LATTA. I hope I don't get in trouble now.

Madam Chair, thanks very much for having this hearing this morning and to our witnesses, thanks very much for being here. I've been very involved with the internet of things working group and also with rural broadband, and with the rollout yesterday, as

was mentioned a little bit earlier from our friend and colleague from Iowa, that, you know, there is great interest out there because of what you have to have today.

Ms. Baker, if I could ask you the first question. It's clear that wireless is the future and with limited spectrum availability NTIA has a vital role encouraging efficient use by federal users.

What can NTIA do to ensure that there is sufficient spectrum available for both commercial and federal purposes to meet the needs of our increasing connected world?

Ms. BAKER. So I think NTIA plays a critical part, obviously, in managing the federal spectrum. I think they've just done a qualitative analysis, which I think is very helpful for us to take a look at what spectrum bands we need to focus on for reallocation next.

We now have devised a system where it's a win-win. So the the spectrum comes to the commercial providers but yet the federal agencies get updated systems.

It's a terrific tool for federal agencies to update their system to also become more spectrally efficient. I think with the help of this committee we can identify the next bands so that we can have more commercial spectrum and it can move this process.

The FCC did a broadband plan but that was a while ago. So I think it's time to take a look and see what we need to do for the future and to build the spectrum pipeline.

Mr. LATTA. Thank you.

Ms. Gomez, you spoke about overlapping jurisdiction in the federal agencies, specifically how it relates to the internet of things.

As I am sure you are aware, NTIA has already taken an active role in the security of IoT by holding multi-stakeholders process meetings and recently releasing a green paper discussing the possibility of a national IoT strategy.

Do you believe that NTIA could be doing more to address securing IoT as well as other policies that touch these connected devices such as spectrum policy and privacy concerns?

Ms. GOMEZ. I think it's a very important role for NTIA to address these issues. The multi-stakeholder process in which it has been engaging is a very good process for addressing these issues that change so quickly in our technical system.

So yes, I do think NTIA could be doing more. I will say they are very under resourced in this. So what they are doing right now is what they can do at their current capacity.

If they could get some more capacity, absolutely. There are lots of areas that they identified in the IoT green paper that you mentioned in which additional multi-stakeholder processes would be able to develop policies to address these challenging issues that are probably better done via this consensus process than via regulations that become enshrined for long periods of time.

Mr. LATTA. Let me follow up.

In addition, would it be harmful to the development of the IoT to have multiple agencies asserting jurisdiction and with that should it be more coordination?

Ms. GOMEZ. Multiple agencies have jurisdiction because of the nature of the IoT. The IoT now touches the Department of Transportation, the Federal Aviation Administration, the Food and Drug

Administration, the Health and Human Services, because it touches so much of our society today.

But, yes, you are correct—we need more coordination to make sure that we are not having one segment be the tail that wags the dog of the entire IoT.

Mr. LATTA. Thank you.

Ms. Baker, if I could ask, with my remaining time here, much of federal infrastructure is governed by agencies other than NTIA. How do you think NTIA could better work with agencies to accelerate and expand access to necessary inputs like leases of federal buildings or federal right of ways?

Ms. BAKER. So a great amount of land, as we know, is owned by the federal government and that is something that NTIA can absolutely help in citing federal government lands and expedite.

At this point, it takes an average of 18 months to site a tower. In the speed of which we need to roll out 5G, there is a global race. America has won the race in 4G. We are the world's leader in wireless.

For 5G, Japan, Korea—they are right on our tails and I think for us to win the 5G race, which is important for every aspect of our life and economy, we need to make sure that we can roll it out fast.

NTIA can help in streamlining federal lands, siting on federal lands. They can also help in best practices and figure out—Ohio just passed a bill. I think at every level of government we need to pitch in to see if we can roll these networks out as fast as we can.

Mr. LATTA. Well, thank you very much and, Madam Chair, with 4 seconds left I yield back.

Mrs. BLACKBURN. He made it in under the wire. All right.

Ms. Dingell, 5 minutes.

Ms. DINGELL. Thank you, Madam Chairwoman.

First, I want to thank all of the witnesses for your public service. People don't thank people enough for putting themselves out there.

NTIA has a critical mission that's going to be even more important in the coming years as technological advances promise to change the way we live our lives.

Nowhere is that more evident than in my home state of Michigan where the development of connected and automated vehicles promises to transform the auto industry into the mobility industry.

And while we all agree that we should be doing more to use spectrum more efficiently, we also have an obligation to ensure we allow connected and automated vehicles to be developed in a responsible manner. Over 35,000 people die on our roadways each year and this technology has the potential to save lives, plain and simple.

NTIA has played a critical role here through its support for vehicle to vehicle and vehicle to infrastructure technology known as dedicated short-range communications, or DSRC. There are more initials in this.

I'd like to thank NTIA for collaborating with the FCC and the DRT with really important work on establishing and executing the test plan to find the best possible sharing solution for the 5.9 GHz band of spectrum.

I hope this continues to move forward and we keep finding common ground. As you know, the auto industry is near and dear to

my heart, in case anybody missed that, and NHTSA has stated that DSRC has the potential to eliminate or mitigate the severity of up to 80 percent of nonimpaired crashes. But there are other ways NTIA could help enable the deployment of these technologies.

As you all know, the president and many members of Congress have said it's a priority to pass an infrastructure bill maybe has high as a trillion dollars. And I would agree this is a good idea if we do it right.

One thing that must be included is dedication to developing the vehicle to infrastructure technologies. We should be giving moneys to the states to help them build these systems up and giving them technical expertise as well.

So my question is for all three of you. Given NTIA's successful history administering the Broadband Technology Opportunity Program, do you believe the agency would have the technical expertise and experience to effectively manage a grant program to help states and localities adopt the V2Y technologies and should this be something that Congress considers either in a comprehensive transportation bill or legislation reauthorizing NTIA?

Mr. KNEUER. I think absolutely NTIA has that ability and there have been, you know, examples in the past. We worked very closely with the Transportation Department to authorize something as simple as EZ Pass, a single frequency allocation that would cover the entire world or the entire country and the entire highway system that resulted in probably trillions of hours of saved time with productivity gains across the economy by something seeming so small.

You magnify that with the ability to essentially make it highly unlikely to die in a car crash on the nation's highways.

It's not just the technical coordination but there is also a leadership function of being able to articulate the benefits of this, that there are huge benefits to the economy and to the nation by doing these things.

So I think NTIA is sort of well situated in its dual role both in the spectrum side and as a communicator of a unified national policy.

Ms. BAKER. I think you're going to find agreement here that NTIA has effectively handled every single grant program that this committee has given it and you have given NTIA a lot of grant programs.

The staff is amazing. They have developed expertises in places that I think they didn't think their core mission was to begin with. They have very effectively done a terrific job.

It's a fair question for this committee to ask whether they want NTIA to continue in grant programs and I think that that's a conversation that is worth having.

Ms. GOMEZ. I agree it's a very nimble staff that understands the importance of having a strong oversight mechanism and of working closely with other agencies like the Department of Transportation as well as with state and localities and tribes and making sure that the grant dollars are stretched to the furthest possible.

Ms. DINGELL. Thank you. I don't have enough time so I'll yield back my 20 seconds, Madam Chairwoman.

Mrs. BLACKBURN. We are on a roll.

Mr. Guthrie, see if you can continue it, for five minutes.

Mr. GUTHRIE. Thank you. I'll definitely stay within the 5 minutes. I appreciate that.

Mr. Kneuer, thanks to everybody for testifying here today but I want to start with a question regarding top level domains.

In 2013, the Obama administration sided with foreign governments and abstained from a vote at ICANN that led to the rejection of Amazon's application for the dot Amazon top-level domain, acting directly against the interests of a major American company which happens to have facilities in my district.

Just made a major announcement that they are going to be locating a new part of their business at Cincinnati Airport, which happens to be in Kentucky across the river from Ohio, and a lot of people are constituents of theirs as well.

Do you believe it would be appropriate for the Trump administration to take specific steps at ICANN to assist Amazon in its ongoing effort to resolve this matter and right the wrong?

Mr. KNEUER. Absolutely. with the conclusion of the transition of the IANA contracts, without speaking to the substantive decisions of the Obama administration, the United States government can take counterintuitively, perhaps, a more proactive role in favor of domestic companies.

I think there was at some point, when the U.S. government had its oversight or its exclusive contractual relationship with ICANN there was some hesitancy to be perceived as abusing that authority or overplaying that role.

With the IANA functions being fully enshrined in the private sector, there are all sorts of examples where it is appropriate and wholesome for the U.S. government to collaborate with U.S. companies in front of myriad private and governmental bodies.

So I think that's exactly the kind of role that you would expect to see the Commerce Department and NTIA in particular playing in this new environment with the full privatization of IANA.

Mr. GUTHRIE. How strong do you believe the U.S. position would be in matters like this when advocating before the Governmental Advisory Committee?

Mr. KNEUER. I think the comparative advantage the U.S. government has in the Government Advisory Committee is our expertise in the subject. All right. We stood up ICANN. We probably have the most dedicated and competent staff to work with the Government Advisory Committee.

So while we are a nation of equals, our historic role and our expertise, I think, gives us a comparative advantage.

Mr. GUTHRIE. OK. Thank you.

And Ms. Baker, one of the things in your testimony focuses on ways to empower NTIA, especially as the agency has become more important in the spectrum debates.

I'll leave it open ended if you'd like to expand on some of the points you made and describe what more can be done to empower NTIA on spectrum issues.

But one idea that has been raised with me would have NTIA regularly collecting more information about how agencies are actually using their spectrum rather than conducting band-specific studies.

So in addition to other ideas you may suggest, is it worth looking at giving NTIA a stronger coordinating role not just in initial frequency assignments but also in monitoring how federal spectrum is being used?

Ms. BAKER. Thank you for your question, and I think that that is a good idea. I think in my testimony I call it transparency and I think that it would help both to have federal government agencies be more transparent about what their use is of the spectrum as well as what NTIA might be looking forward to in relocation in the future and I think that would probably help this committee in its oversight abilities as well.

I also would compliment you on your federal incentives bill because I think that also is a very good step.

