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PROMOTING BROADBAND INFRASTRUCTURE INVESTMENT

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

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PROMOTING BROADBAND INFRASTRUCTURE INVESTMENT

WEDNESDAY, JULY 22, 2015

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

The subcommittee met, pursuant to call, at 12:30 p.m., in room 2322 of the Rayburn House Office Building, Hon. Greg Walden (chairman of the subcommittee) presiding.

Members present: Representatives Walden, Latta, Shimkus, Scalise, Lance, Guthrie, Olson, Bilirakis, Johnson, Long, Collins, Cramer, Eshoo, Doyle, Loebsack, Matsui, McNerney, Luján, and Pallone (ex officio).

Staff present: Ray Baum, Senior Policy Advisor, Communications and Technology; Leighton Brown, Press Assistant; Andy Duberstein, Deputy Press Secretary; Gene Fullano, Detailee, Communications and Technology; Kelsey Guyselman, Counsel, Communications and Technology; Grace Koh, Counsel, Communications and Technology; David Redl, Chief Counsel, Communications and Technology; Charlotte Savercool, Legislative Clerk; Christine Brennan, Democratic Press Secretary; Jeff Carroll, Democratic Staff Director; David Goldman, Democratic Chief Counsel, Communications and Technology; Lori Maarbjerg, Democratic FCC Detailee; Margaret McCarthy, Democratic Senior Professional Staff Member; and Timothy Robinson, Democratic Chief Counsel.

Mr. WALDEN. If we could go ahead and get started, I am going to call to order the Subcommittee on Communications and Technology, with apologies up front that with the classified briefing that got scheduled at the end of last week for later today on the Iranian agreement—that got scheduled about the same time this hearing was originally scheduled to start, so we moved it up to now so that we could hear from this distinguished panel of witnesses.

And I have asked my colleagues—and I think this is on both sides, because we also now have votes scheduled prior to all of that—we are going to dispense with our opening statements, which anybody who watches Congressional hearings knows is unprecedented in the historical annals of Congress, but they will all be in the official record.

So unless there is objection from either side of the aisle, I would like to just proceed straight to our panel of witnesses for their expert testimony.

This is an important hearing on promoting broadband infrastructure investment. You all are on the front lines of that, and we look to you for guidance, suggestions as we go forward.

[Members' prepared statements appear at the conclusion of the hearing.]

So we will start right out with Jonathan Adelstein, President and CEO, PCIA, former distinguished Commissioner of the Federal Communications Commission.

Mr. Adelstein, we are delighted to have you here. Please go ahead with your testimony.

STATEMENTS OF JONATHAN ADELSTEIN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, PCIA; STEPHEN ROE LEWIS, GOVERNOR, GILA RIVER INDIAN COMMUNITY, STATE OF ARIZONA; CRAIG MOFFETT, PARTNER AND SENIOR ANALYST, MOFFETTNATHANSON; MICHAEL SLINGER, DIRECTOR, GOOGLE FIBER CITY TEAMS; AND DEB SOCIA, EXECUTIVE DIRECTOR, NEXT CENTURY CITIES

STATEMENT OF JONATHAN ADELSTEIN

Mr. ADELSTEIN. The committee has shown leadership on this issue over many years. We appreciate the opportunity to testify at such a critical hearing today.

As you said, I run PCIA. We represent the companies that build, design, own and manage telecommunications facilities around the world and in the United States. The members include wireless carriers, infrastructure providers, equipment manufacturers, and professional services firms. Our mission is to expand wireless broadband to everywhere, helping our members provide wireless facilities to meet consumers' growing mobile data needs any time, any place.

The wireless infrastructure industry, as you know, plays an essential role in meeting that data demand that people are asking for so much of. Put simply, infrastructure makes wireless work. It enables the delivery of innovative applications and life-changing services like telemedicine and distance learning. Wireless infrastructure is a catalyst for economic growth and job creation. A PCIA study found that investments in our industry will generate $1.2 trillion—that is trillion with a T—in economic growth and create 1.3 million new jobs over 5 years.

And this committee, as I said, has shown grown leadership, Mr. Chairman. You have done so much to try to eliminate barriers to infrastructure deployment. I commend you, and our industry is thrilled with the leadership of this committee. Most notably, section 6409(a) of the Spectrum Act of 2012 has had a real impact on the ground in speeding the deployment of 4G infrastructure. It eliminated major local regulatory barriers to upgrading existing wireless infrastructure, and the FCC, I might add, has done an outstanding job on a bipartisan basis of implementing that law with a clear framework of rules.

Now, we will face major challenges. Cisco projects that demand for wireless data is going to increase by about 700 percent over the next 5 years, and the question is how we are going to meet that exploding demand for data.

Now, one way is more spectrum, as much as we can get as fast as we can get it. And again, this committee has done great work on that front. Spectrum, as you know, is expensive, scarce, and takes a long time to get into actual use by consumer, all the more reason to move quickly.

Another way to increase data throughput is technological advances that foster greater spectral efficiencies like moving from 2G to 4G and beyond, and the networks themselves are getting smarter, directing capacity where it is needed. These advances also take time to develop and to implement.

A third way to meet the exploding demand for data is through the rapid deployment of infrastructure. Wireless infrastructure driven by private capital addresses the wireless data crunch as soon as it is deployed. Solutions range from traditional tall towers that provide wide coverage and capacity to small cells and distributed antenna systems that fill gaps in capacity and target high-traffic areas, intensifications of networks reused as existing scarce spectrum. Deploying more antennas closer to end users allows carriers to squeeze more out of existing spectrum.

Now, there is still resistance to siting this equipment where it is necessary, and Congress can help even more to remove these barriers. One way is by streamlining the process of siting wireless infrastructure on Federal lands. Despite the law enacted by Congress with the leadership of this committee and an Executive Order by the President, significant challenges remain on Federal property. Further legislation is needed to facilitate access to Federal lands to expand broadband coverage and increased deployment in rural areas.

PCIA supports S. 1618, which was recently introduced in the Senate to address this issue, and we look forward to continuing to work with this committee on developing legislation as well. Additional roadblocks remain despite the assistance this committee has provided. For example, some State and local entities require proof of need before authorizing infrastructure bills. These requirements are both illogical and costly. Local communities shouldn't be in the CTO business of deciding where services are needed. Our members invest their capital where it is needed to serve consumers and local governments aren't in a good position to be second-guessing these kind of technical questions. Continued efforts to harmonize the rates for pole attachments would also help promote broadband investment.

The FCC has taken important steps to provide greater access, timing, and fair rates. States that regulate their own poles should follow the FCC's lead.

In sum, wireless infrastructure boosts every sector of the economy. Mobile broadband is demonstrating its effectiveness in promoting economic growth, job creation, and global competitiveness yet challenges remain in reaching its full potential. Policymakers from Congress to local governments need to eliminate regulatory barriers so our industry can invest their capital without resistance and not add costs and delays that will slow the rollout of wireless broadband.

Our member companies are very grateful for the bipartisan recognition of the centrality of wireless infrastructure by this committee, by Congress, by the administration, and by the FCC.

I would add that we look forward to making continued progress together on some of the ideas we have laid out here today and other panels will share, and we thank you, and thank you, Ranking Member Eshoo, for joining us, and thank you for holding this hearing to address these urgent issues.

[The prepared statement of Mr. Adelstein follows:]

Testimony of

Jonathan Adelstein
President and CEO, PCIA – The Wireless Infrastructure Association

Before the

Subcommittee on Communications and Technology
Committee on Energy and Commerce
United States House of Representatives

Hearing entitled

"Promoting Broadband Infrastructure Investment"

July 22, 2015

Chairman Walden, Ranking Member Eshoo, and members of the Subcommittee, thank you for holding this important hearing and for the opportunity to testify today on the urgent topic of promoting investment in broadband infrastructure. I am the President and CEO of PCIA – The Wireless Infrastructure Association (PCIA), the principal organization representing the companies that build, design, own, and manage telecommunications facilities in the U.S. and throughout the world. Our 220 members include wireless carriers, infrastructure providers, equipment manufacturers, and professional services firms. Our mission is to expand wireless broadband everywhere, helping our members provide wireless facilities that enable consumers to meet their growing mobile data needs anytime, anyplace.

Wireless Infrastructure Creates Jobs and Enables Wireless Broadband

When it comes to meeting the growing wireless data demands of Americans and users throughout the world, the wireless infrastructure industry plays an enormous role. Put simply, wireless infrastructure makes wireless work. Similar to roads and bridges, which carry physical traffic, wireless infrastructure is the essential platform for digital traffic that carries innovative applications like Uber, Instagram, Twitter, and YouTube, as well as life-altering broadband services like telemedicine, distance learning, improved public safety response, mobile banking, and a host of industrial and manufacturing functions. Continued investment in robust wireless infrastructure, which is the purpose of this hearing and the admirable goal of this Committee, will enable future innovation and will solidify and build upon America's historical competitiveness in the technology sector.

Furthermore, wireless infrastructure enables the economic growth and technological innovation that accompanies wireless broadband, including the Internet of Things, the app economy, and many future efficiencies and commercial opportunities that wireless broadband enables. A PCIA study found that private investments in wireless infrastructure between 2013 and 2017 are expected to generate as much as $1.2 trillion in economic growth and create 1.3 million net new jobs – nearly 30,000 of them directly attributable to wireless infrastructure. If such investment can be sustained, it will strengthen America's competitiveness and allow the U.S. to remain the global leader in wireless innovation.

This Committee has shown great leadership and deserves to be commended for its work to eliminate a number of barriers to infrastructure deployment. Most critically, for example, this Committee's work on Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 has made an enormous difference in speeding the deployment of wireless infrastructure. Specifically, Section 6409(a) established a new Federal law governing state and local review of eligible requests for modification of existing wireless towers or base stations, including collocations for additional providers of wireless services. The Federal Communications Commission's (FCC) outstanding and aggressive implementation of this law grounded Congress' work with a clear regulatory framework that we are confident the courts will find legally sound. Our members report real progress on the speed, cost, and ease of their efforts to deploy 4G networks as a direct result of this Committee's work, so we are grateful for your visionary leadership.

Easing the Wireless Data Crunch

One of America's biggest economic and technological challenges is what I call the wireless data crunch. The wireless data crunch refers to a potential future gap between the nearly insatiable and increasing demand for wireless mobile data and the network's capacity to deliver it. To illustrate the potential capacity problem, Cisco projects that the demand for wireless data will increase 700 percent over the next five years. That's on top of the explosive growth we have already witnessed in the last five years. This tremendous growth is both encouraging and sobering at the same time. The challenge for the wireless infrastructure industry, the telecommunications sector at-large, and for this Committee is: how are we going to meet this demand? The projections should serve as a wake-up call that industry and government need to continue to work together in order to maintain the U.S.'s position as the global leader in wireless innovation, as this Committee has long recognized.

To prevent a potential gap between demand and capacity, we need to build and deploy all manner of wireless infrastructure including more traditional towers, small cells, distributed antenna systems, and Wi-Fi offload. This additional infrastructure, with more antennas closer to the end user, results in greater spectral efficiency. Reusing spectrum, a finite and limited resource, as efficiently as possible, allows more data to flow over existing frequencies.

Engineers recognize three basic ways to deliver more wireless data: (1) additional spectrum, (2) increased technological efficiency, and (3) expanded wireless infrastructure. I will address each in turn.

Additional Spectrum

Clearly, more spectrum must be made available—as much as we can get as fast as we can get it. And of course, spectrum is of great value. Thanks to the excellent work of this Committee, the FCC was able to auction 65 MHz of AWS-3 spectrum for over $45 billion. Let me put that in context. There were already 550 MHz of spectrum in commercial cellular use. Thus, we've just increased the amount by around 12 percent. The usefulness of this spectrum is affected by the lag time between when the spectrum is auctioned and when it is ready for use. This includes the need for the spectrum to actually be allocated and cleared, antennas and other infrastructure to be upgraded, and a whole generation of handsets to be swapped out. Significant amounts of time are needed before these bands begin to offload traffic from existing frequencies, and it will not be fully phased in for up to five years.

This Committee and the industry are carefully monitoring the next auction your legislation enabled—the incentive auction for broadcast spectrum. This auction does not even begin until next year, and will likely take over five years to yield any significant spectral relief. Beyond that, significant additional spectrum is hard to come by. Critical efforts are underway to clear unused Federal government spectrum for commercial use, including the commitment by the Obama Administration to clear 500 MHz by 2020. Notably, Senator Rubio recently reintroduced the Wireless Innovation Act (S. 1618), which seeks to identify and allocate Federal spectrum to commercial use. However, as you can imagine, it is extremely complicated, and expensive, to move Federal agencies off their current frequencies. Clearing and auctioning Federal spectrum is necessary, but it will not help ease the wireless data crunch in the very near future. We certainly need more spectrum, and I urge this committee to pursue policies to make more available for commercial use. Nevertheless, even under the most optimistic scenarios, the amount of new spectrum coming online in the next five years is nowhere near enough to accommodate the explosive growth rates that are predicted.

Technological Efficiencies

Technological efficiencies also help ease the wireless data crunch. Each new network generation brings with it new technologies, more network capacity for data per user, and the potential for better voice quality, lower latency and greater data throughput. For example, 4G is much more efficient than 3G, allowing for more economic use of allocated spectrum, and 4G LTE Advanced is yet more efficient. But even as we buildout 4G, traffic immediately diverted to these new and more efficient data channels—there's lag time here, too, with old 3G and even 2G handsets still

being used. Carriers can incentivize customers to use more efficient handsets, but this also takes time. Technological efficiencies are absolutely critical, and more is needed, both on the network layer and on the software or content layer. However, technological innovation alone will not enable the wireless industry to meet growing consumer demand, even when combined with new spectrum projected to come online.

Infrastructure

As noted, additional spectrum and technological efficiencies are necessary tools in our campaign to address the data crunch. The third critical resource is the rapid deployment of the physical network, the infrastructure that would carry any new spectrum and any new technological upgrades.

The physical wireless infrastructure now being deployed and upgraded is an off-the-shelf solution that is already working to alleviate the wireless data crunch. It consists of major investments of private capital that ushers this technology to market. With the appropriate regulatory guidance, today's wireless industry can better plan for the network of tomorrow. Too often, misunderstandings and misrepresentations about wireless infrastructure can stall the deployment of these life-changing technologies. Wireless infrastructure has the power to transform a city in economic decline into an innovation hub. It can breathe new life into aging commercial zones by providing a rural downtown the ability to compete in the innovation economy.

Today, there are an abundance of choices available to network planners. The traditional tall towers effectively provide most of the coverage and capacity necessary. The industry is increasingly deploying small cells and distributed antennas systems to fill the gaps or overlaying capacity in high traffic markets. Further, the networks themselves are getting smarter. Self-optimizing networks and the combination of intelligent software and hardware design allows a network to anticipate usage and provide greater resources to areas of need on the fly, providing users with even greater service. Wi-Fi continues to play an important role in this system, offloading traffic to the wired network and providing greater headroom for cellular services.

This densification of wireless infrastructure plays a critical role in meeting wireless data demand. In fact, infrastructure appears poised to play the largest role of any of the available solutions in the next five years, and perhaps more, to address the wireless data crunch. Spectrum and network densification are fungible—roughly speaking, doubling the amount of spectrum in an area could provide a similar boost to network capacity as doubling the number of cell sites. The availability of network densification as an alternative to spectrum purchases puts a cap on the value of spectrum—and carriers regularly weigh them against one another. The mobile carriers paid high prices for spectrum in the AWS-3 auction, which is understandable because this could be one of the only available opportunities for significant new spectrum in the near future. In sum, today's

infrastructure will provide the cornerstone of the Internet of Things, 5G, and the applications, services, jobs that will make up the economy of tomorrow.

Training and Education

Another complementary way to promote investment in broadband infrastructure is to ensure that a properly trained workforce is available to build, upgrade, and maintain it. As networks continue grow in complexity, it is imperative that we build a modern workforce with the requisite skills to keep up with the rapid deployment in broadband infrastructure.

Last week, on July 15, the White House hosted the "Wireless Industry Workforce Development Summit," attended by over 60 leaders in the wireless industry, the Federal government, and representatives from the higher education system. Never before has such a diverse group of employers in the wireless industry gathered for the purpose of transforming our workforce. As the national trade association representing the wireless infrastructure industry, PCIA's goal is to improve the proficiency of every aspect of the skilled wireless infrastructure workforce. Representatives from carriers, infrastructure owners and developers, equipment manufacturers, and contractors, comprising the entire ecosystem that services wireless networks, took part in the Summit.

Today, wireless training programs are too often balkanized, ad-hoc solutions. That is why PCIA is assembling the industry's finest minds to develop best practices for training to meet our specialized needs. Our industry has emerged so quickly that the educational system and training efforts haven't kept up.

To change the very trajectory of wireless education, we have set three basic goals: first, we need to establish best-of-class training efforts, bringing together leading subject matter experts to establish model curricula; second, we need to establish superior apprenticeships through the Telecommunications Industry Registered Apprenticeship Program (TIRAP), which we helped to establish with other industry leaders; and third, we need to establish mechanisms to expand the diversity of our workforce to bring in more veterans, women, and minorities. We have partnered with Warriors 4 Wireless (W4W) and the Women's Wireless Leadership Forum (WWLF) in that effort.

All of these initiatives are designed by the industry for the industry. To bolster our strength, we're also partnering with the Federal government to assist us through the Department of Labor (DoL), the Department of Veterans Affairs, the Department of Defense, and the FCC, which have all championed our efforts to address safety and skills training for our workforce.

To date, we've made some real progress. PCIA has worked with TIRAP to develop DoL-credentialed apprenticeship programs available to qualified employers. TIRAP's mission is to

partner with stakeholders to promote safety, enhance quality, and enable education and advancement opportunities in the telecommunications workforce. PCIA has worked with W4W to accelerate its excellent efforts to bring veterans into our workforce. And PCIA has incubated WWLF to help women develop careers in our industry, so we can draw on the talents of our country to build a stronger workforce.

Congress' Role in Encouraging Broadband Infrastructure Deployment

Wireless infrastructure is the backbone of all wireless voice and data communications. The industry is constantly innovating with new wireless technologies. If we do not have sound regulations and policy at the local, state, and Federal levels, the innovation and competitiveness of the wireless industry will suffer.

We've seen how misinterpretations of congressional intent can cause delay. Too often, local jurisdictions have denied siting applications without full reasoning and accountability. This left capital tied up and broadband projects languishing or abandoned. Sadly, it took action by the Supreme Court in *T-Mobile v. Roswell* to resolve this roadblock. In January, the Supreme Court agreed with our assessment that the Telecommunications Act of 1996 requires localities to provide clear, written reasons when applications to build wireless facilities are denied. The Court sided with industry and found that wireless providers must be informed in a clear-cut and timely manner when siting applications are turned down. We were pleased with this ruling, but we should not have to petition the highest court in the land to resolve these types of delays in the name of broadband buildout and all that it enables.

One suggestion for Congress to consider that would alleviate roadblocks to wireless siting at the local level would be removing requirements that a provider demonstrate "proof-of-need" or show a "gap-in-service" when siting a wireless facility. Proof-of-need is used as a barrier to building new facilities because it is simple to reject an application based on a local government's subjective evaluation that the applicant failed to sufficiently demonstrate that a facility serves a purpose. Moreover, varied judicial interpretations of Sections 332 and 253 of the Telecommunications Act of 1996 (Telecom Act) allow a jurisdiction to deny an application on the basis that "sufficient" wireless coverage already exists in the area. The test is extremely subjective in practice, makes it more difficult to site wireless facilities, and prevents wireless facilities from alleviating data capacity constraints.

Both state and Federal policies require pole attachment rules that promote the deployment of broadband access and the new technologies that enable it, while providing fair treatment for pole owners. Among other things, Congress added "provider[s] of telecommunications services[s]" to the category of attachers entitled to pole attachments at just and reasonable rates, terms and conditions under Section 224 of the Telecom Act. This Section has been modernized through action by the FCC, which has helped to provide greater access to poles for wireless attachers,

shortened timelines for make-ready and other work, and rates in greater harmony with other like attachments. However, many jurisdictions have been slow to adopt the FCC's standards. In these states, the telecommunications industry must re-legislate, re-litigate, and otherwise relive the efforts taken before the FCC. Greater national certainty and clarity with respect to the rights of wireless attachers in these jurisdictions would spur further broadband deployment.

Congress can also encourage investment by passing bipartisan legislation to promote an open Internet. Only congressional action can give the certainty for broadband providers looking to invest. As Congress looks to enact open Internet legislation, it should provide the FCC the necessary legal authority to map out clear rules of the road for broadband providers while encouraging investment in broadband networks.

To promote broadband investment, Congress should streamline the process of siting wireless infrastructure on Federal lands. The Federal government owns or administers nearly thirty percent of all land in the United States, including thousands of buildings. Broadband providers currently face significant challenges when working to secure access to Federal lands and buildings to deploy infrastructure. Deploying wireless infrastructure on these properties is absolutely critical for public safety and economic development. Wireless facilities can be sited on Federal property in an environmentally responsible way that is sensitive to areas historic significance.

Predictability and consistency are vital to network planning and investment in any arena, but this need is amplified when deploying broadband on Federal property, which often requires burdensome interagency review and coordination. PCIA has been very active in working with agencies across the Federal government, Congress, and the White House to find ways to expedite the siting process. In 2012, Congress, behind the leadership of this Committee, put forward a framework to make it easier to site communications facilities on Federal lands and properties through standard applications and agreements. Also in 2012, President Obama issued Executive Order 13616 to promote infrastructure buildout on Federal lands and created a cross-agency working group charged with meeting the mandate of speeding deployment on Federal lands and properties.

Unfortunately, even with an Executive Order and direction from Congress, the process to site wireless infrastructure on Federal lands has not sufficiently improved. Legislation will help agencies work with the industry to bring broadband service to difficult-to-reach Federal lands and hard-to-access Federal buildings. As such, PCIA supports S. 1618 to address this very issue. We look forward to continuing to work with both chambers on legislation to streamline and expedite the process of siting broadband infrastructure on Federal property. By facilitating access, the Federal government can increase revenues through lease payments to the Treasury while at the same time improving broadband access for its citizens.

Better access to Federal lands and property will also help increase broadband availability in rural areas. The importance of expanding rural broadband should not be underestimated. Many of the lands and properties that would benefit from streamlined siting are by definition rural. It is important for the public and private sector to work together to ensure that buildout can accelerate in these areas. One mechanism to highlight are the loans that the Rural Utility Service (RUS) can offer for broadband buildout. These loans derive a significant portion of their funding from the Universal Service Fund (USF). For these funds to meet their intended purpose, there must be a predictable level of support to the USF so that loan recipients can plan, borrow, and invest in infrastructure. Lastly, the Connect America Fund (CAF) is an ideal and sustainable cost-recovery mechanism for rural areas where subscriber densities are too low to motivate providers to build infrastructure and offer service. CAF's wireless component, the Mobility Fund, is targeted at the expansion of mobile broadband networks. We think these programs will go a long way to accelerate the deployment of wireless broadband in rural communities.

Similarly, more work is needed to provide connectivity to native nations so that these communities can take advantage of the benefits that broadband provides. PCIA has long supported efforts to educate tribal leaders and communities about the opportunities for wireless broadband, including commenting in various dockets related to historic preservation and environmental protection. PCIA has also participated in the FCC's annual workshops on this topic, providing a platform for information exchange between industry and those representing native nations to better understand the cultural differences and shared experiences. However, in the spirit of collaboration, PCIA would urge a reexamination of certain tower siting processes at the FCC, whereby an application to site communications facilities in downtown Chicago triggers a full-day review and fees associated with an interest from a tribe many miles away. Our industry understands the critical nature of sovereignty and respect of a people's history, but there must be a more efficient and rational approach so that we may all benefit from a stronger network.

Another way to encourage investment in broadband infrastructure is to maintain our country's long standing tax policy allowing real estate investment trust (REIT) status for communication towers. Transmission tower companies lease vertical real estate—communications towers and the land beneath it—to multiple tenants. Tenants own the equipment and lease space on the towers. Transmission tower companies eliminate the need for each tenant to construct its own towers, which prevents overcrowding neighborhoods and communities with multiple towers. This model enhances competition in the wireless industry by lowering costs for new mobile wireless service providers and other tenants to enter new markets. Transmission tower companies allow these new entrants to operate without having to raise capital to build their own tower networks.

Today, the properties of tower companies play an integral role. Continued buildout of towers is essential to meeting the demand for new telecommunications technologies, and the current REIT structure promotes this necessary investment.

Conclusion

The wireless infrastructure industry is not just about the facilities we build; it's about what those facilities enable. Wireless infrastructure helps virtually every sector of the economy. Nearly every business in this country relies on wireless infrastructure to grow rapidly and operate efficiently. The mobile broadband revolution holds incredible promise for economic growth, job creation, and numerous other applications, such as education and healthcare. At the same time, there are warning signs on the road ahead that could lead to data demands that outstrip supply. We cannot ignore the warning signs of the looming wireless data crunch. To realize this promise of economic growth, job creation and technological innovation, infrastructure builders need the capital to invest—and we need regulators and Congress to help, as this Committee has long realized and as the purpose of this hearing recognizes.

Wireless broadband helps drive America's innovation economy and fuel the nation's economic future. The U.S. has always been the global leader in wireless broadband innovation, and private investment in wireless infrastructure is the reason why. To maintain this leadership, Federal policies should seek to encourage this continued investment by providing legal and regulatory certainty. Continuing to upgrade America's wireless infrastructure is a necessary component of connecting more Americans with broadband. Laws and regulations adopted by Congress and the Administration should reflect this laudable goal. We are deeply grateful for the bipartisan recognition of the importance of infrastructure by this Committee, by Congress, by the FCC and the Administration, and by the policies all have implemented to promote wireless broadband deployment.

Thank you again Chairman Walden and Ranking Member Eshoo for holding this hearing and inviting me to testify. I look forward to continuing to work with you and the rest of the Subcommittee to continue to make progress on these very important issues.

Mr. WALDEN. Thank you, Mr. Adelstein. We appreciate your testimony and look forward to further discussions on these matters.

We will now go to the Honorable Stephen Roe Lewis, Governor, Gila River Indian Community in Arizona. Governor, we are delighted to have you here. I enjoyed the time I was in your community and toured your facilities, and we are glad you could be here to share your thoughts on the challenges you face.

STATEMENT OF STEPHEN ROE LEWIS

Mr. LEWIS. Thank you, Chairman Walden and members of the committee. Thank you for the opportunity to testify on behalf of the Gila River Indian Community. I also want to again thank Chairman Walden and Mr. Luján for visiting the community, as you just heard, to see firsthand the obstacles that tribes face in deploying broadband. And I want to thank Ranking Member Eshoo and Mr. Luján for their request to have the Government Accounting Office, the GAO, look into the challenges and barriers to deployment on tribal lands.

Our broadband provider is Gila River Telecommunications Incorporated, which we refer to as GRTI. It was founded in 1988 and is wholly owned by our community. Our reservation is approximately 372,000 acres. We have more than 20,000 members and almost 12,000 community members living on our reservation. When we first purchased the exchange from Mountain Bell in 1988, only 10 percent of our residents had access to basic phone service. More, those looking to get connected had to pay tens of thousands of dollars before Mountain Bell would install a party line connection.

Today, GRTI offers phone service to 100 percent of our residents, and 84 percent of the residents subscribe. We also offer broadband service across the reservation. We are very proud of GRTI's success.

GRTI along with the National Tribal Telecommunications Association work together to raise awareness about the unique challenges for deploying broadband on tribal lands. Tribal lands are the least served areas in the country. Approximately 48 percent of tribal lands in the lower 48 States lack access to speeds of 10 down, one up, and 68 percent lack access to 25 down, 3 up.

There are a number of obstacles that present challenges to broadband deployment on tribal lands, and I have set those out with more detail in my written testimony, but I would like to summarize them for you here.

First, population density is an obstacle. The Gila River, for example, is at 20 persons per square mile. Maricopa County, which is adjacent to the reservation, has approximately 414 persons per square mile. Rugged terrain, characterized by mountains and hard soil, is also typical of tribal lands. Low median income and high rates of poverty on most reservations present a severe challenge for the delivery of broadband. The median income on our reservation is $24,000 to $59,000 in Arizona. Approximately 48 percent of the persons living on the reservation live below the poverty level compared to 15 percent for Arizona. These economic circumstances are not unique to our tribal community.

Failed Federal policies from the past continue to negatively impact many tribes. Our community and others like it continue to

struggle with the failed policy of allotment. Because of the allotment policy, obtaining rights-of-way in order to deploy broadband is complex and raises costs substantially and delays deployment.

Finally, access to capital is a barrier. Tribal lands cannot be leveraged as collateral for securing loans because they are held in trust by the United States for the benefit of the tribe. Thus, private capital is often not available, meaning the only lender available is the Federal Government, specifically, the Rural Utilities Service. RUS loans were critical to GRTI when it took over its service area and remains critical as a Warms Springs tribe in Oregon can attest.

The combination of these challenges has resulted in GRTI's average cost per loop being over $2,873. Because tribal nations face many unique challenges, we often need unique solutions. Having tribes at the table and engaging in Government-to-Government consultation is critical. Too often, Federal policies have unintended consequences on tribes because we weren't properly consulted in the beginning.

The current effort to reform the Universal Service Fund is a good example. USF is, when properly scoped, a critically important source of funding that can help make it possible to deploy broadband to our reservations.

Tribes have offered a proposal that will target specific support to tribal lands through a Tribal Broadband Factor that could be added to proposals for a standalone broadband fund. Inclusion of this Tribal Broadband Factor would promote the targeted use of Universal Service Funding to advance the policy objective of ensuring that broadband is made available to all Americans including those living on tribal lands.

The FCC's Office of Native American Affairs and Policy has been a welcome addition to the Commission's outreach efforts to ensure that tribes are included in the development of proposals to deploy more broadband but sometimes the FCC forgets about tribes. That is why we appreciate the letter sent to the FCC from a broadband group of members of this committee, reminding the commission that tribal leaders need a seat at the table.

I appreciate the opportunity to speak with you today and hope to be an ongoing resource for the committee. Thank you.

[The prepared statement of Mr. Lewis follows:]

Testimony of

The Honorable Stephen Roe Lewis
Governor, Gila River Indian Community

Before the
Subcommittee on Communications and Technology
Committee on Energy and Commerce
United States House of Representatives

"Promoting Broadband Infrastructure Investments"

Chairman Walden, Ranking Member Eshoo, and members of the Subcommittee, thank you for the opportunity to testify on behalf of the Gila River Indian Community and our telephone company Gila River Telecommunications, Inc. I also want to thank Chairman Walden and Rep. Lujan for visiting the Gila River Indian Community in order to learn more about the obstacles that Tribal Nations face in our efforts to build more broadband infrastructure on our lands. I want to extend an invitation to other members of the Committee to also come visit our Community and learn about the unique issues that Tribal Nations encounter.

The opportunity that broadband presents for economic development, education, healthcare, and cultural preservation is astounding. I do not need to tell this Committee about just how important broadband is to our economy. This Committee, more than any in Congress, is focused on ensuring that the full potential of broadband is realized for all Americans, and we appreciate the work you do on this topic.

As this Committee is aware, however, tribal lands are the least served areas in the country. As the FCC's recent Broadband Progress Report found, approximately 48 percent of tribal lands in the lower 48 states lack access to 10/1 Mbps broadband and 68 percent lack access to 25 Mbps/3

Mbps broadband.[1] I am pleased to appear before you to provide a perspective on the challenges and obstacles faced by providers trying to deploy broadband infrastructure on tribal lands and to offer some avenues for finding solutions. First, I would like to provide the Committee with some demographic information on the Gila River Indian Community, who I represent and whom I serve.

Our Community

The Gila River Indian Community located in south central Arizona is comprised of two tribes, the Akimel O'othom (also called Pima) and the Pee Posh (also called Maricopa). While the combined heritage of the two tribes traces back to the 1700s, our ancestors have lived along the Gila River for more than 6,000 years.

Our reservation is approximately 372,500 acres and there are over 20,000 people enrolled as members of the Community. Almost 12,000 people live on our reservation, meaning we have a population density of approximately 20 persons per square mile. That compares to approximately 415 per square mile in Maricopa County, 287 per square mile in Pinal County and 56 per square mile on average in Arizona. Over 75 percent of our residents are under age 44, with 40 percent younger than 19. The median income on the reservation is $24,771, compared to $59,154 in Arizona and more than $41,000 nationally. Approximately 48 percent of the persons living on the reservation live below the poverty level, compared to 15 percent for Arizona and 14.5 percent nationally. These economic circumstances are unique to our tribal community, and are similar throughout Indian country.

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[1] FCC Broadband Progress Report, https://www.fcc.gov/reports/2015-broadband-progress-report, at 50, Table 8.

Our Community is pushing to change these circumstances by driving economic development through diversifying our industrial, agricultural, business, retail and recreational sectors. While we have three casinos and a resort on the reservation, farming has historically been the main economic driver for the Community and remains significant to the Community. We have over 35,000 acres of the reservation land under cultivation, with plans to add at least 20,000 acres. So, one of our main goals is to better incorporate technology into our efforts to expand our traditional agricultural businesses. In addition, the Community operates its own hospital and our own utilities company that provides the reservation with electricity, water and sewer, and importantly for this hearing, phone and broadband service.

Our Communications Company

Our broadband provider is Gila River Telecommunications, Inc (GRTI), which was founded in 1988 and is wholly owned by the Community. When we first purchased the exchange from Mountain Bell, later known as Qwest, only 10 percent of residents in the Community had access to basic phone service and for those looking to get connected, they were asked to pay an "aid to construction" deposit in the tens of thousands of dollars before Mountain Bell would install a party line connection (a "chat room" on the old telephone network). Today, through much hard work and the combined dedication of the staff at GRTI and the efforts of the Community to make connectivity a reality, GRTI offers phone service to 100 percent of residents and 84 percent subscribe. We also offer broadband service across the reservation with subscription rates at approximately 5 percent for service above 10/1, but about 45 percent at 6/1. As a former member of the board of GRTI, I know firsthand many of the challenges they face in meeting their mission to the Community, which is ensuring communications services are available to all residents of the reservation. We are all very proud of GRTI's work and dedication to fulfilling

their mission and it is my hope to convey some of what we have learned about the challenges and obstacles to deployment in tribal areas.

Finally, I should mention that GRTI is one of nine tribally-owned telecommunications providers in the country. These carriers and GRTI are a part of the National Tribal Telecommunications Association (NTTA) and they work together to raise awareness about the challenges to and opportunities for deploying broadband on tribal lands.

Challenges to Broadband Deployment on Tribal Lands

I want to thank Ranking Member Eshoo and Representative Lujan, along with Representatives Young and Cole for their request to have the Government Accountability Office (GAO) looking into challenges and barriers to broadband deployment on tribal lands. GRTI and other members of NTTA have met with GAO to provide our insight and we look forward to their report later this year.

The barriers to deployment on tribal lands are many. As I mentioned earlier, one of the biggest obstacles faced by GRTI and other providers serving tribal lands is low **population density**. We are at 20 per square mile, other Tribal Nations are even lower. This presents a challenge to the provider because the fixed costs of equipment necessary to deploy and maintain a broadband network are high. As the members of the Committee understand, fewer customers per square mile raises the per-subscriber costs. Couple low population density with **rugged terrain** that is typical of tribal lands in many areas and you begin to understand the reason cost to deploy on tribal lands is very high.

In addition to density and terrain, tribal lands face unique **rights-of-way** issues that can cause delay in deployment as well as substantially increase the cost. In the late 1800's, Congress adopted the General Allotment Act, which authorized the President to direct the surveying and dividing up of reservation land for individual Indians and their families. Under this policy, title was not given in fee simple to these individuals, rather title was held in trust by the U.S. government and the Indians' title was for the use of the land (usufruct title). This policy ended with the passage of the Indian Reorganization Act of 1934, but that Act did not change existing allotments. A consequence of the allotment policy is fractionated ownership. Today most allotments within the Community have multiple owners and some allotments have hundreds of owners. But, there are Tribal Nations within which some allotments have several thousand owners. Under federal regulations, a majority of owners must grant their permission in order to obtain a right of way. The complexity in identifying and securing this permission from scores of owners can raise costs substantially and delay deployment. The combination of challenges posed by population density, terrain and rights-of-way have resulted in GRTI's average cost per loop in being $2,873.00.

Which brings us to our next challenge –**access to capital**. As a result of the trust relationship between the United States and Indians, reservation land is not an asset owned by the tribe, but is instead held in trust by the United States for the benefit of the tribe. Therefore, reservation lands cannot be leveraged as collateral for securing loans. As a consequence, most private lenders will not loan money to tribally-owned providers seeking to build infrastructure on tribal lands. This means that for many seeking to undertake these infrastructure projects, the only lender is the federal government, specifically the Rural Utilities Service (RUS). RUS loans were critical to GRTI when it took over its service area and needed funding to build its network. RUS remains a

critical source of funding for many, including tribally-owned companies. For example, one of NTTA's members, Warm Springs Telecom, which serves tribal lands in Oregon, has worked with RUS to secure a loan to bring communications services to its reservation. That funding has been essential in allowing the project to go forward.

Finally, a challenge that we in the Gila River Indian Community government and other tribes are working hard to address but that creates a significant barrier is the **economic circumstances** that many Indians living on reservations face. The low median income and high rates of poverty on reservations presents a severe challenge for the delivery of all services, including broadband. Affordability of service presents a challenge to adoption of services and hinders deployment.

Tools to Address These Challenges

The challenges are big but we do have tools that can help us overcome them. One of the key tools that we know can help is tribal consultation and engagement. Having a government-to-government commitment to engage with one another on important policy decisions is critical to ensuring that policies do not have unintended consequences. The FCC's Office of Native Affairs and Policy (ONAP) has been a welcome addition to the Commission's outreach efforts. When used properly by the FCC, engagement can be a two-way street with an exchange of ideas helping to inform policy. Last month, Representative Lujan was joined with Ranking Member Pallone and Representative Eshoo, Representatives Cramer and Welch from this Committee and a bipartisan group of nine other lawmakers who made this very point to the FCC in a letter reminding the Commission that tribal representatives need a seat at the table on discussions concerning the universal service fund and its use to promote broadband deployment on tribal lands. I thank you for that strong statement of support on tribal engagement.

Another tool we have, which I alluded to earlier, regards access to capital. RUS is the primary lender to NTTA member companies and many rural rate-of-return companies. Ensuring they continue to have the ability to lend will be a critical tool. Ensuring that Tribal Nations continue to have access to adequate capital will be important for the continued deployment of broadband on tribal lands.

And finally it is important to note a critical tool we at GRTI and every other rate-of-return company relies on to ensure that we can overcome the challenges to deployment and adoption. The Universal Service Fund (USF) is, when properly scoped, a critically important source of funding that can help make it possible to deploy broadband to our reservations. The high cost of providing broadband in areas like Gila River makes this funding essential not only to continue deployment but to maintain those broadband networks once they are deployed. We are not alone in this assessment. The ongoing reform of the rate-of-return mechanism at the FCC presents an opportunity to address specifically the deployment of broadband. Just a couple of weeks ago Commissioner Pai put forward a proposal for reform that would target support for stand-alone broadband deployment. NTCA – The Broadband Association has a similar proposal before the Commission. NTTA has offered a Tribal Broadband Factor that could work with these proposals to target specific support to the tribal lands. I have attached a summary of that proposal to my testimony. This policy change can help promote the targeted use of universal service funding to advance the policy objective of ensuring that broadband is made available to all Americans, including those living on tribal lands.

Universal service is also critical to promoting affordability. I know the Committee is aware that the FCC is looking at reforms to the Lifeline program. GRTI and NTTA will be providing the FCC comments in that proceeding that stress the ongoing need for the Tribal Lifeline program.