Mr. GUTHRIE. Well, thank you. Do you think the NTIA has sufficient stature to tell federal users that they need to be more efficient with allocations? Is there a problem with regulatory by larger and possibly more influential federal departments such as DoD, Homeland Security, FAA?

Ms. BAKER. I think NTIA punches above its weight in everything they do and I think that they do a terrific job in coordinating federal agencies.

I do think raising NTIA's profile with the title of undersecretary would help. It would make them equal to their sister agency, NIST, and I think it reports directly to the commerce secretary. So I think that that is a natural. In this town, titles seem to matter and that seems like that might be a good addition to their—

Mr. GUTHRIE. OK. Would the other two of you like—any ways to empower NTIA?

Mr. KNEUER. There is the coordination with OMB is critical. So NTIA can use its expertise to gather information from other departments and agents. But Under Secretary or not, Under Secretary of commerce calls the Under Secretary of Defense, it's going to be a different story. The director of OMB calls and says, look, you've got a new requirement—if you want capital to spend on these things it's a different kind of conversation.

Mr. GUTHRIE. I only have about 6 seconds. I am not going to run over because it appears that's the flow. So a couple of seconds? Oh, well, I'll catch you up later. Sorry, I am out of time. I yield back one second.

Mrs. BLACKBURN. Yield back, and we can submit for the record. How is that? Because we do have a couple of things that are coming in.

Ms. Clarke, you're recognized for 5 minutes.

Ms. CLARKE. Thank you, Madam Chair, and I thank the ranking member. I thank our witnesses today.

Spectrum sharing in urban environments may pose particular challenges since population density and user demand for wireless services is very high.

In the previous administration, NTIA and the FCC started work towards a model city program that would establish a pilot program in a major city or cities to serve as a test bed to evaluate and demonstrate spectrum-sharing technology for urban environments.

Additionally, FCC Chairman Pai recently announced the formation of the broadband deployment an advisory committee that

would provide advice and recommendations to the FCC on how municipalities can deploy high-speed broadband nationwide to close the digital divide.

So my question is do you support the model city initiative and what are your thoughts on NTIA—what would you be doing to promote spectrum sharing in cities? And it's for the panel.

Mr. KNEUER. I think there is a great benefit of those sort of model roll-outs. We conducted or we developed a spectrum initiative for the 21st century when Meredith and I were working together.

And one of its proposals was a test bed where you could take potentially a block of federal spectrum that's under consideration for reallocation and a block of perhaps underutilized commercial spectrum and figure out what are the best ways to share and how they can be best deployed.

The challenge in urban environments is the propagation characteristics and it's much more difficult to find low-band spectrum that you can do those sorts of things that would be of most benefit to an urban environment. But some of those propagation characteristics have made some spectrum lie fallow.

And so I definitely think there are opportunities to combine those two to explore in the real world and develop the data that comes from that. So I think it's a fine idea.

Ms. BAKER. So a couple different things. Sharing, I think, is important. I think it's the future. But it has to work for all. It has to work for everyone.

I think these questions are less policy questions than they actually are technical questions and I think that goes back to my plea for the importance of ITS and the labs in Boulder.

The FCC is rolling out one test program now in 3.5. It's still to be seen if that's going to work or not. We are all in. We are trying it.

We are going to see if it does work. I think in the future, whether it's licensed spectrum, unlicensed spectrum, shared spectrum, we are going to need it all and I think model cities are terrific. A lot of our companies have focused on model cities and I think when a city sees that they are saving \$160 billion in energy costs by being a smart city then it does catch your eye and everybody wants to be one.

So I think there is a cost to the build out but the savings is so exponentially great for smart city that I think the more we can illustrate the more rapidly they will deploy.

Ms. GOMEZ. I can't say much more than that. I agree, smart cities are so important for our future in 5G as well. So anything we can do to support that is a good thing.

Ms. CLARKE. Very well.

The next question is for you, Ms. Gomez. First, I want to say that NTIA is a very important government agency vital to growing our innovative digital economy.

With the recent cyberattacks that have occurred over the past couple of months, a particular spotlight has been placed on creating secure cybersecurity policies.

In 2015, NTIA began its cybersecurity multi-stakeholder process. What are your thoughts on this approach and how will it enhance NTIA's policy recommendations?

Ms. GOMEZ. I'm a big believer in the multi-stakeholder processes. I think that they can be much more nimble and flexible than actual regulations and they pull in all of the stakeholders, not just whatever stakeholder a particular individual agency has jurisdiction over.

So it's important to have these discussions, to have as many stakeholders as possible including government, civil society, public interest groups, industry, everybody together to come to consensus to try to address these issues as they change on almost a daily basis. So I would be a big supporter of what they are doing.

Ms. CLARKE. Very well, and I won't break the trend. I go back, Madam Chair.

Mrs. BLACKBURN. We are on a roll.

Mr. Olson.

Mr. OLSON. I thank the chair for the time. On behalf of all Texans, especially one of our witnesses from Houston, Texas, thank you for the opening comments, the strong statements about the best Super Bowl ever. Super Bowl LI, Falcons versus the Patriots, NRG Stadium, Houston, Texas, kickoff 5:30 p.m. Sunday, February 5th.

Well, to our witnesses a special howdy to our Texan, Ms. Baker. Ms. Baker, in our home state bigger is better. Your testimony spent a great time talking about the deployment of 5G over moving up from 4G.

In Texas, bigger is better. 5G is bigger. And Texans are excited about the flood of new services they will have with 5G deployment.

You mentioned medicine, transportation. My question is, where do we stand right now with deployment of 5G in the spectrum. When do you think that will be truly available?

Ms. BAKER. Great question, and we are excited for the Super Bowl in our house, too.

I think when you look at the Super Bowl, for instance, you look at the capacity of how many people are going to want to send videos and tweet and take pictures and send them.

You see the importance of the capacity. It's grown exponentially and we are expected to see it grow six times by 2020.

So the data is just increasing so our network's capacity has to increase. I was in Dallas not too long ago and we have some trials going on there. I think there are about 117 trials of 5G across the country at this point.

When I first started this job two and a half years ago we were not necessarily thinking that we needed 5G. The industry has changed that quickly to now we are seeing the rollout of field trials this year and I expect that we will see commercial roll-out of 5G by 2020.

Mr. OLSON. Great. Thank you.

You talked about America leading development of 4G. We led the world in 4G. It appears we are losing some advantages with 5G.

In today's global economy, as you know, speed kills. You mentioned we are behind South Korea and Japan. I traveled there with Chairman Upton and Chairman Walden, Mr. Shimkus, Mr. Grif-

fifth, we saw it firsthand. We are falling behind those two countries. Who else is ahead of us globally?

Ms. BAKER. I'm hopeful we're not too far behind at this point and we are catching up.

Mr. OLSON. OK. Great.

Ms. BAKER. Our companies are really working hard and they are investing the money and they are working hard to overtake that because of the importance of—the reason the app community is in the United States is because we lead the world in wireless. The reason that 98 percent of operating systems are from the United States is because we rolled our networks first.

So I think we understand how important it is and we are working hard to that end.

Mr. OLSON. OK. Thanks.

Who's behind? Who should be considered as behind us but catching up quickly maybe we should be worried about in the rear view mirror?

Ms. BAKER. I think we are doing well. Well, our LTE networks are covering 99.7 percent of America. So we have a good head start to build on.

Mr. OLSON. OK. One further question—as former NTIA administrators speaking only for yourselves, not for the organization, is NTIA being helpful with the 5G rollout and where can we help them with deficiencies with the reauthorization of the agencies? One minute and 20 seconds. Ms. Gomez, you're up.

Ms. GOMEZ. 5G rollout, as Meredith has mentioned, is a huge undertaking. I think continued support of their interagency processes to get relief from the barriers to infrastructure deployment is the most important thing.

Mr. OLSON. OK. Ms. Baker.

Ms. BAKER. More spectrum and streamlined siting.

Mr. OLSON. Mr. Kneuer.

Mr. KNEUER. Because of our lead in 4G, we have the highest economic incentives to roll out 5G. The barriers are going to be in policy and so making sure that we have the spectrum available, that everybody's pulling in that direction, the industry's going to take care of it and we will be first in that.

Mr. OLSON. Well, thank you. I yield back my time with 45 seconds.

Mrs. BLACKBURN. And he is under the wire.

Mr. OLSON. I yield back.

Mrs. BLACKBURN. And I will remind the gentleman from Texas that his Houston team left and came to Tennessee and became Tennessee Titans.

And with that, Mr. McNerney, all yours for 5 minutes.

Mr. MCNERNEY. Well, first, I want to congratulate the chairwoman on assuming the chair. I look forward to working with you and the ranking member as well.

My first question goes to Ms. Gomez. The rapid growth of the IoT devices creates immense opportunities but also raises serious concerns about issues like privacy and data security.

Multiple federal agencies have recently been involved in examining the challenges raised by these questions. Can you explain the NTIA's role and why that might be important?

Ms. GOMEZ. So the NTIA is, of course, the principal policy advisor for administration policy on telecommunications and information issues, which includes the issues that you raised—privacy, cybersecurity, any other issues raised by the internet of things.

In that role it serves a convening function in two ways. One, it coordinates interagency activities that lead to whatever policies are implemented for the IoT and hopefully the removal of barriers to deployment so that we can get to the rollout of 5G in a timely fashion.

And then, secondly, it's a multi-stakeholder process in which it convenes stakeholders from all walks of life in order to develop consensus policies to address issues like cyber security and privacy issues writ large, both for the IoT and for others.

Mr. MCNERNEY. Thank you.

I am going to follow up on a question that the ranking member asked Ms. Baker. Industry groups like the CTIA have been on the Hill, sent a letter around asking Congress to use the Congressional Review Act to overturn existing rules. This letter makes no mention of the fact that the CRA could prevent the FCC from making substantially similar rules in the future.

Now, are you aware that the CRA could prevent the FCC from making future rules regarding data breach notification or working with industry to create new privacy rules in the future?

Ms. BAKER. So we are absolutely 100 percent committed to consumers' privacy and as such we distributed privacy principles on Friday.

I think what we are looking for is a uniform and common set of rules that apply to the entire ecosystem so that everyone is competing with the same rules.

Mr. MCNERNEY. But are you aware that the CRA could prevent the FCC from making new rules regarding privacy and data breach notification, for example?

Ms. BAKER. We're looking for any tool that will allow privacy rules to be the same for the entire ecosystem.

Mr. MCNERNEY. Ms. Gomez, it's been 2½ years since the National Broadband map was updated. Although the NTIA is no longer responsible for keeping the map up to date, individuals, businesses and state and local governments still rely on this map. Is having an accurate map important for identifying geographical areas that are underserved or unserved by broadband providers?

Ms. GOMEZ. Yes. As you know, NTIA is no longer updating the map. That function has been moved over. But it has not been updated since 2015 and that was using 2014 data.

I do believe it's important to have data-driven decisions and so having an updated map would be a good thing, just not the current state.

Mr. MCNERNEY. How fast does that map change?

Ms. GOMEZ. The map changes constantly. We have deployment change every day. As Meredith mentioned, there is a lot of capital expenditures every year, every day to get the infrastructure deployed.

Mr. MCNERNEY. So, in terms of the digital divide, having this map up to date is important and should be funded.

Ms. GOMEZ. The map was an important tool and it would be good to fund the map in the future.

The FCC also has the ability to do it. It just doesn't have the funding.

Mr. MCNERNEY. So is the NTIA the right organization to do that?

Ms. GOMEZ. If the NTIA gets its grant program again that would be the right way to do it or it would be a good way to do it, I should say. The way that the map was developed was a bottoms-up process in which the states provided the information to NTIA and NTIA worked with the FCC to create the map.

One way or another, you need to have that input and you need to have the funding to be able to have an accurate map because if it's not accurate then it's not useful.

Mr. MCNERNEY. I'm just going to ask a question, and you won't have time to answer it. Mr. Kneuer, you indicated that the NTIA is the most effective when it's the working intersection between business and private and government sectors and also can be effective in advising the Office of Management of Budget.

I'd like you to elaborate on that in writing, since I am running out of time. Thank you.

Mrs. BLACKBURN. And he made it before he went into overtime.

Mr. Johnson, for 5 minutes.

Mr. JOHNSON. Thank you, Madam Chairman, and I want to congratulate you on your chairmanship and looking forward to this session, working with you.

I want to thank our panel for being here today, too. Really appreciate that.

I represent a district that struggles with the issue of the digital divide, particularly when it comes to talking about broadband access. I've got high school students in my district that have to go a public library or to a neighboring town in order to do their school research or to check out the internet, to do things that most of us, you know, just take for granted.

So broadband access is a very, very important issue for the 721,000 people that I represent.

Ms. Gomez, one important component of effectively allocating resources for broadband deployment projects is accurate comprehensive data regarding the current level of broadband service across the country ideally at a granular level.

How can NTIA, in your opinion, be helpful in developing this information?

Ms. GOMEZ. There are a couple of ways that NTIA has been involved in this type of information. The first is with this tool that we were talking about before, which is where NTIA administered grants to get the data necessary to populate the map that the FCC actually put together. They worked on that jointly.

It's not something that's currently funded by if it was that would be a very valuable way to get more accurate data and give the localities of tool that is visual and that provides them good planning tools.

The second way is also with the work that NTIA does in working with the Census to get accurate adaption information. That is a very useful way to understand where we might have our deploy-

ment but not necessarily the take-up. So understanding from a demographic perspective who is using the internet, how they are using the internet, also helps with this type of planning to support localities that need to get broadband infrastructure and adoption.

Mr. JOHNSON. OK. Continuing with you—I appreciate that answer—you were at NTIA during the broadband technology opportunities program when NTIA administered more than \$4 billion in grants to promote broadband employment and adoption.

What are some of the lessons that we can draw from that program as we move forward and what role is appropriate for NTIA to play in future broadband deployment efforts?

Ms. GOMEZ. We learned a few things from the BTOP program. As I mentioned before, we want to make sure that the funding is sustainable and continues.

The importance of providing the technical assistance to the grantees and to the communities to make the full usage of the grants and to make sure that the grants not just benefitting a specific deployment but also had ripple effects throughout the communities in both the adoption as well as the access for other providers to be able to link to whatever infrastructure was being deployed.

The importance of a strong both team to both select the grantees as well as to manage and oversee them. It really requires a lot of resources and a lot of attention to make sure that the grant dollars are well used and used in a timely fashion.

So there is still a lot of that expertise within NTIA because that staff that became very expert at managing the grants have now pivoted to the technical assistance they are providing through the Broadband USA program.

So absolutely NTIA could continue to provide the grant management that you might seek. Understanding that whatever enabling statute is very important in setting parameters of the program.

A lot of the criticisms of the program came from concerns about the fact that, for example, the grants went to fund both unserved and underserved areas.

The definition of rural was very important to managing the grant program. So attention to the statutory language that NTIA would use to implement the programs is also very important.

Mr. JOHNSON. OK. Well, thank you.

Madam Chair, I yield back just under the wire.

Mrs. BLACKBURN. I tell you, we are rolling.

Let's see. Mr. Pallone, you're recognized 5 minutes.

Mr. PALLONE. Thank you. Thank you, Madam Chairman.

And, again, I know this is your first hearing so I want to congratulate you and Mr. Doyle for being the chairman and the ranking member.

Ms. Gomez, I've reviewed NTIA's most recent budget request asking for only \$50 million total, and given the recent growth in the communication networks that the agencies oversees, that amount seems reasonable.

NTIA has also provided strong justification for their request. So can you just tell us briefly what an authorization of \$50 million would allow the agency to do for the American people?

Ms. GOMEZ. From my experience, NTIA is a very resource-constrained agency. It is surprisingly small, considering the breadth of

its portfolio. And with the evolution of the digital economy and the new and innovative uses, its role is only going to get bigger.

So new funding can be used in a variety of ways. Spectrum, spectrum, spectrum. Our innovation is very much centered on wireless and we need to have both the staff that can manage day to day the federal agency's use of spectrum but also continue to plan for the future, continue to plan for the pipeline and continue to work within the interagency process to identify more spectrum for wireless broadband uses.

On the internet policy front, we need to continue our strong voice at the governmental advisory committee before ICANN. That is going to continue to be important for international and domestic internet presence but also addressing cyber security and privacy issues is going to be important in the multi-stakeholder process. Particularly with cyber security, we need staff that has security clearances that understands the issues so that they can convene and shepherd these multi-stakeholder processes to develop these policies.

Both with the multi-stakeholder process as well as intergovernmentally to work with the other agencies as they develop their own security policies.

And on research, it's important for supporting the spectrum initiatives as well as other agencies and also industry. Industry relies on the laboratory for some of its measurement and testing.

And so bolstering their ability is going to be very important. I think the National Foundation found that they are actually seriously underfunded. So that would be very helpful in that regard.

Mr. PALLONE. Thank you.

Ms. Gomez mentioned the privacy issues. So let me ask Ms. Baker, NTIA found last year that around half of American adults limited their economic activity online because they were worried about their privacy and data security.

A Pew study also found that a full 91 percent of adults believe they have lost control of how personal information is collected and used by companies. And that's why I have been disappointed in CTIA's recent attacks on consumer privacy protections. I am hopeful we can still find some common ground though. So I think we may agree that the Federal Trade Commission should be a strong protector of consumer privacy.

Let me ask you, would CTIA support democratic efforts to strengthen the FTC's ability to protect consumers by lifting the common carrier exemption, given the FTC Rulemaking authority, giving the FTC more privacy staff. Would you comment on that?

Ms. BAKER. First, I think that CTIA believes strongly in privacy and in consumers' right to privacy and data security. It is a priority for all of our carriers and companies.

I think that we believe that consumers are served better when their privacy protections are based on the type of information as opposed to the company that holds it.

And for that reason, we would like to see the FTC's jurisdiction on privacy be consistent across all of the companies. The mechanism is to how to get to that. I would have to get back to you on the languages too.

But yes, the idea is to having the FTC have jurisdiction over the privacy of consumers' data. All companies would be consistent with what we believe.

Mr. PALLONE. All right. I've run out of time but I wanted to ask you a local question. Well, it's not really local. But Ms. Gomez, one of my priorities is promoting public safety communications and network resiliency, and I have been a strong supporter of FirstNet, which is housed at NTIA.

And getting better technology in the hands of first responders is really important. So I understand you were at NTIA when FirstNet was formed, and from that perspective how would you assess FirstNet's progress in starting up the nation's public safety broadband network?

Ms. GOMEZ. I think FirstNet has made great progress. It is a huge undertaking as well and it is very close to getting the contract in place to be able to start the actual deployment in services and working with the states.

So I, too, am a great supporter of FirstNet.

Mr. PALLONE. OK. We have run out. Thank you, Madam Chairwoman.

Mrs. BLACKBURN. Well, actually, you went 3 seconds over but who's counting?

Mr. Kinzinger, you're recognized 5 minutes.

Mr. KINZINGER. Thank you, Madam Chair, and running a tight clock. That's good. That's good. I am excited. It's going to be a good couple years.

Quickly, just to all witnesses, since 2010 NTIA's office of spectrum management has been tasked with executing a presidential memorandum to make available a total of 500 megahertz of federal-nonfederal spectrum by 2020. We are quickly approaching the end of that 10-year window and do you all think there is a need for the NTIA and the FCC to jointly establish and carry out formal planning activities for the next decade through a new national spectrum plan?

Mr. KNEUER. Yes, I think it's vital to have a pipeline to have to have long-range visibility as to where the next spectrum bands are going to come from to meet the growing needs that I think we have all been talking about.

I think there is a challenge when you set numbers of megahertz to be freed without some more detail and concept about what that means.

If the agencies are put in a position to find spectrum, they may find spectrum that is in the cupboard but is not very useful and say we have met our obligation.

So the focus less on specific targets and more on holistic policies that will be deployed across the entire government that this is part of your job, day in day out.

As a steward of these resources you need to account for them and make sure you're taking steps that they are used across the economy and not just held for isolated purposes. So I think long-range planning is very important. I think the spectrum pipeline bill is important. But yes, we have to keep looking down range.

Ms. BAKER. I think goals are important and I would certainly welcome this committee, asking NTIA and the FCC to have set an-

other goal for 10 years. I think that the focus of this committee is very helpful.