Conclusion

I appreciate the opportunity to provide the Committee some perspective on this critically important topic and thank you all for your work and engagement on looking at solutions. I look forward to answering your questions and being an ongoing resource to the Committee. Thank you.



June 19, 2015

Ex Parte Communication

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Room TW-A325
Washington, D.C. 20554

Re: In the Matter of Connect America Fund, WC Docket No. 10-90; NTTA Proposal for a Tribal Broadband Factor

Dear Ms. Dortch:

This letter is submitted by the National Tribal Telecommunications Association ("NTTA") to propose adoption of a Tribal Broadband Factor ("TBF") as part of the reform of the long term federal universal service fund ("USF") for rate-of-return carriers being considered by the Federal Communications Commission (Commission).[1] NTTA's members are all Tribally-owned and operated carriers, and NTTA's mission is to be the national advocate for telecommunications service on behalf of its member companies and to provide guidance and assistance to members who are working to provide modern telecommunications services to Tribal lands.

As the Commission is aware, section 1 of the Communications Act states clearly the policy of the United States - "to make available, so far as possible to all the people of the United States…a rapid, efficient, Nation-wide… wire and radio communication service with adequate facilities at reasonable charges."[2] Section 254 builds on that commitment by charging the Commission with developing a universal service support mechanism designed to address a number of specific needs. As the provision relates to rural and high-cost areas, the Commission is directed to "base policies for the preservation and advancement of universal service" on ensuring that consumers have access to "telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas."[3] To assist the Commission in meeting these

[1] NTTA consists of Tribally-owned communications companies including Cheyenne River Sioux Telephone Authority, Fort Mojave Telecommunications, Inc., Gila River Telecommunications, Inc., Hopi Telecommunications, Inc., Mescalero Apache Telecom, Inc., Saddleback Communications, San Carlos Apache Telecommunications Utility, Inc., Tohono O'odham Utility Authority, and Warm Springs Telecom.

[2] 47 U.S.C. § 151.

[3] 47 U.S.C. § 254(b)(1).

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Mescalero, NM 88340

commitments, NTTA offers this proposal, which is designed to address the broadband deployment canyon that exists on Tribal lands by targeting additional funding to any rate-of-return carrier serving such lands in recognition of the higher costs associated with extending broadband service to these communities.[4]

The record is clear, and has been clear, since at least the release of the National Broadband Plan over five years ago.[5] Tribal areas, in order to reach the national goal of universal broadband service, require more support than is currently available. NTTA's proposal provides a reasonable way to start meeting this goal, and should be considered by the Commission as it investigates long term universal service fund reform during 2015.

I. Basics of the Tribal Broadband Factor

NTTA proposes adoption of the TBF, which is a straightforward component that would be added to a non-model based mechanism, such as the Data Connection Service (DCS) proposal made by the Rural Associations, which are comprised of NTCA,The Rural Broadband Association, Western Telecommunications Association, Advocates for Rural Broadband and the National Exchange Carriers Association (NECA).[6]

TBF Funding: Just like the Tribal coefficient adopted by the Wireline Competition Bureau in regards to the quantile regression analysis[7], NTTA believes the TBF factor should be 1.25x and applied to the amount rate of return (RoR) carriers serving Tribal lands would otherwise receive absent this multiplier.[8] The need for additional funding to reach Tribal lands has been recognized by the Commission not only in adoption of the Tribal coefficient, but also in the implementation of a Tribal Lands Bidding Credit to providers willing to serve Tribal lands.[9] The 1.25x factor is equivalent in scope to the 25 percent credit the Commission provided in the Tribal Mobility Fund Phase I and the Mobility Fund.[10] NTTA believes the use of these benchmarks

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[4] Connecting America: The National Broadband Plan at 152 Box 8-4 (*noting* "many Tribal communities face significant obstacles to the deployment of broadband infrastructure, including high build out costs…[and] accelerating Tribal broadband deployment will require increased funding).

[5] *See* NTTA June 5 Ex Parte (for a description of the basis for providing additional targeted support to Tribal lands).

[6] NTCA, WTA, NECA, Ex Parte Notice, Connect America Fund, WC Docket No. 10-90 available at http://apps.fcc.gov/ecfs/comment/view?id=60001029634 (Apr. 21, 2015) (Rural Associations DCS Proposal). The NTCA Proposal and other versions of similar proposals work to transition support over time from voice and data to stand-alone or data-only broadband support. The TBF is designed to work in conjunction with this or a similar framework.

[7] The Tribal Coefficient in regards to the QRA mechanism was adopted via the April 25, 2012 Order (DA 12-646) in WC Docket Nos. 10-90 and 05-337

[8] *Connect America Fund; High-Cost Universal Service Support*; WC Docket Nos. 10-90, 05-337, Order, 27 FCC Rcd. 4235 (2012). For some NTTA members, this Tribal coefficient equated to additional high cost loop support necessary to offset the high cost of providing service to their sparsely populated communities that had no voice or broadband-capable service or only limited voice or broadband-capable service.

[9] 47 C.F.R. § 1.2110(f)(3)(iii)-(iv).

[10] *Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing a Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up*; WC Docket Nos. 10-90, 07-135,

offer the Commission sufficient support for adopting the TBF. Should the Commission require additional information to verify the added costs associated with serving Tribal lands, NTTA member companies stand ready to work with the Commission, as some of our members did in developing the Tribal coefficient, to provide the Commission more specific information.

Targeting Support: NTTA recommends targeting TBF support to all rate-of-return carriers serving Tribal lands and limiting the applicability of TBF support to census blocks that include Tribal lands within the service area of the rate-of-return carrier. Targeting support in this manner would allow the Commission to ensure that its policy directive of expanding broadband is achieved and done so in a way that minimizes the impact to the fund by ensuring that additional support is narrowly-tailored.[11]

In addition, NTTA recommends that the TBF be an "opt in" mechanism for rate-of-return carriers. For those rate-of-return carriers opting out of the recommendations and requirements contained in this proposal, the TBF funding would not be available. Because this additional funding would present a unique opportunity to promote greater deployment of broadband to Tribal lands, NTTA further recommends that the Commission make clear that this election should be part of the Tribal engagement process adopted in the *2011 Connect America Fund Order*.[12] Affording carriers some flexibility in making this determination is consistent with other Commission decisions regarding build out obligations and allows carriers an opportunity to determine whether they can meet the additional obligations associated with accessing this funding.

TBF-Specific Obligations: NTTA suggests that it would be reasonable that the additional 1.25x TBF be used in the determination of a capital expenditure ("Capex") budget for all rate-of-return carriers serving Tribal lands. By setting aside the funds in this manner, the Commission would be able to ensure that these specific funds are used to promote the deployment of broadband infrastructure on Tribal lands.

NTTA fully understands the Commission's need to ensure that support is helping the Commission achieve the objective of bringing greater deployment of broadband to Tribal lands and that other programs have adopted build-out obligations in conjunction with the offer of

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05-337, 03-109, CC Docket Nos. 01-92, 96-45, GN Docket No. 09-51, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17808 para. 430 (2011) (*2011 Connect America Fund Order*).

[11] Note our proposal would not cover Alaska providers because they have put forward a separate proposal for the Commission to consider. *See Consensus Alaska Plan*, filed by Alaska *Telephone Association*, WC Docket No. 10-90 available at http://apps.fcc.gov/ecfs/document/view?id=60001031722 (Feb. 20, 2015). Therefore, based on initial research, NTTA's TBF would apply to the approximately 80 RoR carriers whose service area includes portions that are Tribal lands. NTTA ran a query of all carriers that claim to serve Native Nations from the National Broadband Map database (352 carriers). That list was then compared to a list of ILECs and holding companies from the 2014-1 USF database created by NECA, thus arriving at the approximately 80 companies and/or holding companies.

[12] *2011 Connect America Fund Order*, 27 FCC Rcd. at 17859 para. 604.

additional support.[13] NTTA looks forward to working with the Commission on specific build-out obligations that would need to accompany this additional support. In addition, there are certifications and progress reports that could be added to help ensure the Commission has the information it needs to judge the success of the TBF in promoting broadband deployment on Tribal lands. For example modifications could be made to the Form 481 Certifications to provide the Commission regular certified updates on progress.[14]

TBF Annual Support Amount: If the Commission implements the 1.25x TBF, NTTA projects the estimated dollar impact of employing the TBF on the overall fund would be approximately $25 million. To derive this estimate, NTTA ran a query of all carriers that claim to serve Native Nations from the National Broadband Map database. That list was then compared to a list of ILECs and holding companies from the 2014-1 USF database created by NECA. Based on those inputs, NTTA determined that approximately 80 companies and/or holding companies have in their service areas census blocks that include Tribal lands. We then used funding level data contained in the appendix submitted by the Rural Associations in their April 21st 2015 ex parte filing and determined that the potential size of the TBF would be approximately $25 million annually.

NTTA has worked to develop a Tribal mechanism that is structured to target support for a specific purpose. We would urge that the Commission identify funding for this effort, possibly by accessing some of the Connect America Fund or other universal service reserves that the Commission has used in other instances.
Example of Support Mechanism: We provide the following example to illustrate how the TBF mechanism would be implemented. Assume a rate-of-return carrier has 1,000 connections spread over two census blocks, and one census is Tribal land.[15] Assume that the census block serving Tribal land has 400 connections. Finally, assume total support of all census blocks is $500,000. The TBF for the qualifying census block would be:

- Census Block 1: 600 connections
- Census Block 2: 400 connections **Only Census Block 2 is eligible for TBF**
- USF Support without TBF for Census Block 2 = ((400/(400+600)) = 40% x $500,000 = $200,000
- USF Support with TBF for Census Block 2 = ((400/(400+600)) = 40% x $500,000 = $200,000 x 1.25 = $250,000

[13] *See 2011 Connect America Fund Order* at 17702 para. 103; *Connect America Fund; ETC Annual Reports and Certifications*; WC Docket Nos. 10-90, 14-58, Report and Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd. 8769 (2014).

[14] 47 CFR § 54.313.

[15] Consistent with the definition provided in the *Rural Associations DCS Proposal*, our use of the term "connection" refers to both access lines and data connection services. *See Rural Association DCS Proposal*. Altering the definition in this manner addresses the loss of USF support that would occur from offering a data-only broadband service under the existing mechanism since such service does not meet the definition of "access lines."

As this example demonstrates, the TBF would provide an increase in support of $50,000 for the Tribal lands census block. NTTA believes that an additional increment of support of this percentage for census blocks that contain Tribal lands would be sufficient to cover the additional costs associated with deploying broadband to those areas and, as such, would incentivize rate-of-return carriers to build on those lands.

II. Conclusion

NTTA appreciates the Commission's receptiveness to its proposal in this very important proceeding. Given the comprehensive record related to Indian Country, NTTA believes the above proposal provides reasonable and measured steps toward long term USF reform for RoR carriers serving Tribal lands. The TBF offers many benefits, including:

- The proposal is narrowly-tailored to address the specific need to promote broadband deployment to Tribal lands, which are perhaps the least served areas in our nation.
- The proposal shows good faith in phasing out legacy support and recognizing the need for continued broadband deployment in Indian Country
- The proposal has no impact on Eligible Recovery/CAF ICC funding
- The proposal provides for a fair-share broadband end user charge
- The proposal causes very little pressure on the overall USF system
- The proposal is straightforward and easily understood

NTTA looks forward to working with the Commission with regard to the proposal outlined above and commends the Commission for taking steps toward long term USF reform on Tribal lands.

Sincerely,

/s/

Godfrey Enjady
President
National Tribal Telecommunications Association

cc: Geoffrey Blackwell, ONAP
Irene Flannery, ONAP

Summary of

Testimony of The Honorable Stephen Lewis

Governor, Gila River Indian Community

Before the

Subcommittee on Communications and Technology

Committee on Energy and Commerce

United States House of Representatives

"Promoting Broadband Infrastructure Investments"

Key Points to be made in testimony:

- There are challenges and obstacles to deployment of broadband on tribal lands that are unique and should be addressed as policies are developed to promote deployment
- These challenges include: population density, terrain, rights-of–way, access to capital, and economic circumstances
- As the Committee and federal agencies charged with ensuring the deployment of broadband to all Americans move forward with policies, there are tools that can help promote deployment. These include:
    - Robust tribal engagement early in the policy-making process
    - Ensuring RUS has the ability to lend to providers serving tribal lands
    - Targeted universal service support is provided for deployment and adoption of broadband on tribal lands

Mr. WALDEN. Thank you, Governor. You can count on that. We appreciate your testimony and your insights. They are very valuable.

We will go now to Craig Moffett, Senior Research Analyst, Moffett Nathanson. Mr. Moffett, we are delighted to have you here as well. Please go ahead.

STATEMENT OF CRAIG MOFFETT

Mr. MOFFETT. Thank you, members of the subcommittee, for your kind invitation to participate in today's hearing.

By way of introduction, I have been a financial analyst focusing on the cable and telecommunications industries for the past 14 years. Before that, I spent 11 years at the Boston Consulting Group advising telecommunications companies, so this is now my 25th year in the sector, and I have spent much of that career focused on issues of broadband deployment and microeconomics.

With that in mind, I thought I would share some general observations today about the economics of broadband, particularly focusing on the economics of competitive broadband.

First, I would start by saying the obvious. Infrastructure deployment requires the expectation of a healthy return on capital. That should be taken as a given but all too often in my experience, the issue of return on capital is either ignored or misunderstood in policy forums. It is not a matter of whether a business is or isn't profitable; it is instead a matter of whether a business is sufficiently profitable to warrant the high levels of capital investment required for the deployment of infrastructure.

With that in mind, in 2014, the largest companies in the cable industry earned a very healthy return. The physical assets of Comcast, Time Warner Cable, Charter, and Cablevision, the four publicly traded U.S. cable operators during 2014, all earned healthy returns in excess of their cost of capital with returns ranging from 13 to 33 percent. Those returns are unusually high for a capital-intensive industry. On the other hand, it should be noted that the cable industry earned returns below the cost of capital for decades. Any long-term return on network infrastructure has to earn returns well in excess of the cost of capital during the maturity of that network to offset what were typically years or even decades of losses.

By contrast, large incumbent telephone companies do not earn attractive returns on their wireline businesses. For example, a decade after first undertaking their FiOS fiber to the home buildout to 18 million homes, Verizon has not yet come close to earning a return in excess of their cost of capital. In 2014, their aggregate wired infrastructure business earned a paltry 1.2 percent return against a cost of capital of 5 percent. For the nonfinancial types in the room, that is the equivalent of borrowing money at 5 percent interest in order to earn 1 percent interest. That is a good way to go bankrupt. No one would undertake to replicate those disastrous financial returns.

AT&T, which at around the same time began deploying a much less robust and therefore less costly fiber to the node network has also earned poor returns. Their ROIC, or return on invested capital, has been declining for a decade and is like Verizon well below

the cost of capital. AT&T is committed to the FCC to make fiber available to a total of, I know believe it is 12 ½ million homes as of what was reported last night to their footprint in order to make their acquisition of DIRECTV more palpable to policymakers, but it is hard to be optimistic that they will do much better this time around.

That said, there have been some changes in the market that make deployment of competitive broadband networks less unattractive than they have been in the past. Corning has developed bendable fiber that has helped lower the labor cost of deployment. Google has popularized the concept of demand aggregation whereby communities pledge to subscribe to advanced network services before the network is built so that Google can target areas where the company has the best chance of earning an acceptable return, and while some critics would call that redlining as it typically means that broadband won't be built to the lower-income communities, it has been successful in boosting overall project returns, and you can think of it as a way of ensuring that all the children in the class really are above average.

Still, the broader takeaway here is that the returns to be had from overbuilding, that is, being the second or third broadband provider in a given market are generally poor.

So let that sink in for a moment. Simply stated, it means that market forces are unlikely to yield a fully competitive broadband market. Neither, by the way, does wireless appear to offer the promise of imminent competition for incumbent wired broadband providers. Wireless networks simply aren't engineered for the kind of sustained throughout required for wired broadband replacement services. And wireless networks, by the way, also generally earn relatively poor returns on capital. Returns for Verizon and AT&T are middling, and for Sprint and T–Mobile are very poor as a consequence of aggressive price competition in the wireless market. Neither is satellite broadband a compelling replacement for wired broadband in any but the most rural areas. Costs are high, and it is the nature of satellite connection that it has to travel 22,000 miles and back such that latency is going to be a problem.

So the simple economic reality is that overbuilding is necessarily going to be somewhat limited, given relatively poor financial returns that can be expected, and that alternatives are far and few between. That naturally gives rise to the impulse among some to regulate incumbent networks that are already there. That is, it is a not unreasonable assumption that any attempts to foster competition will ultimately be unsuccessful and that regulation of incumbents, in this case, the cable operators, is therefore required.

The counterargument, that regulation will only stifle investment among incumbent providers and will therefore make the problem worse and will in the process generate unwelcome, unintended consequences is equally well intentioned and unfortunately is equally well supported by the historical evidence. That is to say there are no easy answers here.

I will conclude only by adding a few additional observations about the cable industry. As everyone understands, the cable video business is facing unprecedented pressure. Cord-cutting has been talked about for years but is finally starting to show up in a mean-

ingful way in the numbers, and soaring programming costs are eating away at video profit margins. From a cable operator's perspective, the video business and the broadband business are opposite sides of the same coin. It is, after all, all one infrastructure. Pressure on the video profit pool will therefore naturally trigger a pricing response in broadband where cable operators have cable leverage. That may sound nefarious but it's not intended to be so. It is simply an observation that cable operators have historically benefited from the fact that their infrastructure can support two separate businesses and each can be delivered at a lower cost than if that were not the case. The ACA, or American Cable Association, has made this case eloquently in arguing that absent reforms to restrain runaway programming cost growth, video will be unprofitable and broadband will be left to carry the entire burden of incremental deployment. All else being equal, that will mean that even new builds of broadband will become increasingly economically challenged and therefore will become less and less likely, or as I am quick to add, this is my own editorial rather than ACA's point, they will simply have to sharply raise the price of broadband. As an analyst, I would simply observe that the pressures in the video business are relatively broad-based and are attributable to more than just programming cost inflation and that this may therefore be an unavoidable scenario.

So I will leave my remarks there. If my remarks sound excessively gloomy, they are not meant to. The U.S. broadband infrastructure is the envy of the world notwithstanding my view that there are politicized and cherry-picked statistics that would suggest otherwise. It is simply the case that broadband is an infrastructure that is very difficult to support two of, and in some cases even one of, and I would submit that a clear-eyed acknowledgement of the microeconomics of the broadband business deserves or even demands a seat at the policy table.

So thank you, Mr. Chairman and subcommittee members, for your time and the opportunity to testify today.

[The prepared statement of Mr. Moffett follows:]

Craig Moffett

Partner and Senior Analyst, MoffettNathanson, LLC

Testimony to House of Representatives Committee on Energy and Commerce

"Promoting Broadband Infrastructure Investment" Hearing

July 22, 2015

Thank you, Chairman Walden, and thank you members of the Subcommittee, for your kind invitation to participate in today's hearing. And thank you, Grace, for your role in coordinating today's event.

By way of introduction, I have been a financial analyst focusing on the cable and telecommunications industries for the past fourteen years. Before that I spent eleven years at the Boston Consulting Group advising telecommunications companies, so this is now my twenty-fifth year in the sector. I have spent much of that career focused on the issues of broadband deployment and microeconomics.

With that in mind, I thought I would share some general observations today about the economics of broadband.

First, I would start by stating the obvious. *Infrastructure deployment requires the expectation of a healthy return on capital.* That should be taken as a given, but all too often, in my experience, the issue of return on capital is either ignored or misunderstood in policy forums. It is not a matter of whether a business is or isn't profitable, it is instead a matter of whether it is *sufficiently* profitable to warrant the high levels of capital investment required for the deployment of infrastructure.

In 2014, the largest companies in the cable industry earned a very healthy return. The physical assets of Comcast, Time Warner Cable, Charter and Cablevision – the four publicly traded U.S. cable operators during 2014 – all earned returns comfortably in excess of their cost of capital, with returns ranging from 13% to 33%.[1] Those returns are unusually high for capital intensive industries. On the other hand, it should be noted that the Cable industry earned returns below the cost of capital for decades; any long term investment in network infrastructure *has* to earn returns well in excess of the cost of capital during the maturity of that network to offset what are typically years, or even decades, of losses.