You have brought the AWS-3 auction. You have brought the 600 megahertz auction to bear. And I think that the guidance from this committee is very important and we would love to see that.

Mr. KINZINGER. Ms. Gomez, do you have anything to add?

Ms. GOMEZ. Sorry. The only thing I would add is I agree, planning is I agree planning is very important. Goals are very important. I also want to make sure that NTIA continues to focus on what it's doing today because it still has a lot of work to do.

So whatever resources they need it would be good to bolster those resources so they can in fact engage in thoughtful planning for the future.

Mr. KINZINGER. Mr. Kneuer and Ms. Gomez, how can the NTIA most effectively promote the interests of the United States in international discussions on internet and communications policies?

Mr. KNEUER. Well, I think Mr. Shimkus asked about ITU and our role there. That has been the vehicle in the world radio conference where NTIA works with our colleagues in the State Department. Aggregating all of the equities of the spectrum-dependent agencies is very heavily focused on the Defense Department, as you would imagine.

So maintaining a robust role and making sure that we collaborate across those areas. With regards to internet governance and those sorts of subject matters, the multi-stakeholder model has been very, very productive.

It was productive in collaborating and coordinating the IANA functions. Some of these broader internet governance issues probably don't belong.

The nontechnical issues don't belong in a technical body. But the model of the multi-stakeholder model to bring diverse coordinated interests and equities together for U.S. promotion in a variety of international forums, NTIA plays an important role in that.

Ms. GOMEZ. I absolutely agree with John. NTIA's strong voice and role in the governmental advisory committee is very important, may even be more so important today to ensure that the internet remains a free and open resource and that other bodies don't take over trying to manage the architecture that so far has been so successful and open.

Mr. KINZINGER. And let me just ask you very briefly, Ms. Gomez, one of the NTIA administrator's important roles is to represent the administration and the United States and the multi-stakeholder decision process, particularly when it comes to settings like ICANN and the internet governance issues. Do you see any obstacles to doing this?

Ms. GOMEZ. I would agree with what Meredith said earlier, which is that this is—or maybe it was John who said it. Sorry.

This is probably the best staff, the most expert staff and the strongest and most strategic staff that we have to participate in this body.

So it's important to continue to support that resource and support their needs as we move forward with a U.S. presence and voice in these meetings and associations.

Mr. KINZINGER. OK. Thanks.

And I yield back now.

Mrs. BLACKBURN. With military precision, yields back.

Mr. Butterfield, 5 minutes.

Mr. BUTTERFIELD. Thank you, Chairman Blackburn and Ranking Member Doyle. Thank you for holding today's hearing on NTIA reauthorization.

There is no doubt that NTIA will play a critical role as this administration contemplates its goals related to our nation's telecommunications policy.

By any definition, NTIA is critical in the communication space. NTIA's past and ongoing work with FirstNet—and I appreciate the ranking member's comments a few moments ago—work with FirstNet as well as their work with the National Highway Safety Administration to develop and implement next generation 911 services is to be commended.

NTIA also plays a critical role in safeguarding our nation from cyber threats. There is no higher mission from members of Congress than doing all that we can to protect our constituents from potential threats.

At this point, it is underscored by the intervention of Russia in last year's election and their state-sponsored hacking of the Democratic National Committee.

Those incidents highlight that cyberattacks that threaten our country can be carried out by highly funded and even state-sponsored actors.

In response to that type of attack on our democracy, we must take steps to investigate all potential cyber security threats including those posed by state sponsors like Russia, and I am confident that NTIA will do just that.

Also important to my district and my constituents is identifying ways to increase broadband adoption and reduce barriers to broadband deployment.

In this regard, I understand that NTIA continues to engage in several initiatives aimed to increase adoption. For example, NTIA has engaged local communities through the Broadband USA initiative to provide technical assistance and guidance on how best to increase access to affordable broadband.

It has also been a key participant of the broadband opportunity council which was created to ensure federal agencies take specific steps to encourage broadband investment and remove regulatory barriers.

Just one or two questions, Ms. Gomez. Do you think that the new administration should continue these activities and why?

Ms. GOMEZ. Absolutely. All the activities that you mentioned are important and especially to the continued innovation and deployment of these new and important technologies.

So I would say NTIA is front and center in a lot of them and these are initiatives that should continue.

Mr. BUTTERFIELD. Aside from the increase in the budget from 40 to 50, are there other things that we can do legislatively to enhance the work of NTIA?

Ms. GOMEZ. I do think that there are ways that you can empower and promote NTIA as it continues a lot of these interagency discussions.

As we have discussed before, it's a small agency with a mandate to push and prod its fellow agencies throughout the federal government to lead to, for example, removing barriers to infrastructure deployment.

That requires dedication and focus from other agencies that NTIA sometimes doesn't have the muscle to force other agencies to make a priority as part of their mission.

So to the extent Congress can help with bolstering NTIA's ability to successfully get the other agencies to cooperate, that's always very helpful.

Mr. BUTTERFIELD. Thank you very much.

Madam Chairman, I yield back.

Mrs. BLACKBURN. And gentleman is competing for first prize in yield back.

Ms.—

Mr. BUTTERFIELD. I was told that you would be in the chair, Ms. Blackburn. Your real title in the time is when I was a judge in the courtroom.

Mrs. BLACKBURN. Absolutely.

Mr. BUTTERFIELD. I understand the importance.

Mrs. BLACKBURN. Yes, sir. Ms. Walters, five minutes.

Ms. WALTERS. There is a lot of pressure.

First of all, there's a lot of pressure. First of all, I'd like to thank the chair for holding this hearing and for the witnesses being here today.

Cybersecurity continues to be a growing threat and I'd like to get your thoughts on what role the government should play in this area as this becomes a bigger concern to all stakeholders.

With that, Ms. Baker, with regard to cyber security, there seems to be several agencies that are staking a claim of leadership—FCC, DoD, DHS, NTIA.

With respect to the commercial sector, do you have opinions as to which agency should run point?

Ms. BAKER. I'm glad you asked. It's a great question.

We do have an opinion here. Cybersecurity is critical. These networks are going to change everyone's life every job, our economy. But they have to be safe.

And so cyber security is the most important thing that we work on every day. I feel strongly that this needs to take place within the administration, not an independent agency.

So I think there's a coordination role that needs to happen between DHS, NTIA, NIST. I think we probably prefer DHS to be the lead with coordination from the others. But I do think one way or another it needs to take place in the administration, not in the FCC. Thank you.

Ms. WALTERS. Ms. Gomez, one of the primary challenges we face in securing our nation's communication infrastructure and networks from cyber threats is the rapidly evolving nature of these threats.

Does NTIA have the ability to adapt quickly enough to adjust to new and emerging threats in its efforts to drive interagency cybersecurity practices?

Ms. GOMEZ. In keeping with your prior question, it is important that we have some kind of a balance of the economic and national security concerns in cybersecurity practices.

The point that you're making is it is a challenge to keep up with changes in technology and that is why you need an agency that can convene processes that are able to be flexible enough to be able to address those changes.

NTIA could use more expert staff. They have very good expert staff. But as we look forward to continuing and increasing challenges and new and novel issues in these areas, it would be helpful to be able to bolster them.

As I mentioned before, they also need the security clearances, which is part of the reason why they need additional budget to be able to get those clearances for their staff.

Ms. WALTERS. And Ms. Gomez, you have the most recent tenure at NTIA. And how would you describe the relationship between NTIA and DHS and in this cybersecurity framework? And do you think NTIA and the FCC have sufficient authority and ability to represent the interest the interests of the commercial sector in this conversation?

Ms. GOMEZ. NTIA and DHS has had a very good relationship both on cybersecurity as well as on public safety. There are established processes in place. There are interagency groups in which they participate. So that is very helpful.

I think having specific authority is always helpful to bolster an agency's jurisdiction and I think NTIA does have a very good jurisdiction writ large but it always is helpful to give them that specific jurisdictional authority in reauthorizing legislation.

Ms. WALTERS. And Ms. Baker and Mr. Kneuer, do you have anything to add, either one of you?

Mr. KNEUER. I think there is value in NTIA's role with its interface with the private industry. There is the response part of dealing with the cyber initiative which is probably not going to be NTIA's role.

But one of the greatest lines of defense in cyber is to share information on the nature of threats and the nature of attacks.

Private industry sometimes is hesitant to share that kind of information because they are admitting to a vulnerability or they are exposing a vulnerability or they are concerned about litigation exposure.

NTIA can play that role, taking some of the information of the information from the private sector, bringing that into the interagency and taking the best information from the interagency and taking the best information from the interagency and distributing it back into the private sector.

Ms. BAKER. I think you've covered it.

Ms. WALTERS. Thank you, and I yield back the balance of my time.

Mrs. BLACKBURN. Mr. Costello for 5 minutes.

Mr. COSTELLO. Thank you.

Continuing on the cybersecurity issue, could you share your thoughts, Ms. Gomez, and I would open up to the other panelists as well, on NTIA's role in assisting FirstNet plan and its cybersecurity strategies.

We spoke on the commercial side already.

Ms. GOMEZ. Great. Well, cybersecurity is a very important component of FirstNet. Again, we need to have public safety's trust and confidence in the security of the nationwide public safety broadband network to get them to actually sign on to the service.

FirstNet has its own cybersecurity staff. I would start with that. So to the extent NTIA is supporting FirstNet I would say that's probably it's biggest role.

NTIA also participates with NIST in the public safety communications research program and through that program is able to coordinate support for FirstNet as well on cybersecurity issues.

But this is fundamental to the success of the network will be the ability to have a very secure network.

Ms. BAKER. I would just add probably that I think FirstNet it has probably one of the very most important missions of any government agency.

And as I just stated, I think cybersecurity is one of the most important jobs that we have as network providers. So I guess you get double importance there.

Mr. KNEUER. I think that's right. I think there is an opportunity for potentially a virtuous cycle to come into effect as a customer. FirstNet probably has higher cyber requirements than a typical large enterprise company, right.

So as they put those requirements into the provider and the contractor for FirstNet, those cyber requirements populate into the commercial networks more broadly and as those technological developments take place in response to FirstNet, we get this loop where the requirements get put in, the technology gets developed and it's an improving cycle.