By contrast, the large incumbent telephone companies do not earn attractive returns in their wireline businesses. For example, a decade after first undertaking their FiOS fiber-to-the-home buildout to eighteen million homes, Verizon has not yet come close to earning a return in excess of their cost of capital. In 2014 their aggregate wired telecommunications business earned a

[1] We are focused here on return on physical assets, excluding "goodwill," or the premiums paid for past acquisitions.

paltry 1.2% return, against a cost of capital of roughly 5%. For the non-financial types in the room, that's the equivalent of borrowing money at 5% interest in order to earn interest of 1%. That's a good way to go bankrupt. No one would undertake to replicate those disastrous financial returns.

AT&T, which at around the same time began building a much less robust and therefore less costly broadband fiber-to-the-node network, has also earned poor returns. Their ROIC, or return on invested capital, has been declining for a decade and is, like Verizon's, well below the cost of capital. AT&T has committed to the FCC to make fiber available to a total of 11.7 million locations in their footprint in order to make their acquisition of DirecTV more palatable to policy-makers, but it is hard to be optimistic that they will do much better this time around.

That said, there have been some changes in the market that make deployment of competitive broadband networks less unattractive than it has been in the past. Corning has developed "bendable fiber" that has helped to lower the labor cost of deployment. And Google has popularized the concept of "demand aggregation," whereby communities pledge to subscribe to advanced network services before the service is built so that Google can target areas where the company has the best chance of earning an acceptable return. Some critics would call that "red-lining," as it typically means that broadband won't be built to lower income communities, but it has been successful in boosting overall project returns; think of it as a way to ensure that all the children in the class really are above average.

Still, the broader take-away here is that the returns to be had from overbuilding – that is, being the second or third broadband provider in a given market – are generally poor. Let that sink in for a moment. Stated simply, it means that market forces are unlikely to yield a competitive broadband market.

Neither, by the way, does wireless appear to offer the promise of imminent competition for incumbent broadband providers. Wireless networks simply aren't engineered for the kind of sustained throughput required for a wired-broadband-replacement service. And wireless networks, by the way, *also* generally earn relatively poor returns on capital – returns for Verizon and AT&T are middling, and for Sprint and T-Mobile are poor – as a consequence of aggressive price competition in the wireless market. Neither is satellite broadband a compelling replacement for wired broadband in any but the most rural areas. Costs are high, and it is the nature of a satellite connection that has to travel 22K miles and back that latency is going to be a problem.

So the simple economic reality is that overbuilding is necessarily going to be limited given the relatively poor financial returns that can be expected, and that alternatives are few and far between.

This naturally gives rise to the impulse among some to regulate the incumbent networks that are already there. That is, there is a not unreasonable assumption that any attempts to foster competition will ultimately be unsuccessful, and that regulation of incumbents (in this case, the cable operators) is therefore required. The counter argument, that Title II regulation will only stifle investment even among incumbents, and will thereby make the problem worse, and will in

the process generate unwelcome unintended consequences, is equally well- intentioned, and, unfortunately, is equally well supported by the historical evidence. There are no easy answers. I would submit only that the net neutrality debate and the controversy surrounding Title II reclassification is really a stand-in for what is, in my view, simply a question of micro-economics rather than morality, and we would all be well served to engage these questions as questions of economics rather than morality plays about good and evil.

I will conclude here by adding a few additional observations about the cable industry. As everyone understands, the cable *video* business is facing unprecedented pressure. Cord cutting has been talked about for years but is finally starting to show up in a meaningful way in the numbers. And soaring programming costs are eating away at video profit margins.

From a cable operator's perspective, the video business and the broadband business are opposite sides of the same coin. It is, after all, all one infrastructure. Pressure on the video profit pool will therefore naturally trigger a pricing response in broadband, where cable operators will have greater pricing leverage.

This may sound nefarious, but it is not intended to be so. It is simply an observation that cable operators have historically benefitted from the fact that their infrastructure can support two separate businesses, and each can be delivered at lower cost than if that were not the case. The ACA has made this case eloquently in arguing that, absent reforms to restrain the runaway growth in programming costs, video will become unprofitable and broadband will be left to carry the entire burden of incremental deployment. All else being equal, that will mean that even new builds of broadband will become increasingly economically challenged and therefore will become less and less likely. Or – and I am quick to add this is my own editorial rather than the ACA's point – they will simply have to sharply raise broadband prices. As an analyst, I would simply observe that the pressures on the video business are relatively broad based, and are attributable to more than just programming cost inflation, and that this may therefore be an unavoidable scenario.

I will leave my remarks there. If my remarks sound excessively gloomy, they are not meant to. The U.S. broadband infrastructure is the envy of the world, notwithstanding politicized and cherry-picked statistics that would suggest otherwise. It is simply the case that broadband is an infrastructure that is very difficult to support *two* of, and in some case, even *one* of. And I would submit that a clear-eyed acknowledgement of the microeconomics of the broadband business deserves, or even demands, a seat at the policy table.

Thank you, Mr. Chairman and Subcommittee members, for your time and for the opportunity to testify today.

Mr. WALDEN. Thank you very much, Mr. Moffett. We appreciate your analysis.

We will go now to Michael Slinger, Director, Google Fiber Cities. We welcome you. Thank you for being here, and the floor is yours.

STATEMENT OF MICHAEL SLINGER

Mr. SLINGER. Chairman Walden, Ranking Member Eshoo, and members of the committee, thank you for the invitation to testify today about investment in broadband infrastructure. We believe a successful agenda for bandwidth abundance will benefit consumers, small businesses, and the economy.

My name is Michael Slinger, and I currently serve as the Director of Google Fiber City Teams. In this role, I oversee the operations, business strategy, and on-the-ground outreach to bring gigabit speeds to cities where we deploy Google Fiber across the United States.

We have long believed that the next chapter of the Internet would be built on gigabit speeds. A gig delivers enough bandwidth for everyone in the home or in a small business for all their devices, and we know fast connections unleash innovation and entrepreneurship. Think about it in these terms: if today we are riding a bike, having a gig means that we could be driving a racecar. It is just that much faster.

That is why we launched Google Fiber, which provides download and upload connections of up to 1,000 megabits per second. Our goal is to make the Web faster, more affordable, more relevant and more useful for everyone.

We launched the service 5 years ago, and today it is available in Kansas City, Kansas; Kansas City, Missouri; Austin, Texas; and Provo, Utah. In addition, we are in the process of building out our network in six other markets and we are exploring bringing it to another four on top of that.

In rolling out Google Fiber, we physically built a network from scratch—one street, one pole, one house at a time. This means reviewing infrastructure and working closely with cities to make sure we are ready to work together to design and build a brand-new network.

This experience has given us insight into barriers to deployment. I will outline some thoughts on policy changes that could reduce delays and barriers.

First, policymakers can ease gaining access to existing infrastructure. To construct high-speed networks, broadband providers need access to existing utility infrastructure such as poles, conduits on a consistent, cost-effective and timely basis. While the FCC has taken important steps to improve rules related to infrastructure access, our own experience in building new broadband networks demonstrates that more work needs to be done to reduce delays and barriers.

Second, policymakers can easy rights-of-way. The expense and complexity of obtaining access to public rights-of-way in some jurisdictions may increase the cost and slow the pace of broadband deployment. Policies that facilitate partnerships between different entities and companies that are doing local construction can be beneficial. We also see a lot of benefit in instituting "dig once" policies,

which may involve the installation of an oversized conduit bank by any new network builder within the right-of-way.

Third, policymakers can help resolve the challenge of high rates for access to video programming. This would help smaller players in the business negotiate fair terms for access to popular broadcasts and cable content and make it easier to attract and retain subscribers for broadband networks.

Finally, I would be remiss if I failed to mention the importance of balanced spectrum policies that promote innovation in the wireless sector. Federal agencies should pursue a balanced approach to spectrum reallocation that allows for licensed and unlicensed commercial uses at a variety of frequencies.

I will note, as we think about deploying gigabit-speed networks, we need to keep in mind that about 30 percent of Americans still don't use the Internet at home. This means they are at a disadvantage when it comes to education, job opportunities, social and civic engagement, so one of our main priorities is building digital inclusion into our deployment plans from the beginning. We are guided by a couple of main principles: Make the Internet more affordable, make access a party of the community, and teach people how to get online.

Just last week, as part of the Connect Home Initiative announced by President Obama and HUD Secretary Castro, we committed to bringing our Google Fiber Internet service to residents in select affordable housing properties across our Fiber cities for zero dollars per month with no installation fee. We are also partnering with community organizations on computer labs and digital literacy programming. We are grateful for the partners we get to work with to get more people connected and for your attention to this important topic.

Thank you again for the invitation to speak at this hearing and to share our views on how we can remove barriers, give Americans more choices at higher speeds, and help reach the goal of nationwide broadband abundance.

[The prepared statement of Mr. Slinger follows:]



Testimony of Michael Slinger, Director of Google Fiber City Teams, Google Inc.
Before the House Committee on Energy and Commerce
Subcommittee on Communications and Technology
Hearing on "Promoting Broadband Infrastructure Investment"
July 22, 2015

Chairman Walden, Ranking Member Eshoo, and Members of the Subcommittee:

Thank you for the invitation to testify before you today about investing in broadband abundant networks. Google shares your vision of the importance of creating a regulatory environment that provides new momentum to increase broadband deployment and adoption nationwide, and to expand access to the Internet and the opportunities it provides to all Americans.

I am Michael Slinger, and I am the Director of Google Fiber City Teams. I am responsible for building Google's fiber business in new Fiber cities, helping cross-functional teams overcome roadblocks in cities that might get in the way of deploying a network, that impact communities, or that affect our end users. Part of my responsibility in this role is to develop strong local teams to support the work we are doing. Unlike some of our other product areas — like our search engine or Google Maps — where most of the work is done digitally, Fiber is a physical project that requires significant construction and intersects with nonprofits, small businesses, property managers, city, state and local governments, local business partners, as well as individual users — a wide swath of the community.

Google embarked on building our gigabit Internet access service over 5 years ago to help make Internet access better and faster for everyone. Google Fiber gives customers upload and download speeds of up to 1,000 megabits per second — which is enough bandwidth for everyone at home, and all their devices, at a competitive price point.

After an extensive vetting process, we announced in 2011 that we would deploy our gigabit network in Kansas City, Kansas. Shortly afterward came Kansas City, Missouri. Today, Google Fiber is also available in Austin, Texas and Provo, Utah. We are in the process of building out our network in Salt Lake City, Nashville, and Charlotte, as well as the metro areas around Atlanta and Raleigh-Durham. We are also exploring bringing Fiber to four additional metro areas: Phoenix, Portland, San Antonio, and San Jose.

Our Fiber markets typically have city leaders with a vision for how gigabit connectivity can make their community stronger, and who work closely with us to develop a clear plan for how to build Fiber throughout the area in a way that's efficient and the least disruptive.

Unfortunately, many consumers don't have much choice in broadband providers, and gigabit Internet is still a dream for most. Market-based solutions are critical to closing the gap, yet regulation on the federal, state, and local levels has not kept pace with technological innovation and competition. Some regulations, such as those addressing access to infrastructure, sometimes even compound barriers to broadband deployment.

We're grateful for the opportunity to share our thoughts on the benefits of gigabit networks, our experience building out Google Fiber, and the ways government can help encourage further deployment and adoption. Policymakers' top broadband goal should be achieving broadband abundance — which requires reducing the cost of network buildout and removing barriers that limit providers' ability to reach consumers. The key is to focus on competition, investment, and adoption.

Gigabit Network Benefits

While it is still early days for these networks, we are starting to see the benefits of widespread gigabit availability. Investment in physical infrastructure and labor creates construction jobs and increases demand for inputs like electronics and fiber optic cable. New research from the Fiber to the Home Council shows gigabit networks are contributing billions of dollars in economic growth, and estimates that communities with gigabit Internet have per capita GDP that is 1.1 percent higher than communities with limited or no gigabit service. Moreover, the Fiber to the Home Council recently released a study showing that access to fiber increases home values by 3.1 percent.

We have seen firsthand that next generation broadband infrastructure can also shift economic activity, attracting new businesses and sparking local tech scenes. A super-fast Internet connection can have a particularly large impact on unlocking new possibilities for small businesses. In some of our Fiber cities, small business owners are using Google Fiber to help them save money, work better together, reach new parts of the world without boarding a plane, and save time for the important things — like growing their business.

Consider the exciting economic developments we've seen in Kansas City, our first Fiber city. We have seen entrepreneurs and companies from across America pick up their roots and move there, citing Google Fiber as one of the reasons.

For instance, Nick Budidharma, an 18-year-old game developer, drove with his parents from Hilton Head, S.C., to live in a "hacker home" that's connected to the Google Fiber broadband network. Synthia Payne relocated from Denver to launch a startup that aims to let musicians play together in real-time online. And a local gathering for entrepreneurs keeps growing and growing — often attracting a standing-room-only crowd of hundreds of businesspeople, investors and city officials.

The influx of all of these entrepreneurs led to the emergence of the Kansas City Startup Village, a grassroots startup hub in our very first Google Fiber neighborhood. In its first few years, it has attracted 25 startups from as far away as Boston, New York, Florida and California. The startup village has also become a must-visit location for venture capital firms who want to invest in hot Kansas City technology. A well-known tech investor, Brad Feld, even opened the "Feld KC Fiberhouse," where up to five startup founders can live and work rent-free for one year.

Kansas City has become a legitimate Midwest tech hub, nationally recognized for these successful tech startups — but also increasingly a place where established companies are relocating as well. BIME Analytics, a French cloud computing firm, moved to Kansas City because "Google Fiber helped to validate Kansas City as a technology town." This influx of businesses and capital, spurred in part by Google Fiber, was one of the reasons Fitch improved Kansas City, Missouri's debt rating a few years ago.

Access to abundant, superfast Internet can also open up new opportunities across all facets of a community — from access to healthcare and education technologies to improved energy use, public safety, and transportation. In Kansas City, the City Public Library established the Software Lending Library in partnership with the KC Digital Drive and Mozilla. The program enables patrons to check out and use high bandwidth applications and premium software on their laptops through a system connected to Google Fiber. Or take Sightdeck KC, which, in collaboration with Children's Mercy Hospital, is delivering an interactive

collaboration tool with video, voice and graphics that enables a heightened virtual healthcare experience for students and parents, cutting down on missed work and school.

Gigabit Internet is also driving a speed race between broadband providers, giving consumers higher speeds, greater choice, and lower prices. For instance, when Google Fiber announced plans to bring its service to Austin, broadband competitors AT&T and Grande each followed suit with 1 gigabit fiber deployment of their own. Similarly, after Google Fiber announced it was coming to Provo, Comcast said it would offer cheaper broadband and video bundles, and recently announced it will offer a 2 gigabit service later this year in a number of cities around the country.

These are just some examples. But while the benefits of gigabit broadband in a handful of cities to date have been remarkable, the U.S. shouldn't settle for less than abundant broadband access.

Building a Gigabit Network

To respond to communities across America that are demanding more speed for their own homes and businesses, we have to physically build a network from scratch — one street, one utility pole, one house at a time. This means reviewing infrastructure — roads, underground utility paths, and even permitting capabilities — to make sure cities are ready to work with us to design and build a brand new network. We work with cities to create a detailed map of where we can put our thousands of miles of fiber, using existing infrastructure such as utility poles and underground conduit, and doing our best to avoid things like gas and water lines. Then a team of surveyors and engineers will go out into the community to fill in missing details. Once we're done designing the network, we start construction.

Building a fiber network is a big job. It requires digging up street and climbing poles. This can be enormously disruptive to a community that is not ready for it, so Google Fiber created a Fiber city checklist to help communities prepare to build a new fiber-optic network. There is nothing special or exclusive about the Google Fiber checklist. It's a compilation of best practices from the Fiber to the Home Council, Gig U, the U.S. Conference of Mayors, and other industry experts, and it's designed to be a practical, actionable roadmap that makes building new networks easier, faster and less disruptive. Our hope is that any city across America will find these recommendations helpful, whether they're looking to build and run their own fiber network or attract an existing provider to do it.

Through the process of figuring out how to build a gigabit broadband network — and actually living through the financial and physical requirements of this type of construction project — we have gleaned some insights into how regulation can sometimes get in the way of deployment. I'll focus on three types of regulation that make investment harder and interfere with our ability to enable access to abundant broadband connectivity.

First, the process of gaining access to existing infrastructure can impose significant cost and create time delays. One of the biggest challenges facing new broadband entrants such as Google Fiber is gaining access to utility poles and conduits. To construct high-speed networks, broadband providers need access to utility infrastructure, such as utility poles and conduits, on a consistent, cost-effective and timely basis. The process of getting poles ready for our attachments — known as "make-ready" work — typically requires asking other companies to move their communications equipment to make room for Google Fiber's equipment on the same poles. This process takes a lot of time, and can cause significant delays in the construction of a new network.

The FCC recently took helpful action by granting rights for broadband providers that need access to existing infrastructure, including utility poles and conduits/ducts in FCC regulated States. Policymakers can do more to help reduce delays associated with obtaining adequate information and make-ready work, and increasing

access to existing conduit and rights of way. Local governments can take pole maintenance one step further, by proactively working with third parties to create space on the pole for providers. For example, in cities with a municipally owned utility, the utility could perform make-ready work as part of its standard maintenance program and at the same time increase space for new providers. And any city could take action to expedite network builds by requiring "one touch" relocations in their public right of way, whereby when relocations of multiple providers' attachments on a pole are required, all such moves would be made at the same time by use of authorized contractors. This would minimize intrusions and protect public safety and convenience.

Second, access to rights-of-way poses a challenge. When private companies build fiber networks, one of the biggest costs is installing physical fiber lines throughout an entire community, which requires either digging up streets (to put fiber underground) or stringing fiber on utility poles. The expense and complexity of obtaining access to public rights-of-way in some jurisdictions may increase the cost and slow the pace of broadband network investment and deployment.

To help lower these costs, cities could help facilitate partnerships between different entities and companies that are doing local construction. We also see a lot of benefit in instituting "dig once" policies, which may involve the installation of an oversized conduit bank by any new network builder within the right-of-way, to accommodate future users when new roads are being built or opened for maintenance and conduit is not already in place. Cities could also notify companies building out networks that a road is being dug up and allow them to install their own conduit, so long as there is not undue delay. In the context of the U.S. federal highway system, the U.S. GAO points out that "dig once" policies can save up to 25–33% in construction costs in urban areas and roughly 16% in rural areas. Not only is this an attractive option to providers who save the time and expense of digging, but it has the added benefit of reducing future disruption for local citizens (who probably don't want to deal with a future road closure if it can be avoided).

A third challenge is unreasonably high rates for access to video programming. Offering video services increases the value proposition of broadband services, offers more choice for the user, and improves the economics for new broadband infrastructure entrants. Most consumers want to buy Internet and video programming in one package. Encouraging the competitive availability of video services can spur the deployment of high-speed networks, resulting in more consumer choice. However, the FCC's policy of allowing non-cost based discounts for access to video programming under the guise of permitted volume discounts allegedly based on subscribership undermines broadband entry and deployment. The policy should be revised to require programmers to justify how their discounts for the biggest incumbents relate to actual cost savings.

Finally, although we often focus on fiber when discussing broadband abundance, I would be remiss if I failed to mention the importance of balanced spectrum policies that promote innovation in the wireless sector. Wireless service plays a critical role in bringing broadband to rural areas where low population densities and challenging terrain make traditional deployments prohibitively expensive, and to underserved areas that lack robust infrastructure. Whether a consumer uses a DSL, cable or fiber connection, she likely is using Wi-Fi as the last link for connectivity.

To date, wireless growth has been driven by policies that balance both licensed and unlicensed access. Exclusive access to licensed spectrum provides the certainty major operators need to make large investments in their wide-area networks, while broad eligibility for access to unlicensed spectrum fosters widespread contributions to innovation and investment in emerging technologies. Wi-Fi technology, for example, was created using unlicensed spectrum, and, within the United States alone, the economic benefits of unlicensed spectrum technology have reached $50 billion annually. The uses have been

especially complementary in the wireless broadband space, where the ability to offload data from cellular networks to Wi-Fi has already saved mobile network operators tens of billions of dollars in network deployment costs and expanded connectivity for consumers. Therefore, policy should support robust access to both licensed and unlicensed spectrum at a variety of high, medium, and low frequencies. Where underused spectrum cannot be cleared exclusively for broadband use, spectrum sharing should be a priority.

Helping Consumers Enjoy the Benefits of Gigabit Networks

Beyond making local environments more conducive to broadband infrastructure investment, we also need to invest in digital inclusion so that consumers who today have not adopted broadband have a better understanding of the value and relevance of high speed Internet access to their everyday lives.

About 30 percent of Americans still don't use the Internet at home, leaving them at a disadvantage when it comes to education, job opportunities, and social and civic engagement. Research by the Pew Internet Project has shown that, among adults who do not use the Internet, almost half say that the main reason they don't go online is because they don't think the Internet is relevant to them.

Unfortunately, while the effects of this digital divide are easy to see, the solutions are less obvious. This is a long-term, complex problem — and creating change requires time, a sustained commitment, and close collaboration with local partners who can make progress day by day.

While a broader effort is needed to bring all Americans online, Google Fiber has committed to help address digital inclusion and adoption with community partners and local leaders, following three guiding principles.

First, make the Internet more affordable. We want to help people who haven't had home Internet before get online for the first time. That's why we offer an affordable Basic Internet service. Anyone in a Fiber service area, regardless of income, can choose this package.

Just last week, in partnership with the ConnectHome initiative announced by President Obama and HUD Secretary Castro, we committed to bring our Google Fiber Internet service to residents in select affordable housing properties across all of our Fiber markets for $0/month and no installation fee. We are also partnering with community organizations on computer labs and digital literacy programming to bridge the digital divide for students and families in these communities. This pilot initiative brings together local governments, private industry, and nonprofit organizations to accelerate Internet adoption by children and families living in HUD-assisted housing. Our commitment was inspired by our partnership with the Housing Authority of the City of Austin (HACA), whose "Unlocking the Connection" program has already achieved a number of successful outcomes — both with respect to residents participating in digital literacy trainings, and signing up for Internet service.

Second, make access a part of the community. For many people, public computing centers and community organizations serve as the on-ramp to the Internet. One example of how Google Fiber has addressed this is our current Community Connections program, launched in our first few Fiber cities, where we are hooking up hundreds of neighborhood institutions so people in Google Fiber cities have a place where they can get access to gigabit speeds even if they do not yet have Internet at home.

Third, teach people how to get online — often referred to as "digital literacy." Even if access to the Internet is affordable, some people don't see the web as relevant to their lives, or they don't have the skills to use it. Working with partners, Google supports programs that help people learn how to do things like power on a computer, use a search engine, or open an email account. Earlier this summer we launched an

initiative called the Digital Inclusion Fellowship in partnership with the Nonprofit Technology Network (NTEN). The fellowship pairs 16 people with community organizations in our eight Google Fiber metro areas, where they'll spend a year creating programs that get more people connected to the web. For example, the Salt Lake Education Foundation's fellows will teach parents how to communicate with their children's teachers and access grades and attendance records online. Meanwhile, the Triangle Literacy Council's fellow is set to create a mobile computing lab, which will travel to libraries, community centers, jails, and schools to teach people basic online tasks like sending emails or finding health clinics.

We are making these investments in digital inclusion because our goal with Google Fiber is to make the Web faster, more affordable, more relevant, and more useful — for everyone. We are happy to be a part of catalyzing innovation and investment in the race to bring gigabit networks to communities around the country.

Conclusion

To sum up: to construct high-speed networks, broadband providers need access to existing utility infrastructure such as poles and conduits on a consistent, cost-effective, and timely basis. While the FCC has taken important steps to improve rules related to infrastructure access, our own experience in building new broadband networks demonstrates that more work needs to be done to reduce delays and barriers.

Moreover, "dig once" policies that further promote joint-trenching will continue to reduce barriers to accessing government rights-of-way for broadband providers.

With regard to video competition, owners of popular broadcast and cable content should need to justify alleged volume discounts based on actual costs, allowing for access to content on more reasonable terms by entities other than only the largest incumbents.

Finally, Federal agencies should pursue a balanced approach to spectrum reallocation that allows for licensed and unlicensed commercial uses at a variety of high, medium, and low frequencies. Federal agencies also should explore further opportunities for shared use of spectrum.

A successful policy agenda to increase broadband infrastructure investment and bandwidth abundance will benefit consumers, small businesses and the economy. I thank the Committee for the invitation to speak at this hearing and allowing me to provide recommendations on ways to reduce barriers, give Americans more choices at higher speeds, and help reach the goal of nationwide broadband abundance.

Mr. WALDEN. Thank you, Mr. Slinger. We appreciate your testimony.

And now we will go to final witness today, Deb Socia, Executive Director, Next Century Cities. We are delighted to have you here as well. Thank you, and please go ahead with your comments.

STATEMENT OF DEB SOCIA

Ms. SOCIA. Good afternoon. Thank you for holding this hearing on such an important topic.

My name is Deb Socia, and I am the Executive Director of Next Century Cities, a bipartisan city-to-city collaborative formed just last October. We have already grown to over 100 member cities, all of whom are dedicated to ensuring access to fast, affordable and reliable broadband.

High-speed access is essential to America's economic future. It is as simple as that. What can be complicated is making it happen on the ground. Cities face a range of technical, economic and political challenges including obstacles at the State and Federal levels. More and more, providing for this critical need has emerged as a core responsibility for local governments. Many cities and towns from around the country are taking diverse and creative steps to secure their Internet future.

When it comes to providing access to high-quality Internet, everyone has a role to play. It is an issue that spans political party, an issue that crosses the urban-rural divide, and an issue that relies on many sectors of our society.

There is no single pathway to next-generation broadband network, and several of the most innovative solutions have emerged in unexpected places. The small towns of Ammon, Idaho, and Mount Vernon, Washington, have each developed a gigabit open access network. These local governments are directly involved in building the physical infrastructure and then leasing access to competing private providers. Just outside of Baltimore, Westminster, Maryland, has initiated a public-private partnership with Ting, a provider of fiber Internet service, and with the introduction of Google Fiber in Kansas City, residents there can now experience giga-level speeds at an affordable rate. Cities like Lafayette, Louisiana, and Chattanooga, Tennessee, have built their own networks and now have some of the fastest, most globally competitive access available.

Next Century Cities is dedicated to helping all communities achieve high-quality access regardless of the path they choose to pursue. Our membership represents an inclusive cross-section of America from small, rural communities such as Winthrop, Minnesota, to large, urban areas like L.A. and Boston.

What unites these mayors is a commitment to the imperative of broadband access for continued growth and an understanding that local governments are best situated to understand and provide for the needs of their residents. It is an exciting time, a time for creative local solutions to usher in a new generation of innovation as the Internet continues to transform all aspects of society.

Next Century cities recently developed a policy agenda showing how mu stakeholders can help communities develop the crucial infrastructure needed today. Consistent with our mission, this new

resource provides guidance that will be useful to communities regardless of how they choose to pursue their broadband goals.

Part of the policy agenda looks at steps local and State government can use to ensure high-quality access. Locally, governments can institute "dig-once" policies that minimize disruption as well as take other steps to ensure their cities are fiber ready.

At the State level, the policy agenda addresses changes such as modernizing State regulations and making investments in the middle mile infrastructure. But we are here on Capitol Hill today, and I wanted to emphasize some recommendations we heard from mayors about steps the Federal Government could take to help empower local communities. First and foremost, Congress can encourage competitive local markets through national legislation and other avenues. In addition, you have the ability to provide a national platform for the issue of broadband as necessary infrastructure. Hearings such as this help to elevate this discussion and attract national attention to this critical issue.

And finally, the policy agenda discusses how Congress could better require information about available Internet access including speed of connection, price for consumers, and areas of operation for service providers.

As is clear from everything we have heard so far today, the need for fast, affordable and reliable broadband Internet access is undeniable. Innovative leaders in communities across the country recognize this urgent need and are developing the critical broadband infrastructure that will allow their residents and their cities to thrive. It is evident by the over 100 Next Century Cities I am speaking on behalf of today, communities that represent over 18 million Americans.

Thank you for providing this platform for communities to share their experiences and develop opportunities for collaboration with Federal policymakers. I look forward to working with members of this committee and your colleagues to ensure that communities across the country have the next-generation access that all Americans need and deserve.

Thank you.

[The prepared statement of Ms. Socia follows:]



Testimony of Deb Socia

Executive Director of Next Century Cities

Before the

Subcommittee on Communications and Technology

Energy and Commerce Committee

House of Representatives

on

"Promoting Broadband Infrastructure Investment"

July 22, 2015

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NEXT CENTURY CITIES | Connecting Communities

Good afternoon, members of the Subcommittee. My name is Deb Socia, and I am the Executive Director of Next Century Cities, a bipartisan city-to-city initiative with over 100 members dedicated to ensuring access to fast, affordable, and reliable broadband Internet for all.

High-speed Internet access is essential. It is as simple as that. What is genuinely complicated is making it happen at the ground level. Due to the lack of robust competition in this space, local governments around the country are taking proactive steps to ensure their communities have universal, fast, affordable, and reliable Internet access. Providing this critical need has emerged as a core responsibility of local governments, transcending traditional partisan divisions and requiring cooperation across the community. When it comes to providing access to high-quality Internet, everybody has a role to play.

Communities across the country – including the 103 members of Next Century Cities – have taken divergent approaches to bringing broadband Internet access to residents, from municipal networks to partnerships with private providers. These approaches and others, such as open access networks in which cities provide fiber infrastructure and lease access to competing independent providers, show that there are nearly as many successful models for communities to deploy, as there are communities in the country. Our organization is committed to helping all communities succeed in ensuring access to high-quality Internet, which is why we recently developed a comprehensive policy agenda that provides guidance to different stakeholder groups on how to contribute to making a community's broadband dreams reality.

Several of the most innovative and interesting solutions have emerged in unexpected places:

- The small towns of **Ammon, ID** and **Mount Vernon, WA** have each developed gigabit open access networks. In this innovative model, local governments are directly involved in building the physical fiber infrastructure and lease access to this network to private providers, who compete to provide low-cost, high-quality service to residents and businesses. In Mount Vernon, this network has revolutionized the community's healthcare system, creating a 'telehealth' system in which information can easily be shared across medical facilities, leading to more efficient services for patients.

- Outside of Baltimore, the town of **Westminster, MD** has initiated a new public-private partnership with Ting, a private provider of fiber Internet service. The recently-launched network will give this small community access to next-generation Internet.

- In the South, the cities of **Chattanooga, TN, Wilson, NC**, and **Lafayette, LA** have some of the fastest, globally competitive Internet access available.

- In Connecticut, a state-convened coalition of communities, with **New Haven, CT** at the forefront, is developing a unique regional approach to establishing broadband Internet access. The CTgig project, now featuring 46 partner towns representing half the state's population, has issued a joint Request for Qualifications that encourages private providers to work with the group to transform Connecticut into a gigabit state through public-private partnerships.

Next Century Cities is dedicated to helping all communities achieve access to high-quality Internet, regardless of the path they choose to pursue. Our organization's membership represents

an inclusive cross-section of America, from small rural communities such as **Winthrop, MN** to large metropolises such as **Los Angeles** and **Boston**, and from traditionally conservative communities such as **Lafayette, LA** to progressive cities such as **Boulder, CO**. What unites these communities is a commitment to the imperative of broadband Internet access for continued growth, and an understanding that local governments, freed from federal and state constraints, are best situated to provide for the needs of their residents.

To help advance these goals and support communities on the path to achieving fast, affordable, and reliable Internet access, Next Century Cities has developed a range of tools to empower local leaders and equip local governments with the knowledge needed to effectively develop this critical infrastructure. Some of our activities to provide a platform for city voices in this important conversation include:

- **NCC Launch Event:** in October, NCC launched with 32 inaugural members at an event held in Santa Monica, CA. The event featured keynote speakers and panels with mayors and city technologists from inaugural member cities, a welcome address from the FCC Chair, and attracted over 100 attendees.

- **Envisioning a Gigabit Future Field Hearing:** NCC partnered with the Southeast Tennessee Development District to produce "Envisioning a Gigabit Future," a field hearing held in Chattanooga, TN. At the event, municipal leaders spoke to the importance of broadband Internet access to community well-being.

- **US Conference of Mayors Panel:** NCC hosted a Best Practices panel at the US Conference of Mayors annual meeting, entitled "Building Out Broadband and Creating the Fiber Future." The panel was moderated by Chattanooga Mayor Andy Berke and featured other NCC mayors speaking to their colleagues nationwide about the need to build out high quality broadband and the benefits of NCC.

- **NCC Featured at Major Events:** NCC has also featured prominently with Deb Socia and Chris Mitchell speaking, moderating, or sitting on panels at other events hosted by third parties, including MountainConnect, Gigabit Cities Live, the Schools, Hospitals, and Libraries Broadband Coalition (SHLB) Conference, and the Coalition for Local Internet Choice (CLIC) Conference. NCC is also working with Broadband Communities on an upcoming event in Lexington this September.

- **Elevating City Voices:** NCC has also coordinated opportunities for city leaders to directly share their stories with a range of audiences. This includes assisting communities in telling their own stories and helping draw national and local press attention for their broadband efforts, and highlighting mayors through NCC-hosted events and other panels.

- **Member Letters to FCC:** NCC has supported member engagement with national-level policymakers, facilitating two open letters presented to the Federal Communications Commission.

In addition to providing support and opportunities for city leadership, our organization also assists cities in understanding and implementing best policies and practices to ensure successful

development of broadband projects. Some elements of our learning network, aimed at helping communities to improve broadband practice, include:

- **Members' Calls on Policy and Practice:** NCC hosts regular members' calls for its communities. Monthly calls focus on issues related to practice and implementation, such as 'dig once' policies and working with incumbents. Additional calls offer experts to discuss high-level policy topics, including discussions of proposed changes to the FCC's Lifeline program with a senior counselor at the Commission and a conversation between Next Century Cities members and representatives of the Broadband Opportunity Council.

- **Newsletters and Weekly Updates:** NCC issues a monthly newsletter and a short weekly email on broadband news, known as the "Weekly Download." Both serve to promote awareness of broadband issues and NCC's activities and events. In addition to informing our members, the NCC public monthly newsletter currently reaches over 600 subscribers.

- **Building Connections among Cities:** NCC staff also personally connect city leaders to help them strategize, discuss barriers and solutions, and share knowledge.

Recently, Next Century Cities released a comprehensive policy agenda identifying concrete steps that all broadband stakeholders—government officials, community members, and the "civil society" of nongovernmental organizations and institutions—can take to help achieve fast, reliable and affordable Internet access.

This new resource is intended to both guide broadband practice, and emphasize the importance of community leaders in ensuring access to high-quality broadband. Consistent with our mission,

this new resource provides guidance that will be useful to communities regardless of how they choose to pursue their broadband goals.

The resource seeks to provide guidance on appropriate actions that can be undertaken by five key stakeholder groups:

- **Local Government**
- **State Government**
- **Federal Government**
- **Philanthropy**
- **Community**

Our organization believes that local governments occupy a critical place in the direction and execution of broadband projects, and our policy agenda offers some specific guidance on how to effectively leverage this position. Examples of best practices include:

- **Encourage Knowledge Sharing:** communities across the country can learn a great deal from their peers in other states. Sharing experiences, lessons learned, and best practices among local leaders can improve the overall development of broadband Internet.

- **Improve Local Regulations:** local regulations can either impede broadband development by burdening private providers or promote investment by making the building of broadband as efficient as possible. Regulations that can be adjusted, streamlined, or improved include local permitting processes which govern access to local rights-of-way, building codes that allow communities to construct fiber-ready buildings, and 'dig once' policies which mandate that communities lay down fiber as part of other

infrastructure work. It is worth noting that when utility poles are privately owned, local governments have little power to compel owners to ease access to them.

- **Pursue Local Investment:** in many communities, community members have either built their own networks or partnered with an independent ISP to build new Internet infrastructure. The majority of communities have not used taxpayer dollars in these investments, though some have recently chosen to, not unlike they do in building roads or other essential infrastructure. . The policy agenda offers examples of investments communities can choose to undertake to foster broadband development, including entering into partnerships with private companies, building the physical infrastructure needed for gigabit Internet, and building and operating broadband networks.

State governments, too, have an important role to play in ensuring that all Americans have access to fast, affordable, and reliable broadband Internet. Some of our recommendations for state governments include:

- **Improve State Regulations:** community authority is a function of state regulations that can either empower local governments or restrict their ability to provide truly high-quality Internet access. Many state regulations currently burden communities by proscribing options for ensuring broadband access, which protects large providers from effective competition that can truly drive improved performance.

- **Invest in the 'Middle Mile':** while many communities have been able to improve 'last mile' service, which connects individual homes and businesses to the Internet, larger 'middle mile' infrastructure, which links communities together, can benefit from

resources and coordination at the state level. States are also frequently significant buyers of telecommunications services for their internal functions that they can often self-provision at lower cost and higher quality.

- **Create Representative Task Forces:** state task forces on internet performance and broadband access can be improved upon by better integrating representatives from local businesses and community members. More representative state-level task forces can help to particularly amplify the voices of local communities both urban and rural, for whom broadband Internet can play a critical role in community life.

The federal government can play a central role in helping to empower local communities across the country. Our policy agenda outlines a number of concrete actions that Congress, including Members of the Subcommittee, can undertake:

- **Provide a National Platform:** hearings such as this one help to elevate the broadband discussion and attract national attention to this critical component of continued growth for American communities.

- **Mandate National Data Collection:** currently, information about broadband Internet access – including speed of connection, price for consumers, and areas of operation for service providers – is either piecemeal, of questionable accuracy, or missing altogether. This represents a tremendous knowledge gap that hinders our ability to understand the most pressing challenges facing communities across the country – be it insufficient speeds, high prices, or a lack of competition and choice for consumers. Congress can address this need by requiring more robust data collection, particularly from the largest

providers. In our experience, smaller providers are more transparent with potential subscribers and require less oversight.

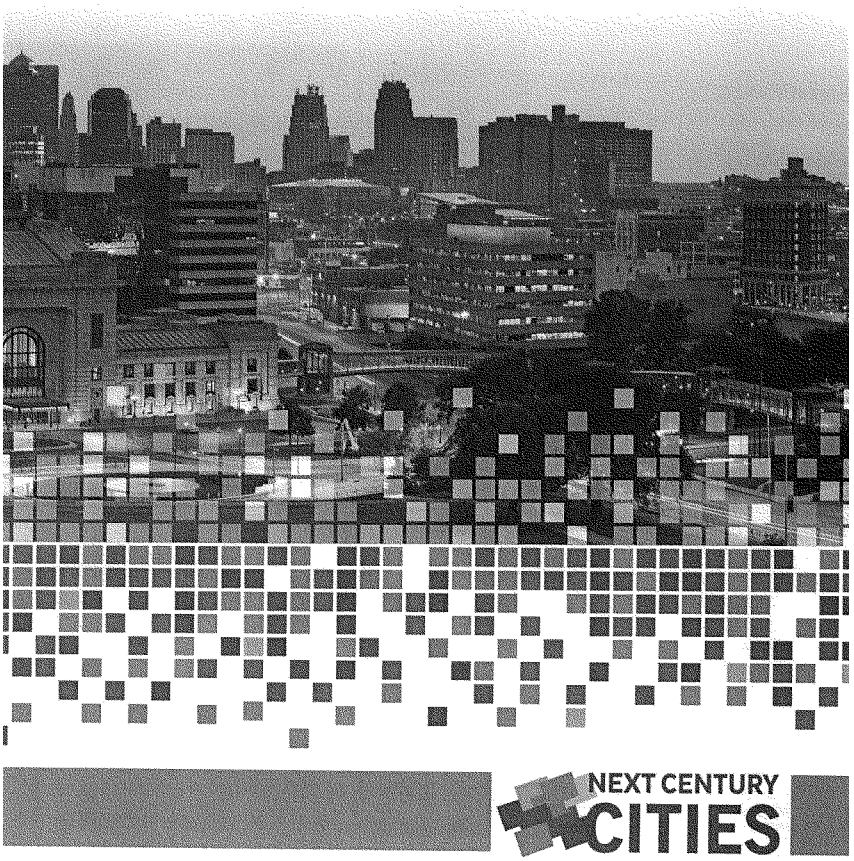
- **Encourage Competitive Local Markets:** our organization believes that competition among Internet service providers drives improved network performance and better outcomes for consumers. Congress can assist this aim through national legislation that would remove barriers to local Internet choice at the federal and state level.