Mr. COSTELLO. This could be a philosophical or a technical question or both.

We are obviously dealing with a very massive network that I think we can all agree needs to remain agile because as you get new security technologies you want to make sure that you don't have to sort of go back in time to reengineer.

How does NTIA remain relevant and make sure that it remains agile and nimble as new security technologies enter into this?

Ms. GOMEZ. I think, again, this goes back to NTIA's convening role. It both has the external expertise and also the interagency expertise between NIST and DHS.

But, more importantly, it also needs to rely on the stakeholders to come in and to educate it and the multi-stakeholder processes on these new technologies and that's a large part of what they do.

Mr. KNEUER. I would just build on something Meredith said earlier about the administration being the best place for some of these issues.

I think the danger in pursuing a regulatory approach to cyber is that the incentives shift from network protection to regulatory compliance and that creates a sort of sporadic function that you're concerned about, that how do you stay relevant.

Enshrining things in regs is the quickest way to delay rapid changes. So leveraging the coordinating function, leveraging and taking advantage of the incentives that both industry and the government have to protect themselves is the best way for us to keep it

as something that's top of mind rather than always backward looking at a regulatory structure.

Mr. COSTELLO. The state and local implementation grant program—the education and outreach to a state's local emergency personnel is obviously extremely important. And the guidance—the NTIA can offer in the decision making process for states weighing challenges and how to opt in or opt out, can you sort of explain, moving forward, how NTIA should approach that—particularly in my state of Pennsylvania, where it's an extremely important issue?

Ms. GOMEZ. Yes. Congress was very wise to include what we call planning funding, just generally, in creating this state and local implementation grant program because FirstNet needs to get the input from the bottom up, from the cities and communities and localities up through the state up to FirstNet, and that takes dedicated resources. That's what the grant program does.

What NTIA does is administers that grant program and support FirstNet's efforts to reach out to those individuals so they can have a voice in the network.

Mr. COSTELLO. Thank you.

Mrs. BLACKBURN. Gentleman yields back.

Mr. Cramer, you're recognized 5 minutes.

Mr. CRAMER. Thank you, Madam Chair, and congratulations on the gavel.

Thanks to all of our witnesses for this hearing and your time—time that is getting late.

Now, I've sat here a long time and I've listened to pretty much everything and there have been a couple of passing references to smart cars or autonomous vehicles. But I am going to bring up a completely different topic so a completely different context at least for a similar topic.

So my home state of North Dakota is home to the Northern Plains UAS test site, one of the six FAA-designated test sites designated in 2013.

And as you likely know, remotely-piloted aircraft are playing an increasing role in important duties like disaster recovery, monitoring pipelines, precision agriculture.

Obviously, there are the obvious military applications. And as a result of our test site, we have a rather unique enhanced use lease at the Grand Forks Air Force Base where there is a private sector business park at the same place on the air base, with the appropriate security divisions and what not.

It's quite unique, and for military applications for defense contractors, which we have attracted to the park, spectrum is fairly easy. Of course, it's a military issue.

But for the private sector where I think the real opportunity and real growth lies for testing, aircraft testing equipment, training pilots, research and development, there has been a challenge as it relates. And, in fact, there was a specific situation not that long ago where a company was testing and wanting to illustrate, demonstrate the use of their cameras and video. And they literally could not do it because of a fairly basic spectrum issue.

All of that being said, going forward, how do you see spectrum allocation as it relates to UAS and how do you see it being resolved, improved upon? NTIA—obviously, their role in other agen-

cies and what can we as Congress do to help clarify it? And I throw that to all of you and that will be my only question, Madam Chair.

Ms. GOMEZ. So spectrum is going to be very important for unmanned aircraft in a variety of ways. First of all, the command and control of aircraft, particularly if you start looking at beyond line of sight uses.

And there is going to be different types of needs depending on the type of aircraft and the operations themselves. So right now, you can fly using unlicensed but that's not going to be true for the longer range flights.

So the spectrum is going to be very important. The FCC is going to be important because they are going to have the rules for commercial uses.

The FAA's going to be important because they are the ones that are going to try to regulate to make everything safe and make sure that they meet requirements to make them safe. And NTIA is important because there is going to be interagency coordination.

And so spectrum is something that the agencies are very focused on currently. There is internationally allocated spectrum for unmanned aircraft and it's specific aeronautical spectrum, and then there is also other spectrum that can be utilized that will also be very significant for the expansion of this industry that is moving so quickly and, as you've noted, the North Dakota test site is an important part of that.

Mr. CRAMER. So Ms. Gomez had beautifully described the complication of the issue. So as a result going forward, how can we help streamline? Because you articulated perfectly how difficult this is, especially command and control, which is where the real opportunity rests.

Ms. BAKER. I would highlight, many of the things that we have talked about today, the future of our communications networks, overlapped jurisdictions, and I think what we need to encourage is to make sure that we remain on the cutting edge of innovation and I think UAS is one where they are using them in England. We are not using them really here.

So I think its own place where—I think with Congress' oversight we can make sure that we don't over regulate budding innovations and budding industries so that we can maintain our innovative edge and competitive edge against other countries around the world.

Mr. KNEUER. The only thing I would add apart from the long-term deployment of unmanned vehicles, with regards to the test site, there are private test sites. There are military test sites that are typically in very remote areas and those remote areas are typically not at all spectrum constrained in the real world but they're spectrum constrained by the issuance of those licenses.

We issue licenses on national bases or wide geographic areas and you can turn on a spectrum analyzer and say there is no one here. But the authorities are held by someone else.

Creating governance processes where there are the opportunity and the ability of diverse carriers to say you know what, I am not out there, and, here's how we can collaborate and here's how you can use my spectrum, how you can have transactional agreements

in those areas, I think, clarifies or will get the regulatory out of the way of the technological in those test areas.

Mr. CRAMER. Thank you all very much, and Madam Chair, I yield back.

Mrs. BLACKBURN. Gentleman yields back.

Mr. Engel, we will get you in before we get called to votes and be able to dismiss our panel and not have to come back.

Mr. ENGEL. OK. Thank you. Thank you, Madam Chair, and briefly, before I begin, I want to say how excited I am to be rejoining this subcommittee after having served on it a number of years ago and how much I am looking forward to working with you, Madam Chair, and all the members here on these important issues of Congress.

Thanks to our witnesses. I wanted to focus on cybersecurity and particularly the role NTIA plays coordinating our national cybersecurity response between government and industry.

Last year, when Russian operatives breached the Democratic National Committee and broke into John Podesta's emails, they attacked our election, the very core of our government.

But even that attack never hit a government agency or government-owned computer. The DNC is a private organization and Mr. Podesta kept his e-mail on a Google g-mail account.

So the Russian hacking story is at least in part a story about how cyber threats leave us vulnerable in these places where governments and the private sector meet.

NTIA has emerged as a vital cop on that beat in its role at the IPTF and as a liaison between industry, Commerce Department, defense and intelligence communities, DHS and the rest of the government.

So let me ask Ms. Gomez and Mr. Kneuer, I wonder if you could talk a bit about what would happen to this multi-stakeholder approach to cybersecurity, particularly on the government side if there wasn't an agency to fill that role.

Ms. GOMEZ. So what would happen if there wasn't an agency to fulfill the role of coordinating with other agencies, as we talked there's a lot of overlapping jurisdiction and interests throughout government.

As I mentioned, I think it's very important that as we continue to look forward to securing the networks that we make sure we balance economic and national security interests because each agency's mission is a little bit different.

The national security agency's interest is in protecting the internet. That could lead to very draconian measures that would not allow continued innovation.

So an NTIA is important because they are a convener and they provide a balance. It's also important because it convenes the multi-stakeholder processes to ensure that we have methods of addressing a lot of these vulnerabilities and without having rules enshrined in regulations that would then not be flexible for to take into account changes in technology.

Mr. ENGEL. Mr. Kneuer, do you have anything to add?

Mr. KNEUER. I think I agree largely with all of that.

The legal and authorization structures around structures around cyber touch everything. This is Title 50 authority Defense Depart-

ment—it's Title 10 Authority under Espionage and you've got all of the various law enforcement authorities on the response side of things.

I don't think it's ever going to be NTIA's role or whether it would be wise for it to be NTIA's role to be in the response change.

However, it does play an important role in, as we have talked about earlier, sharing information that is developed from some of those other expert agencies that are really designed to respond to foreign and domestic threats.

Its role is best suited, I think, to making the commercial industry aware of these threat vectors, what they can do to practically defend themselves. And should the attacks come, the response is going to be focused, I think, in other agencies.

Mr. ENGEL. Thank you. Let me ask Ms. Baker.

How valuable is the institutional expertise at NTIA and IST and these other industry facing agencies that work with all of you in cybersecurity—what would happen to our national cybersecurity strategy if we lost that expertise at that junction between industry and government?

Ms. BAKER. I think it's critical. I mean, I think expertise as these networks evolve is having that housed in both in the private sector and having that in the government so that they can convene the private sector I think is integral to our protection, going forward.

Mr. ENGEL. Thank you. So let me just say, in conclusion, that I am convinced that one of the biggest problems we are facing now in confronting cyber threats is that everything is spread out.

There are precious few clearinghouses where actual decisions are made about the best way to protect American interests.

We have this opportunity here with NTIA to build on and expand our capability at this intersection of industry and government.

I believe it is very important to overcoming part of this problem. So I want to urge my colleagues and chairwoman to keep that in mind while this subcommittee moves forward with this reauthorization process.

Thank you, Madam Chair, and I yield back the balance of my time.

Mrs. BLACKBURN. The gentleman yields back and there are no further members waiting to ask questions. So we will thank our witnesses.

We are so pleased to have had you with us today. I remind members you've got 5 days to submit opening statements. You have 10 days to submit further questions to our witnesses.

We would ask for written responses within 10 days, and there being no further business to come before the committee today, it is adjourned.