Day by day, the need for access to fast, affordable, and reliable broadband Internet becomes more and more evident. Communities across the country are recognizing this urgent need and developing the critical broadband infrastructure their residents demand. I am encouraged that this Committee has chosen to hold this conversation today; as our policy agenda makes clear, the federal government can play a central role in assisting communities in the development of broadband infrastructure. Hearings such as today's can provide a critical platform for communities to share their experiences and develop opportunities for collaboration with federal policymakers.

I look forward to continuing to work with Members of the Committee and your colleagues to ensure that communities across the country can continue to enjoy world-class Internet. Thank you.

Connecting 21st Century Communities

A Policy Agenda for Broadband Stakeholders | July 2015



In the 21st century,

broadband Internet access has emerged as more than just an information superhighway—it has become critical infrastructure to connect citizens, businesses, and communities alike to new opportunities. Yet for too many communities, the promise of fast, affordable, and reliable Internet access remains unrealized.

That is why over 100 cities and towns have formed Next Century Cities, a nonpartisan, city-to-city collaborative. Next Century Cities (NCC) is dedicated to elevating the voices of communities in the broadband policy discussion and sharing resources and knowledge among members. Our members know that universal, high-speed Internet access is necessary infrastructure for their communities.

But communities face real hurdles in achieving universal, high speed access, and once that is achieved, taking full advantage of the promises of broadband Internet can be a daunting task. From bringing fiber connections to homes and business, to building 'middle mile' networks that serve as the backbone of the Internet, to bridging the 'digital divide' and ensuring access for advantaged and disadvantaged communities alike, communities are often left with no map to guide their way and no real sense of how they can leverage all levels of government and civil society to support their efforts.

This Policy Agenda offers policies that will move communities in the direction of fast, affordable, and reliable Internet access available to all. Expanding high quality Internet access in a community, whether large or small, can yield a multitude of benefits for residents – from improved health services, to new opportunities for small businesses, to higher property values, to a stronger local economy.

High-quality Internet access is not only necessary infrastructure for the 21st century, but the collaborative process of expanding that access itself has civic benefits. Whether communities choose to work with independent service providers or build and/or operate their own network, government and civil society can play a critical role in assisting the larger push for broadband access. Creating a diverse group of stakeholders to guide the development of broadband infrastructure ensures an end result that serves all citizens of a town or city.

Key stakeholder groups addressed in the NCC Policy Agenda include:

- **Local Government**
- **State Government**
- **Federal Government**
- **Philanthropy**
- **Community**

The development of fast, affordable, and reliable broadband Internet for communities often requires a wide range of stakeholders contributing in a variety of ways, from providing a broadband friendly regulatory climate, to demonstrating the value of networks, to empowering key voices. NCC's Policy Agenda identifies the roles each ally can play to develop broadband at each level of government, offers guidance on how policymakers and community members can fulfill these roles with examples of what's working, and proposes concrete actions government and civil society can take to lay the groundwork for a broadband-ready future.

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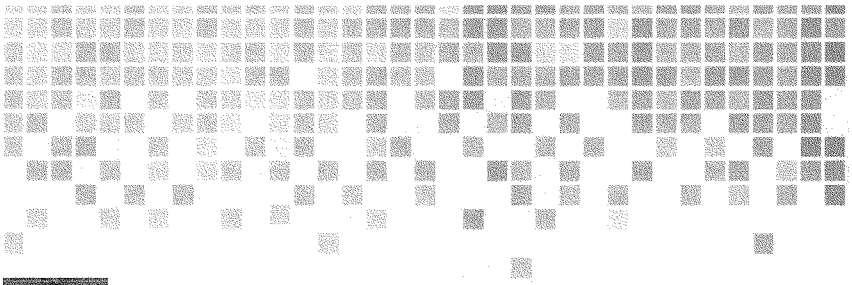
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Local Government

Local governments occupy a critical role in the success of broadband projects and are ideally equipped to identify and address a community's specific Internet access needs. Local governments are better equipped than any other level of government to decide if the community is well served and the needs of residents, businesses, and anchor institutions are being met.

They are also best poised to understand the challenges and assets present in the community that will impact the success of any project. Some policies for effective local government engagement include:

Lay the Groundwork through Municipal Codes

Local policies can have a direct impact on how many Internet providers can operate in a community. For instance, requiring every provider to bury fiber to connect their subscribers reduces the number of service providers able to compete. That is why many communities have created "dig once" policies to ensure conduit and fiber are available for lease on reasonable terms. A number of local governments have revised their permitting requirements to lessen the burden on ISPs. However, simply taking these actions has little impact without a committed partner willing to invest. Areas that municipalities can address include:

- **Dig once for efficient building**

  This is a collection of approaches that collectively aim to get conduit, fiber, and other assets, placed at a very low cost as part of other projects. For instance, installing conduit underground as part of a sewer main replacement—or requiring that a new housing development include multi-channel conduit when it is being built (at a tiny fraction of the cost it would take to add after the streets are paved). The conduit and fiber may later be used by the local government or leased to other providers. Over a period of ten years or more, this policy could result in fiber throughout the majority of a community.

  Example: Without increasing its internal spending on telecommunications, Santa Monica has seized many opportunities to lay fiber throughout the community to meet its internal needs while also connecting businesses and residents. For example, it laid extra fiber when connecting traffic signals with a grant to mitigate traffic congestion. The cost of the extra fiber was quite small but creates many opportunities for community benefits. The network has not only saved millions, it is generating millions of dollars for the city. [http://www.ilsr.org/santa-monica-city-net/]

  Additional Example: In Minnesota, Dakota County has saved many millions of dollars to date by laying fiber as part of other capital projects and ensuring local governments work together in planning and executing projects in the rights-of-way. [http://www.ilsr.org/all-hands-on-deck-mn/]

  Additional Information: http://nextcenturycities.org/resources/#digonce

▸ **Creating broadband-ready buildings**

New providers may find it all but impossible to serve potential subscribers in existing multi-tenant residential and commercial buildings. Requiring buildings to have wiring or ducts that facilitate multiple providers can go a long way toward facilitating more investment in higher quality networks.

Example: Loma Linda, CA requires new buildings and retrofits that touch more than 50% of existing buildings to be fiber-ready and able to connect to the municipal network. Local governments could require buildings to have internal neutral wiring that any carrier could use from a demarcation point within or near the building.
[http://lomalinda-ca.gov/asp/Site/LLCCP/AboutLLCCP/TheLLCCPStandard/index.asp]

▸ **Permitting and rights of way management**

Local governments should make permitting as easy as possible for building these essential networks. By streamlining permit processes, local governments can not only reduce the cost of a potential deployment but also ensure a network owner will begin to collect revenue more rapidly, both of which make a community a much better prospect for investment (whether external or internal). Note that in many cases, local governments do not own the utility poles. Without owning the poles, there is little a local government can do to force a pole owner (often the incumbent telephone company) to "play nice" with a planned network.

Example: "One Stop Road Permit Shop" from Dakota County saves an estimated $400,000 annually for the county and partner municipalities. More importantly, it has greatly simplified the permitting process for the public and private sectors alike.
[Podcast and transcript: http://www.muninetworks.org/content/dakota-county-fiber-rich-thanks-dig-once-approach-community-broadband-bits-podcast-117]

Additional Information: CTC Technology & Energy Consulting report: Technical Strategies for Facilitating Public or Private Broadband Construction in Your Community.
[http://www.ctcnet.us/publications/gigabit-communities-technical-strategies-for-facilitating-public-or-private-broadband-construction-in-your-community-3/]

Approach Broadband Internet Access as Infrastructure Investment

Local governments play a critical role in existing infrastructure projects such as roads and electrical grids—and broadband networks are no exception. Several types of infrastructure investments can assist in providing high-speed broadband to all residents:

▸ **Connecting government offices and anchor institutions with institutional fiber networks**

Though many local governments and anchor institutions like schools lease services from an independent provider, many hundreds of local governments have decided to own and/or operate their own network serving only public facilities. In other cases, school districts have begun to build their own fiber network or lease dark fiber to operate their own internal network. They have found that self-provisioning can ensure higher reliability, greater capacity, and more flexibility, all at a lower total cost than other solutions. This approach results in greater efficiency and can create the expertise needed to later begin offering services to businesses and/or residents if necessary.

Example: Santa Monica began its City Net by taking charge of its internal needs. Re-directing funds it had previously spent on leased lines from the incumbent telephone company, it built a network connecting anchor institutions. The city has continued to reinvest its savings into expanding the network, which now creates millions in revenues.
[http://www.ilsr.org/santa-monica-city-net/]

Additional Example: In Washington DC, the city's DC-Net has saved community anchors tens of millions of dollars. This is one example among many in NATOA's Comments on "Cost Estimates for Connecting Anchor Institutions to Fiber" [https://www.natoa.org/documents/NATOA%20Comments%20on%20NBP%20Public%20Notice%20%23%2012.pdf] DC-Net saved a federal agency nearly $10 million over just six years. [http://dcnet.dc.gov/sites/default/files/dc/sites/dcnet/publication/attachments/OPM_Case_Study_2012.pdf]

Additional Examples: Boston, Portland's IRNE, Dakota County in Minnesota

Providing the building blocks for broadband

One of the most basic things a local government can do is to create assets that will lower the cost of deploying a network. This can be part of the dig once policies discussed above or include extra assets created as part of building an institutional network. Such assets may include conduit, fiber optic cables, and space on towers or other facilities allowing wireless attachments. This infrastructure is often called passive because the city simply has to create physical things but generally does not have to actively operate them; independent service providers will lease these spaces or facilities to offer their own services.

Example: The city of Ammon, Idaho, has constructed a dark fiber network in some areas of town that it leases to firms that want to offer services to nearby businesses and residents. Ammon is not offering any services itself to businesses or residents; instead its fiber lowers the capital cost that independent providers would need to spend to serve the community.

Additional Example: Stockholm has become one of the most connected cities in the world (both wired and wireless) due to its massive dark fiber network. [https://www.stokab.se/Documents/Stockholms%20Stokab%20-%20A%20Blueprint%20for%20Ubiquitous%20Fiber%20Connectivity%20FINAL%20VERSION.pdf]

Additional Examples: Mesa, Arizona; Palo Alto, California; Lakeland, Florida

Serving citizens with a public network

Some of the best places in the United States to get Internet access are communities where local governments directly provide the service. In most of these approaches, the local government offers the triple play of telephone, Internet access, and cable television in competition with national cable and telephone companies. Offering the three services has been seen as the safest way to ensure the private investors that financed each project would be repaid because these communities have often chosen not to use taxpayer dollars to finance the network. Most of these communities have built their network via an already-existing municipal electrical company. However, communities without public power are recently getting more involved in this approach.

Example: Chattanooga, Wilson North Carolina, and Lafayette are three of the most well-known citywide municipal fiber networks. Each community has long had a public power provider that now runs the fiber network as well.

Additional Example: Sandy, Oregon, which has no electrical utility began building a wireless ISP in the early 2000's and has recently completed its citywide gigabit fiber network. Approximately half of all residents have already subscribed to it.

Additional Information: See MuniNetworks.org/CommunityMap

Teaming up with private partners

Some local governments have chosen to expand services with a partnership, where the risks and rewards are shared in some way between the local government and a trusted partner. In this case, the local government often focuses on core infrastructure or funding while relying on its partner to provide the services, which tend to evolve more rapidly and

require more marketing savvy. This is an area with a lot of active interest and new models but only a few long-standing examples.

Example: Though Westminster, a small community in rural Maryland, knew it wanted to dramatically improve the level of Internet access in the community, it also knew that it wanted an experienced partner to offer services to residents and businesses. The city began working with Ting, a recent entrant to fiber services after developing a very good reputation in mobile wireless services. Ting and Westminster both share the risk and rewards of the fiber network, which the City owns.

Additional Example: The cities of Urbana and Champaign in Illinois have partnered with a local company, iTV-3, to expand existing municipal fiber to connect residents and businesses across both communities [http://uc2b.net/faq/]

Additional Examples: Indianola, Iowa; Princeton, Illinois

Peer-to-Peer Exchange of Success and Best Practices

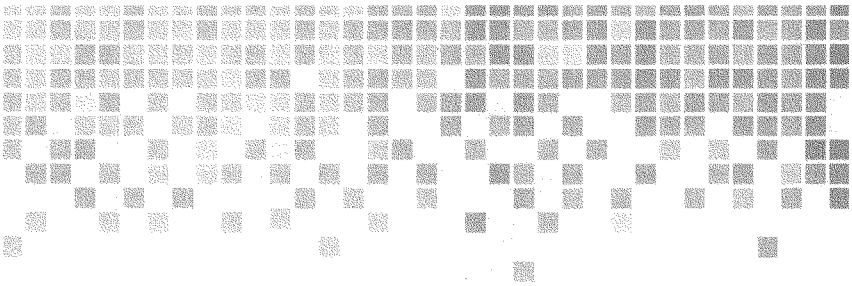
Communities can help their peers across the country by creating channels to share best practices and lessons learned from their own broadband projects. This knowledge sharing can occur through institutionalized and informal forums alike. Many local governments have made it a priority to share their knowledge, whether by presenting at conferences, joining Next Century Cities, doing interviews on Gigabit Nation or the Community Broadband Bits podcast, or even simply writing articles to explain what they did and why. These lessons are very important to inform other local governments because local governments have more challenges and different assets than the typical small ISP building a fiber network. If local governments do not share their experiences, others will have to reinvent the wheel.

Examples: Cities that have joined Next Century Cities; ILSR podcast interviews and case studies; stories in Broadband Communities magazine.

Collect Data to Prove the Case

Data about broadband networks and their impacts can provide a powerful tool for advocates in other communities seeking similar infrastructure. Local governments are ideally positioned to gather important information that can be used to demonstrate the positive impacts of ubiquitous broadband access. Whereas private sector companies are most focused on maximizing revenue, local governments should be focused on ensuring businesses and residents can maximize the benefits of connectivity.

Examples: Municipal electric utilities publishing savings and benefits of smart grid approaches; Local governments can work with a firm like SNG to survey businesses before and after receiving high quality Internet access to gauge impacts.



State Government

State governments can play a critical role in facilitating and empowering community-led broadband initiatives. Effective leadership at the state level can:

Empower Communities through Resources

Through funding initiatives, state governments can play a critical role in assisting community-led efforts. For instance, state governments can create grant and/or loan approaches to encourage projects. Minnesota spent $20 million on grants for 19 projects to expand Internet access in the most rural areas. New York has established a $500 million fund for matching grants to build high capacity networks. States may also establish an effort to aid local governments in accessing capital markets by combining multiple offerings into one and offering a backstop to ensure a low interest rate. States should be aware that a requirement for a network to serve only underserved or unserved populations makes long term financial sustainability questionable. Allowing networks serving largely unserved or underserved areas to overlap some areas with existing service may be preferable.

Example: The Massachusetts Broadband Institute built a middle mile network around the state and is currently granting $40 million to subsidize the capital cost of publicly owned last mile networks in rural western Mass.
[http://broadband.masstech.org/sites/mbi/files/documents/building-the-network/mbi-boadband-last-mile-project-guide-4-1-2015-final.pdf]

Additional Examples: Minnesota established its one time $20 million Border-to-Border Broadband Fund in 2014 [http://mn.gov/deed/programs-services/broadband/grant-program/]; Virginia Resources Authority (VRA) has some capacity to help rural communities expand Internet access: [http://www.ilsr.org/rule/2887-2/]

Convene Partners

State governments can bring together stakeholders and communities from across the state to discuss the importance of broadband and share best practices to facilitate further network development. These are key opportunities to shine a light on successful examples that others may not be aware of and can help attract press attention on those that are leading by example. States must be careful not to be captured by incumbent interests that may want to restrict the types of approaches available.

Example: Working with the state Office of Consumer Counsel, the cities of New Haven, Stamford, and West Hartford issued an RFQ for entities that would work with them for a universal open access fiber network.

[http://www.ct.gov/broadband/site/default.asp, http://ct-n.com/ondemand.asp?ID=11499]

Modernize State-Level Regulations

State policies may enable or disable different approaches. For instance, approximately 20 states have limited local government capacity to invest in one or more approaches or partnerships. States should remove any barriers to local choice—communities will have to take responsibility for the consequences of any action or inaction. Some have justified the state preempting local authority as a measure to protect taxpayers. To date, we are unaware of a single instance where a state had to deal with any debt created by a community network. For states where authority is unclear, the state should make it clear that local governments have the authority to build or partner for new networks.

Information: The Baller Herbst Stokes & Lide law firm maintains a library of resources on state barriers [http://www.baller.com/category/community-broadband/federal-state-developments/]

Additional Information: The Coalition for Local Internet Choice (CLIC) is a national coalition of businesses, organizations, and individuals that believes decisions about improving broadband internet access should be made locally and not preempted by states or federal policy. [http://www.localnetchoice.org/]

Create Representative Task Forces

Task forces or committees focused on Internet access have been created in many states but have not often resulted in substantive new investment or changes to the status quo. States that have task forces should consider increasing representation from local businesses, residents, and local governments to ensure incumbent voices do not dominate the agenda. Particularly in rural areas, the voices of cooperatives and other locally rooted entities should be elevated rather than those of service providers that are not locally based.

Example: Minnesota established an "Ultra High-Speed Broadband" task force in 2008. The group decided on official goals for broadband in the state by 2015, which has emboldened broadband expansion advocates to demand better policies because the state has not achieved its goals. A key lesson was the importance of the Task Force traveling around the state to have local hearings, giving residents, businesses, and organizations an opportunity to speak.
[Final report: http://minnesota.publicradio.org/features/2009/11/documents/Final-BB-Report.pdf]

Build Out the Middle Mile

Ensuring that communities have robust backhaul to connect to the rest of the Internet is important for financially-viable business plans for next-generation networks. Many states have regions where one or a small number of ISPs dominate the backhaul market. Building middle mile connections, most notably open access approaches that ensure multiple providers can use the infrastructure, will allow ISPs (particularly small private and community networks) to offer higher capacity connections at reasonable prices. And when built with modern technology, this approach may allow ISPs to offer their services anywhere the middle mile can connect them to open last mile networks. States already have internal needs that reach across the states but most lease lines from an incumbent provider like the telephone company. Replacing leased lines with state-owned fiber (the need for which will only increase) and adding extra capacity to lease to others may even be less expensive than continuing to lease lines from incumbent providers. Adding new fiber will result in more resiliency because a single fiber cut will not strand an area served by multiple options. Some of this investment may also be accomplished with a statewide "dig once" approach over time.

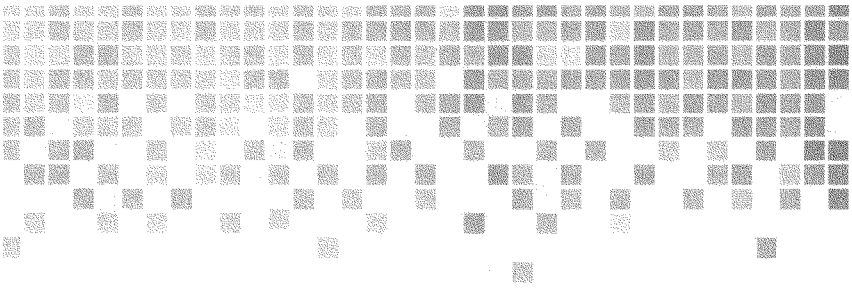
Example: Kentucky is currently negotiating a contract with Macquarie to build an open access middle mile network across the state. This approach has the potential to dramatically lower the cost of Internet transit (fees to access the rest of the Internet) in small ISPs around the state.