[Whereupon, the hearing concluded at 1:01 p.m.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

I had the honor of chairing this subcommittee for 6 years and still care deeply about the issues under its jurisdiction. There is never a dull moment in this exciting industry. The communications and technology sector is a bright spot in the American economy as it continues to innovate, compete, and grow despite the recession of 2008. I have always argued that this industry deserves a fair, transparent government agency to oversee the rules of competition. Moreover, this industry de-

serves a government that understands modern technology and recognizes that these innovations are a critical underpinning of the domestic economy. Our hope today is to ensure that the agencies overseeing this dynamic industry have the tools they need to set an environment that fosters innovation and competition.

I applaud Chairman Blackburn for kicking off this Congress with a close examination of NTIA. This agency plays a critical role in determining how spectrum is allocated. We will be looking increasingly to our government agencies to determine where spectrum can be re-purposed for ever increasing commercial needs without compromising the safety of our infrastructure.

This agency also plays an important role in assessing policy challenges in securing our networks. We should consider how its role should evolve in this day and age, when threats include everyone from nation states to teenage kids. I am also mindful that additional work must be done on public safety networks in general. NTIA's responsibilities include not only the incubation of FirstNet but also the distribution of grants intended to incentivize states to deploy and support public safety answering points that can receive IP-based texts, voice, and video. This work hasn't exactly gotten off to a roaring start, and it is high time we looked into moving that forward.

I appreciate the work that this subcommittee has done to date on these issues, and I know that under Chairman Blackburn's leadership, you will continue to do good work. I thank the witnesses for their time today and look forward to their testimony.

epic.org | ELECTRONIC PRIVACY INFORMATION CENTER

February 2, 2017

The Honorable Marsha Blackburn, Chair
The Honorable Michael Doyle, Ranking Member
U.S. House Committee on Energy and Commerce
Subcommittee on Communications and Technology
2125 Rayburn House Office Building
Washington, D.C. 20515

RE: Hearing on “Reauthorization of NTIA”

Dear Chairwoman Blackburn and Ranking Member Doyle:

We write to you regarding the reauthorization of the National Telecommunications & Information Administration (NTIA). American consumers face unprecedented privacy and security threats. The unregulated collection of personal data has led to staggering increases in identity theft, security breaches, and financial fraud in the United States. Congress should work with the NTIA to develop meaningful safeguards for the privacy and security of Americans’ personal information.

The Electronic Privacy Information Center was established in 1994 to focus public attention on emerging privacy and civil liberties issues. EPIC is a leading advocate for consumer privacy and has appeared before this Committee on several occasions, and has actively participated in the proceedings of the Federal Trade Commission (“FTC”) and the Federal Communications Commission (“FCC”).¹

¹ See, e.g., Marc Rotenberg, EPIC Executive Director, Testimony before the U.S. House Energy & Commerce Subcommittee on Communications and Technology, *Examining the EU Safe Harbor Decision and Impacts for Transatlantic Data Flows* (November 13, 2015), <https://epic.org/privacy/intl/schrems/EPIC-EU-SH-Testimony-HCEC-11-3-final.pdf>; Marc Rotenberg, EPIC Executive Director, Testimony before the U.S. House Energy & Commerce Subcommittee on Communications and Technology, *Communications Networks and Consumer Privacy: Recent Developments* (April 23, 2009), https://epic.org/privacy/dpi/rotenberg_HouseCom_4-09.pdf; Letter from EPIC to the U.S. House Committee on Energy and Commerce on FCC Privacy Rules (June 13, 2016), <https://epic.org/privacy/consumer/EPIC-FCC-Privacy-Rules.pdf>; Letter from EPIC to the U.S. Senate Committee on Commerce, Science, and Transportation on FTC Oversight (Sept. 26, 2016), <https://epic.org/privacy/consumer/EPIC-Letter-Sen-Comm-CST-FTC-Oversight.pdf>.

The recent Yahoo! data breach that exposed the personal information of more than one billion users is the latest in a growing number of high-profile hacks that threaten the privacy, security, and financial stability of American consumers. Far too many organizations collect, use, and disclose detailed personal information with too little regard for the consequences. Further, there are massive privacy and security implications of the growing “Internet of Things.” Earlier this week, the New York Times reported on the hack of an Austrian hotel relying on Internet-connected locks.² The hackers demanded ransom to unlock guests’ doors. Last week, it was discovered that hackers infected a majority of the storage devices that store data from D.C. police surveillance cameras just a week before Inauguration Day.³ Congress and the NTIA must work together to enact concrete consumer protections that:

- Promote Privacy Enhancing Techniques (PETs) that minimize or eliminate the collection of personal information.⁴
- Ensure routine security updates for IoT devices; and
- Carefully assesses IoT deployment for critical functions, including transportation, home security, and medical devices.

The NTIA’s multi-stakeholder processes are simply not working – they result in weak, voluntary self-regulatory regimes. Industry self-regulatory programs do not provide meaningful privacy protections.⁵ The NTIA should support a strong legal framework that protects American Internet users and promotes public safety.

The implications of Internet of Things for consumer privacy and security are far-reaching. If the NTIA fails to develop appropriate safeguards, the country will face growing risk.

We ask that this letter be entered in the hearing record. EPIC looks forward to working with the Subcommittee on Communications and Technology on these issues.

Sincerely,

Marc Rotenberg
Marc Rotenberg
EPIC President

Caitriona Fitzgerald
Caitriona Fitzgerald
EPIC Policy Director

² Dan Bilefsky, *Hackers Use New Tactic at Austrian Hotel: Locking the Doors*, NY Times (January 30, 2017), <https://www.nytimes.com/2017/01/30/world/europe/hotel-austria-bitcoin-ransom.html>.

³ Clarence Williams, *Hackers hit D.C. police closed-circuit camera network, city officials disclose*, Wash. Post (Jan. 27, 2017), http://wpo.st/Jb_Y2.

⁴ See Comments of EPIC, *On the Privacy and Security Implications of the Internet of Things*, FTC File No. ____ (June 1, 2013), <https://epic.org/privacy/ftc/EPIC-FTC-IoT-Cmts.pdf>.

⁵ Comments of EPIC, *Multistakeholder Process to Develop Consumer Data Privacy Codes of Conduct*, Docket No. 120214135-2135-01 (Apr. 2, 2012), <https://epic.org/privacy/consumer/EPIC-NTIA-Comments-FINAL.pdf>; Comments of EPIC, *Protecting the Privacy of Customers of Broadband and Other Telecommunications Services*, WC Docket NO. 16- 106 (July 6, 2016), <https://epic.org/apa/comments/EPIC-FCC-Privacy-NPRM-Reply-Comments-07.06.16.pdf>.

GREG WALDEN, OREGON
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FIFTEENTH CONGRESS
Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115
Majority (202) 225-2927
Minority (202) 225-3841

February 23, 2017

The Honorable John Kneuer
Former Assistant Secretary for Communications and Information
Former Administrator
National Telecommunications and Information Administration
1050 30th Street, N.W.
Washington, DC 20007

Dear Mr. Kneuer:

Thank you for appearing before the Subcommittee on Communications and Technology on Thursday, February 2, 2017, to testify at the hearing entitled "Reauthorization of NTIA."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Thursday, March 9, 2017. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Greg.Watson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Marsha Blackburn
Chairman
Subcommittee on Communications and Technology

cc: The Honorable Mike Doyle, Ranking Member, Subcommittee on Communications and Technology

Attachment

Attachment—Additional Questions for the Record

The Honorable Marsha Blackburn

1. What are five critical items that Congress should consider in our efforts to reauthorize and modernize NTIA? What do you see as the biggest challenges to reauthorizing and modernizing the Agency?

The Honorable Kevin Cramer

1. You mentioned there may be an ability to develop a governance process to create an opportunity and ability to use spectrum through transactional agreements. Is there currently a process that can be followed by the NTIA that is understood by the FCC and the FAA Spectrum Office to execute these types of agreements? This seems like an opportunity to use frequencies based on geographical location, which could be written into the concept of operations for beyond visual line of sight flights.

The Honorable Jerry McNerney

1. In your testimony, you indicated that NTIA is most effective when it focuses its policy coordination efforts on the intersection of commercial and government interests. You also noted cybersecurity as an example where this type of coordination occurs. Aside from policy coordination, how does NTIA work with the private sector in the area of cybersecurity?
2. How can the research being done at NTIA's Institute for Telecommunication Sciences aid technological developments in the area of cybersecurity?

GREG WALDEN, OREGON
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FIFTEENTH CONGRESS
Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115
Majority (2021 225-2927)
Minority (2021 225-3641)

February 23, 2017

The Honorable Meredith Attwell Baker
Former Acting Assistant Secretary for Communications and Information
Former Acting Administrator
National Telecommunications and Information Administration
1400 16th Street, N.W., Suite 600
Washington, DC 20036

Dear Ms. Baker:


Thank you for appearing before the Subcommittee on Communications and Technology on Thursday, February 2, 2017, to testify at the hearing entitled "Reauthorization of NTIA."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Thursday, March 9, 2017. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Greg.Watson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,



Marsha Blackburn
Chairman

Subcommittee on Communications and Technology

cc: The Honorable Mike Doyle, Ranking Member, Subcommittee on Communications and Technology

Attachment

**Responses to Questions for the Record from Meredith Baker, President and CEO, CTIA
House Energy & Commerce Communications & Technology Subcommittee
Hearing on the "Reauthorization of NTIA"**

Chairman Blackburn

1. What are five critical items that Congress should consider in our efforts to reauthorize and modernize NTIA? What do you see as the biggest challenges to reauthorizing the Agency?

Five critical items that Congress should consider in a NTIA Reauthorization should include the following:

1. Infuse increased transparency into NTIA processes. NTIA would benefit from greater transparency tools to better hold agencies accountable for their spectrum use and needs, as well as simplify this Committee's important oversight role.
2. Encourage NTIA to leverage those tools already available to it to best manage federal spectrum use. For instance, NTIA can fully utilize the Institute for Telecommunication Science (ITS), which engages in important studies to determine the most effective means of making federal spectrum available for commercial use. In the context of sharing AWS-3 spectrum, for example, the ITS helped determine the level of protection required for incumbent licensees, which facilitated greater access to federal spectrum by commercial users while protecting critical government uses.
3. Elevate the NTIA Administrator's title from what is now an Assistant Secretary position, to an Undersecretary level position. This would be consistent with the Undersecretary title of NTIA's sister agency, the head of National Institute of Standards and Technology.
4. Continue to find ways to utilize the Spectrum Relocation Fund (SRF). The SRF provides positive incentives for federal agencies to invest in new and innovative technologies needed to support efficient spectrum use and potential reallocation, and this Committee can take steps to further enhance this system.
5. Encourage NTIA to more routinely review spectrum needs and assets. NTIA released a report in November 2016 evaluating several spectrum bands now used by federal agencies that hold significant potential for commercial use. This "Quantitative Analysis" was a useful process that required evaluation of federal spectrum utilization. Congress can further direct NTIA to issue similar reports in the future on a more regular basis, and create mechanisms to provide greater awareness into the timing and status of key spectrum priorities. These reports can assist all spectrum-using entities to better understand the interagency spectrum review process and provide more certainty for future planning.