Additional Examples: Many of the broadband stimulus projects, like Maine's Three Ring Binder, have built regional networks along these lines.

Elevate the Issue and Stakes

Elected officials, from the Governor to State Legislators can use their positions to call for local choice and block any actions by incumbents to use their power to restrict competition in the telecommunications market. Speaking out in favor of smart local approaches will result in more attention and media coverage, which will inspire other communities to work toward better Internet access.

Example: Janice Bowling is a state Senator in Tennessee that has led an effort to remove barriers in state law that limit the ability of existing municipal fiber networks to serve their neighbors.
[http://nextcenturycities.org/2014/11/19/watch-envisioning-a-gigabit-future/]



Federal Government

Even the federal government has a role to play in ensuring the success of local broadband projects. The federal government was essential in ensuring all Americans were connected to the electrical grid, which it accomplished by encouraging investments by municipalities, cooperatives, and the private sector. This lesson is directly applicable to efforts to connect everyone with high quality Internet access. The federal government can:

Protect Market Competition through Antitrust and Antimonopoly Action

The federal government has the authority to prevent market consolidation and mergers that are not in the public interest. In recent years, the Department of Justice and Federal Communications Commission have stopped mergers between AT&T/T-Mobile and Comcast/Time Warner Cable. Both would have allowed firms that already have significant market power to substantially increase it, which would harm competition and economic outcomes throughout society. However, even as presently constituted, the large cable companies have the power to engage in predatory pricing to thwart competition (as well as engage in a variety of other anti-competitive tactics). The federal government should take a stronger role in limiting the power of the largest firms to ensure small firms are able to enter the market and compete.

Example: After the city of Monticello, Minnesota, built a municipal fiber network to improve Internet access in the community, Charter lowered its rates well below its own cost to drive out the new competition. [http://arstechnica.com/tech-policy/2012/03/predator-or-prey-charter-cuts-internet-prices-to-compete-with-city-owned-network/]

Additional Example: Senator John McCain has introduced legislation to reduce the power of the largest firms controlling television channels. The current cable television market structure gives many advantages to the biggest firms while penalizing the smallest, which harms prospects for competition. Senator McCain's bill would give consumers more options. [http://www.mccain.senate.gov/public/index.cfm/press-releases?ID=8a5d2818-ac05-71a2-5eae-5b58400e0019]

Additional Examples: Podcasts discussing telecommunications and antitrust: Community Broadband Bits 148 [http://www.muninetworks.org/content/comcast-merger-wrap-and-anti-monopoly-policy-community-broadband-bits-episode-148] and 83 [http://www.muninetworks.org/content/real-threats-monopoly-community-broadband-bits-podcast-83]

Remove Barriers and Break Down Silos

In some cases, the federal government can act as a bulwark against state barriers regarding broadband infrastructure projects. By exercising preemptive powers, federal policymakers can remove barriers to broadband deployment, as well as break down bureaucratic silos. For instance, one agency may refuse to allow grants for one kind of infrastructure to be used for multiple purposes, meaning that conduit for traffic signaling may not be used to

improve Internet access for businesses or anchor institutions. Though these rules may make sense narrowly in the silo, they raise the cost of investment in needed infrastructure when viewed more holistically. The executive branch should review such rules to lower the cost of infrastructure investment and remove any uncertainty in how valuable assets may be used.

Example: The FCC has used its authority to remove barriers in North Carolina and Tennessee that limited local authority to build or expand fiber networks to themselves or nearby communities.
[http://www.bailer.com/2015/03/fcc-memorandum-opinion-and-order-granting-wilson-n-c-and-chattanooga-cpb-preemption-petitions-march-12-2015/]

Additional Examples: Local governments in Colorado and Florida have been either discouraged or prohibited from using conduit and fiber built in part with transit grants for other purposes, such as economic development. Conduit should be used widely, not dedicated for only one type of telecommunications service.

Strengthen the Case through Nationwide Data Collection

Collecting higher-quality data at the national level can help inform decisions made in communities across the country, providing a wealth of information about approaches and tools to meet unique needs. Current data collection is insufficient, leading to numerous examples of people buying homes after being promised they have broadband Internet access, only to find out they did not [http://consumerist.com/2015/03/25/new-homeowner-has-to-sell-house-because-of-comcasts-incompetence-lack-of-competition/]. In collecting this data, agencies should develop reasonable processes for small ISPs, recognizing that they are often already more responsive at the local level than the largest ISPs (which have more capacity to comply with data disclosure requirements though are also more reluctant to share their data publicly). Federal agencies can assist this goal by collecting accurate data with regard to

- Adoption
- Service availability (actual connection rates, not just advertised)
- Cost over time
- Low-income digital inclusion programs

Examples: The National Broadband Plan called on FCC to improve data collection [http://www.broadband.gov/plan/17-implementation-and-benchmarks/#r17-2]

Additional Information: The Government Accountability Office has recommend the FCC improve its data collection practices [http://www.gao.gov/products/GAO-10-249]

Fill the Funding Gaps

Funding for broadband infrastructure is often difficult to find - despite its critical importance to a thriving future. The federal government can assist communities through grant and loan opportunities. Rural electrification depended on the federal government loaning funds to newly created rural cooperatives. The history of success of municipal and cooperative approaches in providing infrastructure to rural America suggests that these efforts should be prioritized for grant/loan funding. Grants and/or loans should cover for capital costs that accompany a financially sustainable plan without future federal subsidies. The federal government should ensure paperwork requirements are more suited to small, rural operations than large firms that retain many lawyers.

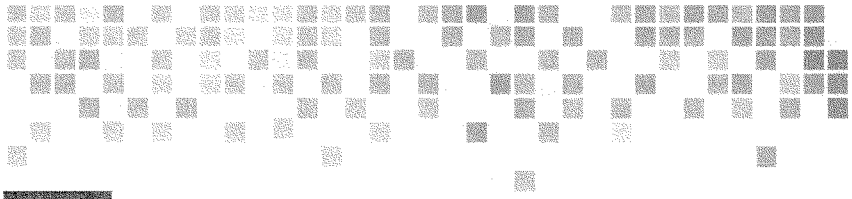
Example: Originally called the Rural Electrification Administration, now Rural Utilities Service, this branch of the US Department of Agriculture has long provided loans and support to cooperatives and entities deploying telecommunications in rural areas.

Additional Examples: The NTIA and USDA both ran broadband stimulus programs (BTOP and BIP) that resulted in significant investment, particularly in middle mile connections, across the United States. [http://www2.ntia.doc.gov/awards, http://www.rd.usda.gov/programs-services/farm-bill-broadband-loans-loan-guarantees]

Use the National Platform

Much like the state bully pulpit, only bigger. National elected leaders are powerful actors in any policy debate. National officials can influence policymakers at the state and local level by taking a stand for local Internet choice and improved access while highlighting good examples that should be emulated.

Examples: President Obama spoke in Cedar Falls on January 14, 2015, to announce his support for municipal broadband networks. [https://www.whitehouse.gov/the-press-office/2015/01/14/remarks-president-promoting-community-broadband]; FCC Chairman Wheeler spoke at the Broadband Communities Summit in Austin Texas, on April 14,2015. [https://www.fcc.gov/document/chairman-wheeler-broadband-communities-summit-austin-tx]



Philanthropy

Philanthropic partners can be critical advocates for successful broadband projects, offering communities a number of tools to facilitate the development of fast, affordable, and reliable Internet in a community. In many cases, philanthropies have begun to engage productively in developing broadband networks, with room to further expand these efforts. Some of these activities include:

Support Advocacy

Philanthropic support has been crucial in helping to establish key advocacy groups for broadband. With funding from large foundations, organizations such as Next Century Cities are able to develop an effective platform for engaging key stakeholders and decision-makers in the larger broadband policy debate.

Example: Thanks to generous philanthropic support, Next Century Cities is able to provide a platform for city leaders to share their experiences and voices in the national broadband discussion [www.nextcenturycities.org]. Similarly, the Institute for Local Self-Reliance (ILSR) advocates on behalf of local autonomy regarding a number of vital issues, including community broadband [www.ilsr.org, www.muninetworks.org].

Fund High-Impact Research

Knowledge production and dissemination helps bolster community campaigns for broadband Internet, providing both a sense of current gaps and suggesting possible solutions and benefits. Funding from philanthropic organizations can support high-quality research.

Example: The Open Technology Institute (OTI) at New America conducts high-quality research into the state of broadband Internet, including deployment models and cost information [www.newamerica.org/oti/]. Harvard's Berkman Center is another example [cyber.law.harvard.edu].

Create Forums for Knowledge-Sharing

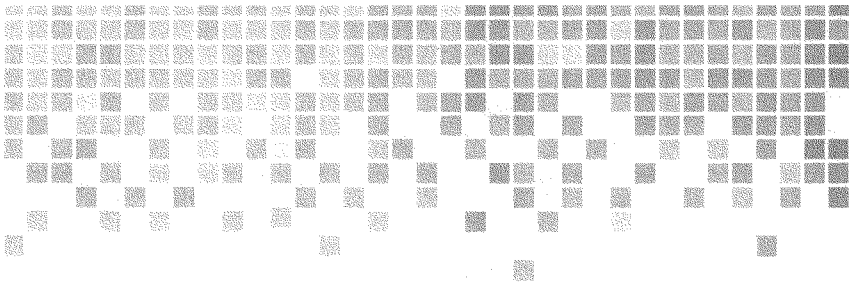
Communities and stakeholder groups often learn best when they share experiences with one another. Mutual learning forums, supported by philanthropies and foundations, can be an effective tool for advancing access to fast, affordable, and reliable broadband Internet.

Example: The Coalition for Local Internet Choice (CLIC) brings together broadband experts and administrators to share best practices and develop strategies to uphold local choice for communities [www.localnetchoice.org].

Improve Civil Society and Empower Communities	Other philanthropy-supported groups work in the community at large to ensure that all members of a given town or city can reap the benefits of broadband Internet. ***Example:*** KC Digital Drive works in the Google Fiber-connected city of Kansas City to help residents take full advantage of their gigabit connection. Efforts of the organization include developing gigabit apps, using broadband Internet to drive economic development, and bridging the digital divide [www.kcdigitaldrive.org].

Other avenues for philanthropic engagement remain largely untapped, though they offer significant benefits to broadband deployment projects. Some of these new programs include:

Work Collectively with Peer Funders	By collaborating among partner and peer organizations, philanthropic funders can amplify the impact of individual investments and develop a shared broadband strategy. ***Example:*** In February of 2015, the presidents of the Ford, Macarthur, Open Society, Mozilla, and Knight Foundations, along with partners from private industry and government, launched the Netgain Challenge to identify areas for effective collaboration to address key issues in technology [http://netgainchallenge.org/].
Leverage Community Foundation Assets	While smaller than major philanthropies, community foundations possess valuable local knowledge that can effectively direct resources to important players in local broadband Internet projects.
Support Core Costs through Funding and Investment	Philanthropies can draw upon significant funds to assist in broadband projects. Supporting broadband can include large-scale program-related investments (PRIs) and instruments such as social impact bonds to support capital costs. Some of the challenges with connecting low-income populations are one-time capital expenditures that may be smart investments if a local service provider is willing to partner and ensure services are then available. Smaller-scale investments include matching funding to support feasibility studies. When assisting in feasibility studies, care should be taken not to establish a pipeline of the same consultants/vendors/etc for every community in the program. Communities have a variety of needs that may be better suited to some consultants and vendors than others. ***Example:*** Blandin Foundation Matching Feasibility Cost Studies



Community

Successful broadband projects need engagement from all members of the community to maximize the social benefits of the network. This includes involvement from the private sector, key pillars of civil society, and individual citizens. Some tools for effective community engagement might include:

Engage with Anchor Institutions

Organizations such as libraries, schools, and communities of faith often play a critical role in community projects. Identifying and engaging respected leaders of these anchor institutions can help solidify social and political support for broadband projects. These institutions are already hubs of information for many in the community and may already be serving a substantial portion of the people that lack access at home or are in need of digital literacy training.

Example: The Schools, Health & Libraries Broadband Coalition, or SHLB, works to support projects connecting key anchor institutions to broadband networks. [www.shlb.org]

Additional Example: The City of Austin's digital inclusion plan actively incorporates representatives from key anchor institutions, with the steering committee including representatives from the city's libraries and housing authority.

Educate the Community

High-quality Internet access creates a tremendous variety of indirect benefits for the community including enhanced educational opportunities, avenues for civic growth and participation, improved healthcare outcomes, and even higher property values relative to areas without high-quality Internet access. However, these benefits are accrued generally by the community rather than specifically by the network owner, not unlike the benefits from roads. Roads themselves have tremendous maintenance costs but they enable commerce and travel, which is why building and maintaining streets is an important function of government. The many indirect benefits from improved Internet access are not immediately apparent without an effort to engage and educate the community.

Example: WiredScore is a project that started within the New York City Economic Development Corporation. It rates buildings based on a number of broadband metrics to ensure potential buyers and renters have the information necessary to properly value real estate. [WiredScore.com, www.greenbuildingsnyc.com/2013/10/05/city-rolls-out-leed-for-broadband-certification-program-for-nyc-office-buildings/]

Additional Information: The Fiber-to-the-Home Council and Broadband Communities magazine have produced a Fiber-to-the-Home Primer [www.bbpmag.com/FTTHprimer/]

Lift Up Citizen Voices

Citizen testimonials about broadband offer a useful tool for advocates. By putting a human face to these technological issues, citizen-centered media campaigns can help to garner further community support.

Examples: The nonprofit Charlotte Hearts Gigabit has played an important role in helping make Charlotte's broadband ambitions come to fruition. A grassroots effort led by Charlotte citizens, Charlotte Hearts Gigabit has hosted public events in which members testify to the importance of fast, affordable, and reliable broadband Internet in their daily lives. [www.charlotteheartsgigabit.com]

Additional Information: Next Century Cities 'telling your story' toolkit [www.nextcenturycities.org/resources/#tellingyourstory]

Engage the Whole Community, and Be Honest about Access

Successful broadband efforts require input from all segments of the community. Advocates should seek to engage less-advantaged communities, while recognizing existing gaps in access to fast, affordable, and reliable Internet.

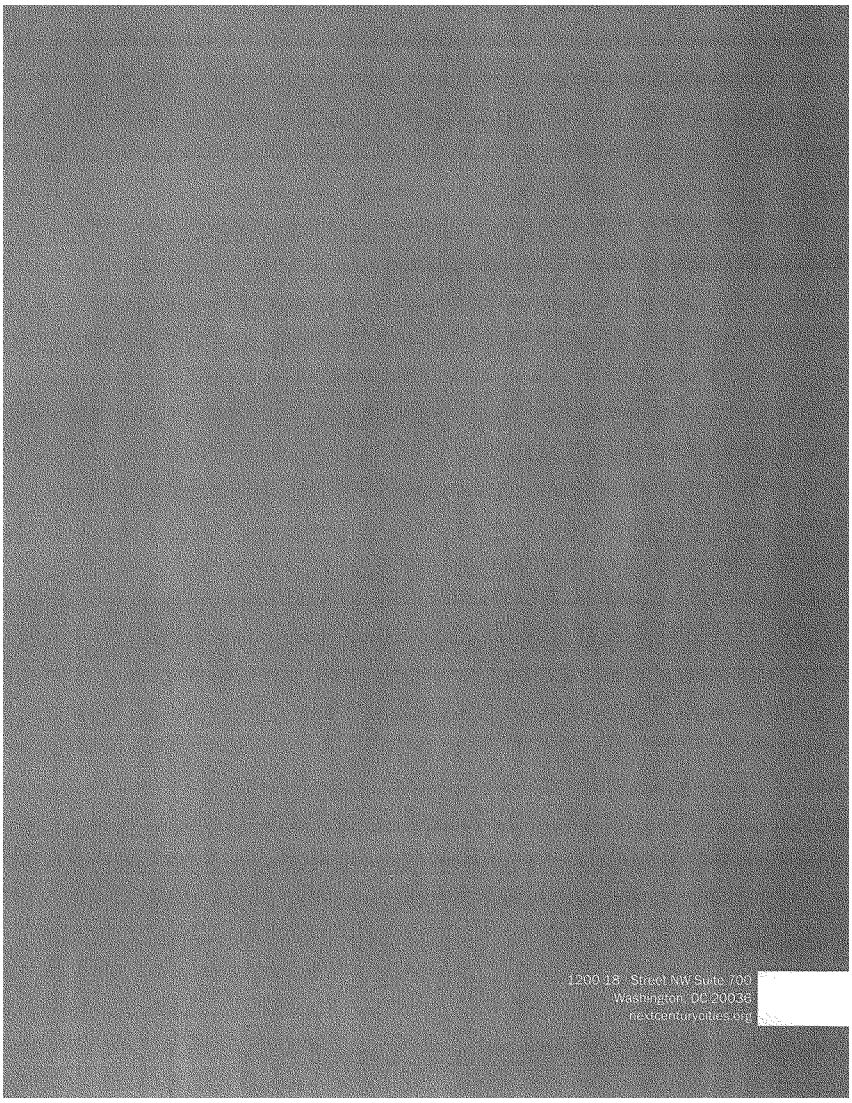
Example: In Chattanooga, The Enterprise Center works across the community to engage constituencies in the mission of making the city a hub for innovation. The organization works alongside small business and anchor institutions to improve broadband in the city, and recently launched a Tech Goes Home CHA initiative to pilot digital inclusion projects in Chattanooga.
[http://www.theenterprisectr.org/]

Additonal Example: KC Digital Drive [http://www.kcdigitaldrive.org/]

▸ **Organizing neighborhood conversations**

Conversation among residents of a community can help to galvanize support for broadband infrastructure and serve to educate community members about the importance and potential of high-speed Internet. Community members are encouraged to talk to their friends and neighbors about the need for fast, affordable, and reliable Internet.

Example: To amplify its advocacy efforts on behalf of several Internet policy issues, the Electronic Frontier Foundation (EFF) has helped to organize citizens in San Francisco and across the country, facilitating public discussions on issues such as privacy rights and net neutrality.
[https://www.eff.org/deeplinks/2014/11/rain-or-shine-bay-area-internet-users-take-net-neutrality-fight-city-hall]


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Mr. WALDEN. Ms. Socia, thank you very much for your testimony and your insights.

I will start off with questions.

Mr. Adelstein, as you probably know, the Middle Class Tax Relief and Job Creation Act directed the GSA—Government Service Agency—to develop a master contract to simplify the placement of wireless antennas on Federal buildings and other property. Last year, the Administrator of the GSA told Congress that the master contract was complete and available for use by executive landholding agencies. In your opinion, do you believe the GSA—General Services Administration—has done everything in its power to give life to the siting directives embodied in section 6409, which you referenced in your testimony, of the Middle Class Tax Relief Act? Have they done everything they can?

Mr. ADELSTEIN. Mr. Chairman, I do not believe they have. As a matter of fact, I am the former Administrator myself of a Federal agency, and if I had implemented something so poorly that Congress instructed me to do, I would be embarrassed, frankly. And it is worse than that because the Executive Branch as well ordered them. There is an Executive Order by the President of the United States directing GSA to move faster to try to get these master contracts together, and to date, nothing has been done, 3 years after Congress enacted this legislation. Progress has been slow. GSA hasn't been proactive. The law required standard rates, common forms and applications to provide clarity to agencies in the wireless industry, and I think our members now are having to negotiate for each and every site individually, just as they have in the past. So GSA has not implemented the intent of Congress, and we can't wait 3 more years for what is needed I think today. There is an urgent lack of coverage on Federal lands. The administration has made a priority of this, this committee has made it a priority, and yet GSA I think has been dragging its heels. I think there might be need for further legislation.

Mr. WALDEN. Or maybe a hearing with one witness. They always like those.