As for potential challenges to a NTIA reauthorization, CTIA was pleased to see bipartisan support to examine NTIA's mission, a task not undertaken since 1992. We are hopeful that members see the value of NTIA's critical convener role of ensuring federal agencies have the spectrum necessary to fulfill their important operations, while finding ways to efficiently repurpose federal spectrum for commercial use.

Ranking Member Pallone

2. When asked whether CTIA would support Democratic efforts to strengthen the FTC's ability to protect consumers by lifting the common carrier exemption, giving the FTC rulemaking authority, and giving the FTC more privacy staff, you responded: "[Y]es, the idea of having the FTC have jurisdiction over the privacy of consumers' data over all companies would be consistent with what we believe." In your testimony, you also clarified, however, that "the mechanism as to how to get to that, I would have to get back to you on the language."

- a. Can you provide specific language on how the best to strengthen the FTC's ability to protect consumers by lifting the common carrier exemption, giving the FTC rulemaking authority, giving the FTC more privacy staff, or additional mechanisms?

Re-establishing the FTC as the expert agency of jurisdiction on privacy best strengthens the FTC's ability to protect consumers. Congressional rollback of the misguided FCC privacy rules is the first step in restoring the FTC's previous role. Because the FCC's 2015 Open Internet Order stripped the FTC of its authority over broadband providers' privacy and data security practices, that decision continues to be the most significant obstacle to a return to the FTC's consumer protection work relating to ISPs.

Any legislation that seeks to focus on the FTC's ability to protect consumers, ensuring that all entities are subject to a uniform privacy regime, would have to simultaneously address the gap created by the Open Internet Order,

3. Last year, the Energy and Commerce Committee considered a bill, H.R. 5510, the FTC Process and Transparency Reform Act that would substantially weaken the FTC's ability to protect consumers.

- a. Do you oppose H.R. 5510, or similar legislation, that would diminish the FTC's ability to protect consumers?

CTIA did not take a position on H.R. 5510. In general, legislation that seeks to consider the costs of regulation and increases agency

transparency can result in decisions that are more balanced from federal agencies, including the FTC.

4. Yes or no, in your opinion, if Congress were to pass a Congressional Review Act resolution disapproving the Federal Communications Commission's (FCC) broadband privacy rules, would that preclude the FCC from adopting broadband privacy rules harmonized with the Federal Trade Commission (FTC) unfair and deceptive acts or practices framework?

No, we do not believe that the invocation of the CRA would preclude the FCC from adopting new privacy rules consistent with the FTC framework. The CRA would only foreclose rules that are "substantially the same" as the disapproved rules, which departed significantly from the FTC approach. We support the goals jointly expressed by FCC Chairman Pai and FTC Chairman Ohlhausen establishing a uniform, technology-neutral privacy framework that allows for consistent treatment of consumer data throughout the Internet ecosystem.

5. Yes or no, if Congress were to pass a Congressional Review Act resolution disapproving the FCC's broadband privacy rules, would you petition the FCC to adopt broadband privacy rules harmonized with the FTC unfair and deceptive acts or practices framework?

CTIA has already filed a comparable petition before the FCC, in the form of a petition for reconsideration to revise its rules so as to make them consistent with the FTC privacy framework, to the extent permitted by Section 222 of the Communications Act. As stated above, the more uniform approach would subject all entities to the same privacy regime under FTC jurisdiction.

6. Yes or no, if the FCC adopts broadband privacy rules harmonized with the FTC unfair and deceptive acts or practices framework, would you defend those rules if challenged.

As noted above, CTIA has filed a petition for reconsideration, asking the FCC to revise its rules to make them consistent with the FTC privacy framework, to the extent permitted by Section 222 of the Communications Act. If the Commission chooses to craft rules that align with our petition and the FTC approach, we would not challenge the new rules.

GREG WALDEN, OREGON
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FIFTEENTH CONGRESS
Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115
Majority (202) 225-2927
Minority (202) 225-3641

February 23, 2017

Ms. Anna Gomez
Former Acting Assistant Secretary for Communications and Information
Former Acting Administrator
National Telecommunications and Information Administration
1776 K Street, N.W.
Washington, DC 20006

Dear Ms. Gomez:

Thank you for appearing before the Subcommittee on Communications and Technology on Thursday, February 2, 2017, to testify at the hearing entitled "Reauthorization of NTIA."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Thursday, March 9, 2017. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Greg.Watson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,



Marsha Blackburn
Chairman

Subcommittee on Communications and Technology

cc: The Honorable Mike Doyle, Ranking Member, Subcommittee on Communications and Technology

Attachment



1776 K STREET NW
WASHINGTON, DC 20006
PHONE 202.719.7000
FAX 202.719.7049

7925 JONES BRANCH DRIVE
MCLEAN, VA 22102
PHONE 703.905.2800
FAX 703.905.2820

www.wileyrein.com

Anna M. Gomez
202.719.7261
AGomez@wileyrein.com

March 9, 2017

Via first class mail and email

The Honorable Marsha Blackburn
Chairman
Subcommittee on Communications and Technology
2125 Rayburn House Office Building
Washington, DC 20515

Re: February 2, 2017 Hearing - Reauthorization of NTIA

Dear Chairman Blackburn:

Thank you for the opportunity to appear before the Subcommittee Hearing entitled "Reauthorization of NTIA" and to respond to your and Subcommittee Members' additional questions as outlined in your February 23, 2017 letter.

Attached please find my responses to the Member Questions for the Record.

Should you have any further questions, please do not hesitate to contact me.

Respectfully Submitted,

Anna M. Gomez

AMG:pld

Attachment

- cc: The Honorable Mike Doyle, Ranking Member, Subcommittee on Communications and Technology
- cc: The Honorable Greg Walden, Chairman of Committee on Energy and Commerce
- cc: The Honorable Frank Pallone, Jr., Ranking Member, Committee on Energy and Commerce

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
"Reauthorization of NTIA"

MEMBER QUESTIONS FOR THE RECORD

Chairman Marsha Blackburn

1. **What are five critical items that Congress should consider in our efforts to reauthorize and modernize NTIA? What do you see as the biggest challenges to reauthorizing and modernizing the agency?**

Thank you, Chairman Blackburn, for the opportunity to offer my views on opportunities and challenges relating to the reauthorization of NTIA. As Congress deliberates about how to reauthorize and modernize NTIA, it should consider NTIA's roles in spectrum management, infrastructure deployment, technology research, interagency coordination, and facilitating and managing multi-stakeholder processes.

Spectrum: One of NTIA's most critical roles is serving as the spectrum manager for federal users. In that role, NTIA ensures that federal agencies have the spectrum they need to accomplish their missions, and also to identify spectrum that can potentially be shared or repurposed with new commercial uses.

NTIA should continue to focus on its longstanding and important role of managing federal use of radio frequency spectrum domestically, but also bringing its technical expertise into the international regulatory arena. It serves as a key expert advisor to the Department of State on spectrum, as well as other key domestic policy issues. While one of NTIA's primary responsibilities is to ensure there is sufficient spectrum for federal users to accomplish their missions, NTIA should also continue to actively explore ways for the federal government to make the most efficient use of spectrum. This would not only help federal users but also support the important goal of ensuring that the United States remains at the forefront of mobile communications and that the commercial sector has enough spectrum to meet ever-increasing consumer demand for mobile broadband. By improving spectrum efficiency, federal users should have access to more capacity using spectrum more effectively, which would allow the federal government to meet its own increasing demands and potentially share or repurpose more spectrum for commercial use.

NTIA should continue to advocate for aggressive use of the Spectrum Relocation Fund to identify technology upgrades for government systems, potentially leading to greater federal allocations being opened to spectrum commercial uses. The most effective incentive to achieve efficient federal spectrum utilization is to provide agencies the necessary resources to research and plan for more efficient technologies. Congress made important and needed changes as part of 2015 Spectrum Pipeline Act to broaden scope of eligible expenses. Additional funding and flexibility would further strengthen the fund, such as by supporting research into allowing more unlicensed use in federal bands.

Easing barriers to infrastructure deployment: Deploying infrastructure is a costly and time-consuming endeavor, made worse by inefficient permitting and licensing processes, delayed access to rights-of-way, and uneconomic buildout and service requirements. NTIA should

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
 “Reauthorization of NTIA”

continue its efforts to identify barriers to broadband deployment and to push interagency efforts to streamline processes or eliminate requirements that slow down infrastructure deployment, such as environmental reviews or access to federal lands.

At the federal level, despite the Obama Administration’s 2012 Executive Order to prioritize broadband infrastructure deployment on federal properties, concrete improvements have been slow and providers continue to experience significant difficulties in getting sites approved and installed. While some agencies have made improvements, siting on federal properties is a very long, painful endeavor, often taking years to get processed and approved.

NTIA can play an important role in addressing the most significant barriers to timely approval of applications for siting on federal lands. NTIA can help address the lack of consistent application processes and uniform forms across agencies, and even within agencies themselves. For example, NTIA can assist by convening the relevant agencies to establish uniform siting processes across agencies, to create uniform leases, licenses and other forms for use by all agencies, and to develop best practices for siting on federal lands. This includes boosting the existing broadband interagency working group co-chaired by the Department of Commerce and the U.S. Department of Agriculture and utilizing the working group to reduce barriers.

At the state and local level, NTIA should continue its BroadbandUSA efforts and develop best practices to help communities both attract infrastructure providers and expedite the permitting process. A frequent problem facing infrastructure providers is the lack of consistency in the state and local review process. To address this, NTIA and the FCC should jointly publish “Model Infrastructure Siting Rules for Broadband Deployment,” which would establish best practices for state and municipal tower siting. Among the best practices that would improve broadband deployment: establishing right-of-way fees based on an objective standard, such as right-of-way management costs; providing reasonable and enforceable timelines for approval (such as a deemed-granted shot clock); basing municipal pole attachment fees on the FCC’s formula; granting communications companies the right to place poles and small wireless facilities in the right-of-way and to attach to municipal poles in the right-of-way under permits with initial 10-year terms with up to three 5-year renewals; and specifying that no moratoriums should be imposed on approving small wireless facility permits. To encourage state and local instrumentalities to manage rights-of-way consistent with federal telecommunications policy, NTIA can also condition federal funding for state and local broadband infrastructure deployment on the recipient jurisdiction’s agreement to follow the model rules.

NTIA has talented staff knowledgeable in managing programs, including grants and other investment vehicles that promote broadband. As the Congress and White House consider infrastructure funding including national broadband investment activities, be mindful that NTIA has expertise and experience in increasing broadband availability and adoption in this country.

Bolstering the lab: NTIA’s lab, the Institute for Telecommunication Sciences (“ITS”) is known for its objectivity and neutrality in assessing new technologies. The lab works as an impartial arbiter within government by doing objective testing and research. The lab provides valuable research and analysis to inform the Office of Spectrum Management as NTIA works to identify

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
 "Reauthorization of NTIA"

additional spectrum efficiencies and potential opportunities to increase spectrum access for all users.

ITS's funding, however, is too low to meet the need for its services. A 2015 National Academy of Sciences review of ITS found that its funding was "inadequate for keeping up with future communication, networking, and spectrum research and engineering needs" and that without additional resources, ITS "will not be able to effectively identify and perform research and tasks that are essential to furthering advanced communication technologies."¹ Although the lab can and does contract with other agencies and enter cooperative research agreements with the private sector, and universities, it needs the base fund to be able to get ahead of the science, to have updated propagation models, and to get down to granular levels to understand spectrum usage, sharing capabilities, and other needs. ITS has served as a valuable resource for NTIA's efforts to manage federal use of the radio spectrum and should receive the full support of Congress.

Bolstering NTIA's position vis-à-vis other agencies: In an area like technology policy, where there are many agencies with overlapping jurisdiction, it is critical to have an agency like NTIA to shepherd interagency activities and bring some thought and rigor to priorities and interagency coordination so there is less duplication of effort for the private sector. Furthermore, NTIA has the unenviable role of overseeing the federal agencies' spectrum use and urging them to divert resources away from their primary missions to review their use of spectrum. Therefore NTIA needs all the support it can get for these efforts. Congressional committees can bolster the NTIA's efforts by conducting oversight hearings and meetings to ensure that agencies are accountable and working with stakeholders as necessary.

Continuing Multistakeholder processes: NTIA should continue to use multistakeholder processes to address policy issues raised by today's fast-paced, innovative, technology environment. Multistakeholder processes involve bringing together all interested stakeholders to address particular issues. When appropriately structured, they can address Internet policy challenges in a more timely – and flexible – fashion than traditional regulatory processes. NTIA's process on privacy and cybersecurity have already generated a number of best practices and codes of conduct and delivered results in months, rather than years.

¹ National Academy of Sciences, *Telecommunications Research and Engineering at the Institute of Telecommunication Sciences of the Department of Commerce: Meeting the Nation's Telecommunications Needs* 4, 18 (2015).

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
"Reauthorization of NTIA"

The Honorable Kevin Cramer

- 1. What are the limitations of using the internationally allocated UAS spectrum in the United States? Or, approached another way, what other types of spectrum could be approved for use in the United States as an acceptable means to fly beyond visual line of sight?**

Thank you, Congressman, for raising the issue of spectrum allocation to serve the needs of the rapidly-expanding UAS industry.

The International Telecommunication Union, via the World Radiocommunication Conferences, has played an important role in securing internationally allocated aeronautical bands – the 960-1164 MHz band (L-Band) and the 5030-5091 MHz band (C-Band) – that can be utilized for unmanned aircraft command nonpayload control. These allocations, however, are not adequate to meet the forecasted growth of UAS technology. Furthermore, it is unnecessary to use these safety-of-life allocations for many low-altitude operations. Use of these internationally allocated bands should be reserved for long-range, higher altitude operations, where the risk tolerance is lower than with short-range, lower altitude operations. The FCC should initiate rulemakings to develop the service rules to enable licensing for these spectrum bands.

For shorter range, lower altitudes operations, other spectrum, such as cellular spectrum, can be utilized. The FCC has, for more than two decades, allocated spectrum for commercial use on a flexible use basis. Under this policy, the FCC adopts broad service and interference rules and places very few limits on the licensee's use of the spectrum. This licensing policy has made possible commercial networks with minimal use restrictions in low, mid, and high band spectrum. There are also various spectrum bands that are available for unlicensed use that could be used for commercial drone operations, including LTE-U in the 5 GHz band. The FCC should continue its flexible use policy and, when setting technical parameters for spectrum use going forward, should consider the immense economic and consumer potential of commercial UAS technology.

- 2. Beyond visual line of sight may be beneficial for short range flights, less than 5 miles. Therefore, will unlicensed bands be available for these types of flights? And, in this scenario, what is considered a longer range flight?**

Licensed spectrum is capable of providing connectivity for beyond line of sight over longer range flights. Unlicensed spectrum is at least theoretically capable of similar use. As is the case with a call from a mobile phone, the network design is the key component to achieve coverage for expanded operations like beyond visual line of sight flights. Nevertheless, whether spectrum for unlicensed use is usable for beyond visual line of sight will depend on a number of factors, including the frequency and power used, the height of the aircraft and the ground station

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
"Reauthorization of NTIA"

antennas, the interference environment, and the terrain at issue. As a general matter, unlicensed spectrum is more likely to function adequately in visual line of sight rather than beyond visual line of sight operations.

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
"Reauthorization of NTIA"

The Honorable Susan Brooks

- 1. Does, or should, NTIA play a role in the security of the FirstNet network?
Please explain.**

Thank you for your questions about our public safety infrastructure.

There are multiple agencies involved in ensuring the security of the FirstNet network, and NTIA plays a limited, but important, role. Specifically, if a state decides to deploy its own Radio Access Network, that state, after securing the Federal Communications Commission's approval, also must seek NTIA's approval to enter into a spectrum lease with FirstNet. NTIA's review of that lease is subject to specific criteria set forth in the Act, including that the state has "the ability to provide RAN security, coverage, and quality of service comparable to that" which FirstNet will provide in the Nationwide Public Safety Broadband Network ("NPSBN").

NTIA will have a framework against which to compare any opt-out state plans because FirstNet has integrated cybersecurity from the beginning of its plans for the NPSBN. FirstNet sought comment on the security of the network, and both its draft Request for Proposals ("RFP") and final RFP had entire sections dedicated to security. FirstNet's Chief Technology Officer Team also includes cybersecurity experts, ensuring that the NPSBN will implement security from the ground up and end-to-end.

- 2. NTIA performs two important and related functions in support of the nation's emergency communications systems: (1) support FirstNet's efforts to deploy an advanced mobile broadband network for use by first responders; and (2) in cooperation with the National Highway Traffic Safety Administration, work to support the National 911 Office's efforts to advance the nation's 911 systems. These initiatives address important national goals that will protect and secure the American public, but I've heard that progress in each of these areas has been slow. For example, while Next Generation 911 technologies are widely available and some states have effectively implemented NG911 systems, the vast majority of the country continues to rely on outdated technology for access to emergency services. Now, I recognize that funding is important, but funding alone isn't enough to ensure success. Aside from more money, what should Congress and the Administration do to ensure that the nation's 911 systems are not left behind as communications technologies continue to rapidly advance in the marketplace? Do you have any thoughts on why the transition has not happened more quickly?**

The transition to Next Generation 911 ("NG911") technologies in federal, state, and local public safety answering points ("PSAPs") has been very slow. As you noted, the large capital investment necessary to make the transition to NG911 has been a major impediment to adoption, but the slow adoption is not solely because of the funding issues.

ANNA M. GOMEZ

Questions for the Record from the Feb. 2, 2017 Subcommittee on Communications and Technology Hearing:
 "Reauthorization of NTIA"

Historically, PSAPs have been decentralized and disconnected from one another. NG911 fundamentally changes this model and causes PSAPs to interconnect and interoperate with one another. This means that both technical issues, such as cybersecurity and adoption of industry standards-based solutions, as well as non-technical issues, such as governance, planning, coordination, and training, are all critical elements in the successful implementation of NG911. Additionally, to truly enable NG911, there are many activities at the national-level that need to occur, such as the national database of PSAP IP-addresses, national coordination of cross-border interconnection issues among states, and ongoing cybersecurity requirements. Finally, it is important to note that there has been little focus on the federal PSAPs, such as military bases and national parks, to ensure that they have the necessary resources and support to transition to NG911. Congress and the Administration have important roles to play in all of these ongoing NG911 efforts.

Moving forward, NTIA should encourage states and localities to be flexible in their approach to RFPs and to look beyond traditional providers as potential options for NG911 contractors.

- 3. You note that the NTIA can be helpful in shepherding interagency activities, as proven through its work on IOT and obviously on spectrum management. The Broadband Opportunity Council was a useful inter-agency coalition that helped to identify ways to point the government's resources toward broadband deployment. Do you think that NTIA would be a useful point to coordinate federal permitting? Or do you think this function should be located elsewhere in the federal government? Please explain why or why not.**

Thank you for this question.

As principal advisor to the President for communications and information policy, NTIA plays an important convening role among federal agencies to develop the Administration's communications policies. NTIA should play a role in convening federal agencies to coordinate – and speed up – federal permitting. For example, NTIA can help spearhead efforts to establish designated personnel or points of contact within each agency responsible for broadband deployment and encourage agency commitment at executive levels to promote and facilitate broadband deployment. The Broadband Interagency Working Group co-chaired by NTIA and the U.S. Department of Agriculture should be leveraged to make further progress to improve permitting on federal lands and further reduce barriers to deployment.