I appreciate that, and for the rest of the panel, if there are issues you are running into with Federal siting, let us know because this is one we raised because it is important and we don't—we concur with what Commissioner Adelstein has said. I don't think they have got it right yet.

Ms. Socia, traditionally network operators were given a monopoly exchange for the obligation to serve anyone upon reasonable request. In the models we have been discussing, carriers only deploy to areas where there is an economic case for the build. How do we balance sound network economies with the threat of redlining, a practice of refusing service to areas that are deemed a poor financial risk? And as I heard about the incredible buildout that Google is doing, which I applaud, representing a district that is bigger than any State east of the Mississippi, getting access out into our tribal lands, getting access out into our very remote rural communities, whether it is wired or wireless, remains a big problem. And so I wonder how we can address that better.

Ms. SOCIA. I think that the interesting thing about—when you think about profit, I think that is a problem across the board with

building out to these more rural locations and therefore requires an influx of capital. There just isn't a way to do this without support. But I think the ways that our cities are looking at what is a profit are a little bit different than the ways that a company might look at what a profit is, right? So it is about education, it is about public safety, it is about economic development and transportation and all of these opportunities that are presented when you have access. And so what is that worth and how do we ensure that our tribal lands and our rural communities can benefit in the same ways that other communities are able to?

Mr. WALDEN. Before I go to Mr. Moffett for his comments, this is also an issue just to get wireless phone coverage out in areas of Montana, upstate New York. Elise Stefanik has made this case to me, our new Member from up there, that just getting access, getting connectivity remains a real issue. The job is not done.

And so Mr. Moffett, from your perspective as an analyst, what do we do?

Mr. MOFFETT. Well, I would certainly agree with Ms. Socia's comments that it is simply not realistic to think that those projects are going to be entirely self-funding in the more rural areas. That said, I think the targeting of the funds that are available, the Connect America funds, can be improved such that those funds are more carefully directed to new greenfield projects that really are bringing broadband to places that haven't been served in the past. There is always some controversy around whether an area is either partially served or sufficiently served.

Mr. WALDEN. Right.

Mr. MOFFETT. And then secondarily, I think it is also important that those Connect America funds be made available to all manner of companies so that there can be more competition of potential providers of those services.

Mr. WALDEN. I want to get a quick answer from Mr. Slinger. Does Google have plans to try a model out in sort of rural, remote areas of the country to see if you can make that work?

Mr. SLINGER. Well, as you know, Fiber may not be the right solution technologically——

Mr. WALDEN. Correct.

Mr. SLINGER [continuing]. For rural areas, and we want to make sure that there is sufficient spectrum available for unlicensed wireless technologies. As well, as you know, we are experimenting with balloon technology with Project Lune, and as well with fixed-wing aircraft out of New Mexico. So we think that in rural areas, it may be new technologies that are going to affordably bring Internet to those areas.

Mr. WALDEN. I hate to cut you off, but I know we are all tight for time, so I will turn to my colleague from California, Ms. Eshoo.

Ms. ESHOO. Thank you, Mr. Chairman, first of all for having this hearing and for the high level of cooperation relative to witnesses and invitations. We appreciate it.

Jonathan, it is great to see you, former Commissioner at the FCC, and to everyone that accepted our invitation to be here today.

To Mr. Slinger and Ms. Socia, first of all, thank you for your important advocacy for the "dig once" policy. I wish that the Congress had passed it because I think that we would have more of that pol-

icy actually—excuse the expression—embedded in our Federal roadways, but how do you think, A, the Executive Order is working? I want to get my questions out first, OK, because the time is very brief, and if you think there are any additional steps that Congress should take to incent that deployment of conduit as part of the Federal highway projects and that system, which I don't know, right now it doesn't seem like the highway project system is going anywhere. It looks like it is being driven off the road in Congress. But anyway, here maybe we can concentrate on that.

Mr. Moffett, I listened very carefully to what you said, and I think it is really highly pessimistic. It was depressing to listen to your description of every last sector of the telecommunications marketplace, and my question to you would be, where do you see a bright spot?

To Governor Lewis, thank you for being here. You know, there was a report that just came in out of terms of broadband penetration in our country. We are 24th in the world. And I think that a good part of that number is a representation of Native Americans and reservations in our country. It is a shameful record. It is a shameful record. And I think if there is going to be something that moves up to the top of the list here in a bipartisan way is to see that we bring to the parts of the country where there are reservations that you get first-class service for first-class citizenship. You really do. I mean, for students to have to be driven by their parents 65 and 75 miles away to sit in the car in order to get some kind of connection to do their homework, I don't think any Member of Congress who is a parent here would ever put up with that. We shouldn't have that in our country. And I hope that Mr. Slinger and Governor Lewis will form a partnership and then come back and report to us. I would really like to have you meet and see what you can come up with because you both need each other and we need both of you.

To Ms. Socia, does Next Century Cities support having local municipal systems?

Ms. SOCIA. We support whatever it is our local communities need to do in order to get where they are going. So——

Ms. ESHOO. Well, that doesn't answer my question, though.

Ms. SOCIA. OK.

Ms. ESHOO. It is too broad. Excuse the——

Ms. SOCIA. I understand.

Ms. ESHOO [continuing]. Term.

Ms. SOCIA. Many, many of our mayors signed on to a letter we sent to the FCC in support of the preemption. The two cities that filed petitions, Chattanooga and Wilson, are two of our cities, and we have—we believe deeply in the idea that competition is important and we believe deeply in the idea that local folks should be able to solve their local problems in a way that makes sense to them.

Ms. ESHOO. Well, I come from local government so I agree with you, and I think that they should have the opportunity to do that as well.

Jonathan, I regularly hear from constituents who are frustrated with the tower siting process. Now, here is one for you. Everyone wants great service, the best service in the whole wide world, but

no one wants a wireless tower in their backyard or where they can see it anywhere near where they live. So how do you respond to this, you know, the people that say that reforms need to be made to take away local jurisdiction, say, over the placement of cell towers. It is really a—it is like trying to get socks on an octopus. I mean, they want it, they don't want it. And yet there are some have-tos in this. So those are my questions, and you have 13 seconds to answer them. Oh, no, you don't have any time because I am over time. But you can respond in writing, and that way I will get more meat on the bones, I think.

So thank you for being here, and please, Mr. Slinger and Governor Lewis, come together, and if my office, other offices can help facilitate, let us know.

Mr. WALDEN. The gentlelady's time is expired.

I will turn to the vice chair of the subcommittee, Mr. Latta, for 5 minutes.

Mr. LATTA. Thanks, Mr. Chairman, and thanks very much to our panel today. It is always a great discussion that we have in subcommittee.

Mr. Adelstein, if I could go back to some of the questions that the chairman was posing and also I think you said about the GSA dragging its feet in getting some of these things done, especially when we are talking about streamlining the process for providers to obtain the necessary permitting and other approvals needed to build on Federal lands and protected lands. Just out of curiosity, on average, how long does it take for a negotiation process with the Federal Government compared to the private industry? Any idea?

Mr. ADELSTEIN. It takes about 4 years with the Federal Government, less than half of that with the private sector, and sometimes it can drag on much longer with the Federal Government for many, many years. And so generally private companies will just avoid Federal lands because it takes so long. They don't see the return on investment that Craig was talking about and so the Federal Government is actually deprived of that revenue because it will go right next door if there is non-Federal land nearby.

Mr. LATTA. OK. When you say that then, so you are saying that on average it is four but can drag out even longer?

Mr. ADELSTEIN. That is right.

Mr. LATTA. And any ideas or examples of how long some of them have taken? Over 4 years?

Mr. ADELSTEIN. Yes, I have heard from people that it has taken 10 years and longer. I have heard sometimes they have tried and it never gets done. And there is never even a finality to it. There is on decision-making process that is in place. That is why this committee in its wisdom said that the GSA was supposed to take steps to standardize the process, and yet it hasn't been done.

Mr. LATTA. Let me follow up with that. Because of that, you know, 4 to 10 or who knows or maybe into infinity and beyond, what additional costs are incurred when the Federal Government is unable to streamline its process for the broadband infrastructure buildout?

Mr. ADELSTEIN. Well, there is lost revenue. There is huge costs trying to go through that process for the individuals who are trying to get the site acquisition done. It is a shame. Thirty percent of all

the land mass in the United States is Federal property, especially in rural areas, and a lot of very valuable Federal buildings in dense urban which could use a facility as well to deal with the capacity demands. So it is a shame that these negotiations take so long, that they don't lead anywhere. Not only do you lose revenue that you need for deficit reduction, companies lose valuable places and the consumers lose access to service they need.

Mr. LATTA. Thank you.

Mr. Slinger, I think in your testimony you were talking about the percentage of the population out there that does not have access to broadband, and what percentage would that be?

Mr. SLINGER. We are seeing now, the stats that we are seeing, is about 60 million Americans. In some of our cities that we are working in right now, 25 to 30 percent of people have never had an Internet connection at home. They may have access through cell phones but they don't have an Internet connection at home.

Mr. LATTA. OK. Just two quick follow-ups on that then because again, I represent from urban to very, very rural, and when you look at the numbers then or the percentages, what percentage of that would be urban, suburban, very rural and that percentage when you talk about that? Was it 60 million?

Mr. SLINGER. Yes.

Mr. LATTA. And how would that break down, and also, how many people would that include that would not want to have access to broadband?

Mr. SLINGER. I don't have a breakdown of urban versus rural within the numbers but again, in urban areas, I can say in many cities that 25 percent, 30 percent of these cities, residents don't have anything at home at all, no Internet connection.

Mr. LATTA. Thank you.

Governor, if I could turn to you, and again, thanks very much for being here with us today and for your testimony. Because again, you said that you have, you know, a very, very rural population, I think you said that you have 20 persons per square mile, and you know, it is of great concern in your area along with all the rural areas in the country about having that essential broadband for our constituents, and you talked about the USF and that that would help you, but are there other areas besides the USF that you could see that would be of benefit to you and your community?

Mr. LEWIS. Thank you for that question, and first of all, I would like to recognize that I have two of my council members here, Councilman Devin Redbird and Councilwoman Caroline Williams, and also from our GRTI, Gila River Telecommunications, Belinda Nelson and Pamela Thomas from the Gila River Community.

Mr. LATTA. Thank you.

Mr. LEWIS. Thank you. And I would say that one critical issue is rights-of-way, and you know, rights-of-way is a challenge where it is a complex issue. It has to do with the nature of tribal land. It goes back, as I said, to the allotment policy that has a devastating effect on tribal lands, and so the short answer is that GRTI in regards to rights-of-way, if they do not get rights-of-ways, we have to build around it, and of course, that costs—it is very capital-intensive, and so we either have to move to another route or where we can in some cases have to build a wireless link to go over

the right-of-way, and obviously this is pretty costly as compared to trenching through an established right-of-way, but sometimes this is our only course of action. That is an issue that, you know, we really need to look at.

Another is the ETC designation process, which is overly complicated, and so streamlining of that ETC designation process would be welcome to many tribes.

Mr. LATTA. Well, thank you very much, and Mr. Chairman, my time is expired and I yield back.

Mr. WALDEN. Thank you.

We will now recognize the gentleman from New Jersey, Mr. Pallone, for 5 minutes.

Mr. PALLONE. Thank you, Mr. Chairman.

I want to get one question in to Mr. Adelstein about infrastructure during disasters like Hurricane Sandy, but then I want to get a question in to Governor Lewis, so I am trying to split this up.

Three years ago, Hurricane Sandy devastated my district. The force of the storm knocked out some communication for days. Mr. Adelstein, you testified about all the wireless infrastructure that is being deployed and upgraded across the country, and I support all this deployment, but my constituents are also concerned about whether the equipment works in a disaster.

So what is your industry doing to make sure people can call for help and reach loved ones in an emergency, and what do you think of the FCC's work to improve resiliency?

Mr. ADELSTEIN. Well, ensuring——

Mr. PALLONE. Two minutes.

Mr. ADELSTEIN. Ensuring reliable access to telecommunications is a real top priority for our industry. We want to make sure all of the customers get access when they need it most, which is in a disaster. You know, during Hurricane Sandy, we saw cooperation, for example, between T–Mobile and AT&T that agreed to share each other's network in the region affected by the storm and share their network operations centers. I would say that in terms of the structures themselves, not one of them went down during the storm, not one. The issue was things that were beyond the control—power companies, access to roads, trees that fell. But what makes it difficult is that sometimes we can't even get generators sited on these things. Going back to the issue of this committee, we find from localities that you can't put a generator there because it violates a noise statute. It is only going to be used in a time of emergency. I don't think anybody in the neighborhood would complain about the noise of a generator when otherwise their wouldn't work, and yet localities will not allow us to put them there and then complain when the system doesn't work in a disaster. We need more proactive thinking about having backup power and facilitating access to it.

And one more point to add, which is the best thing you can do for reliability is redundancy. The more these facilities are up, the more likely you are going to have one that works in a time of emergency. So all the work done by this committee to promote deployment is promoting redundancy and ensuring that there will be adequate facilities in case of emergency and more likelihood that they

will survive the disaster and be available for use of public safety as well as for the citizens in the community.

Mr. PALLONE. Do you want to comment on the FCC's work? Because Chairman Wheeler committed to me that the FCC would act by the end of the year to complete its rulemaking on improving wireless network resiliency.

Mr. ADELSTEIN. We are thrilled with what the FCC is doing. We have worked very closely with Chairman Wheeler and the other members of the Commission that are looking at a cooperative arrangement where we can try to provide incentives for industry to deploy this kind of equipment. I think industry is doing a lot already, making major investments in things like backup power, and we are working together with them in a very cooperative fashion. We believe that the goals are shared in making sure that these networks are resilient and redundant.

Mr. PALLONE. All right. Thank you.

Let me go to Governor Lewis, and I should say that I love the Gila River Reservation. I haven't been there in a long time. It is about time I go back.

But you know, on the one hand I was thinking that I guess relative to many tribes, you might have more ability than even some of the, you know, more remote or even poorer tribes, if you will, to achieve some of the goals that you mentioned. So I just wanted to ask about funding. You mentioned the Universal Service Fund. I guess the gentleman from Google talked about this Connect Home Initiative. I think the President was actually at the Choctaw Reservation last week or so talking about that.

I mean, what are these sources of funding? Is the Universal Service Fund useful to you now? What would we have to do to improve it? You know, what could the Federal Government do in terms of funding for tribal infrastructure, particularly for those tribes that might have even more difficulty. I am thinking of like the Pueblos in New Mexico or the tribes at the Grand Canyon, you know, smaller than Gila River, less funding available. How are these funds helpful to you, the ones that we do have, these programs that we do have, or are they?

Mr. LEWIS. Thank you, Congressman Pallone, and you are always welcome at the Gila River Indian Community.

And with USF funding, stable funding mechanisms are critical to businesses like GRTI and those in Indian Country where they have to develop deployment plans and rely on Federal funding sources to be there to begin with. Now, our U.S. funding is critical as well for providing funding for infrastructure buildout, and that is critical to the long-term sustainability of these telecommunications providers in Indian County.

Mr. PALLONE. Now, are you using funds from Universal Service now?

Mr. LEWIS. Yes, we are.

Mr. PALLONE. And how is that working? What does it mean? How do you do it?

Mr. LEWIS. That is critical to the overall business plan of Gila River Telecommunications. You know, they rely on that source of income moving forward. It is critical to the long-term business outlook. And also in regards to long-term capital buildout as well.

Mr. PALLONE. All right. Thank you.

Thank you, Mr. Chairman.

Mr. WALDEN. The gentleman's time is expired.

The Chair now recognizes the gentleman from Illinois, Mr. Shimkus, for 5 minutes.

Mr. SHIMKUS. Thank you, Mr. Chairman. It is a great panel. I appreciate you all being here.

I want to go to Adelstein, Commissioner, and Governor Lewis real quick to highlight the challenges because especially the environmental review process, especially on Federal lands, is a burden. So have you thought through how local municipalities and they do their zoning outside of Federal lands and how we could marry that with which goes on there and can you comment on that?

Mr. ADELSTEIN. Yes. You know, some localities are great, and what we heard today from Google, from Ms. Socia, is that those communities that promote broadband make it easier to get access, and that is where the investment goes, and those that throw up roadblocks, not to name any specific parts of the country represented by folks here but there are some that aren't seeing investment they would get if they weren't throwing up roadblocks, and to the question of Congresswoman Eshoo about, you know, people saying not in my backyard, they are not going to have service in their backyard. So we work very cooperatively with local communities. I mean, we try to—every single facility that has been sited has been sited in cooperation with local government. But to have it to be dragged out, it took the work of this committee to say you don't have to get another zoning hearing for something that has already been zoned to put a 4G antenna up on a tower that is already there. Why should the committee have to do that? Increasingly, communities are recognizing this. The smart ones are moving ahead. Ten States have enacted laws in the last several years since 2013 to streamline deployment in their States, and those States are seeing more investment. They are working with local partners, the National Association of Counties, the National League of Cities and others to get out word about the way the FCC is implementing the law that you passed. Commissioner Cliburn asked us to go out——

Mr. SHIMKUS. Let me get to Governor Lewis on the Federal properties because that is another big challenge because they have got to get past the Government land issue, and Governor, really, the question is, can't we force a zoning issue, get you guys the zoning ability like we do municipalities?

Mr. ADELSTEIN. Yes. You know, there is a bill that was introduced in the other body by Senator Rubio that would create a standard fee schedule, fee retention for the agency that the agency could keep the money they get from that to pay for the cost of processing it. There would be common forms and contracts, which you have already tried to get enacted, but there is a need for more legislation to get them to do what you asked them to do already. There is an expectancy of lease renewals, so when somebody invest there, they are not going to get cut off.

Mr. SHIMKUS. Let me get Governor Lewis to respond.

Mr. LEWIS. Federal lands in Indian Country, that has been a long issue in regards to, you know, our unique situation as Indian

tribes and the nature of Indian land in regards to highly fractionated land interest that, you know, are just so critical and sometimes are one of the major obstacles to buildout in regarding to getting right-of-ways. If we can somehow streamline that process through the Bureau of Indian Affairs, through the Department of Interior, that would greatly help out tribal infrastructure buildout in the future.

Mr. SHIMKUS. Great. Thank you.

Mr. Slinger, let me go to you real quick. My largest community in my Congressional district is 33,000 people. When do you think Google would hit that community on your timeline?

Mr. WALDEN. Did you want to name that community?

Mr. SHIMKUS. But I am not the chairman of the committee so I don't have as much power.

Mr. SLINGER. Well, you know, we published this Fiber checklist so that we can, as Mr. Adelstein said, get cities to ready by themselves for Fiber deployment, whether it is Google Fiber or any other provider, by making sure that they have smooth permitting processes that allow for a large volume of permits to go through to make it easy for people to get onto telephone poles through streamlined make-ready engineering and construction.

Mr. SHIMKUS. So it is the same type of debate as we are talking with the rural or the Federal lands deployment, the ease of being able to have access and a timely response.

And let me finish up with Mr. Moffett. It is all about return on investment—I don't care how people want to marry it—if you believe in the capital model. So if a rural area can't make a go based upon the formula, then you have to be able to dip into RUS or other forms of low-interest loans to make the business sense. Is that correct?

Mr. MOFFETT. That is exactly correct.

Mr. SHIMKUS. And also, time is money. So any delay, as what we have just talked about here, affects the ability for someone to go to the capital markets to make a pitch that they are going to get their return on investment that you propose.

Mr. MOFFETT. That is correct as well, yes.

Mr. SHIMKUS. Thank you, Mr. Chairman. I yield back my time.

Mr. WALDEN. The gentleman yields back his time.

The Chair now goes to the gentleman from Pennsylvania, Mr. Doyle, for 5 minutes.

Mr. DOYLE. Thank you, Mr. Chairman. Thank you for this excellent hearing and this excellent panel.

Jonathan, welcome back.

Mr. ADELSTEIN. Thank you.

Mr. DOYLE. Broadband infrastructure has become a critical component to almost every facet of our daily lives from students using Blackboard for school or watching Netflix and Amazon to stream movies and TV shows, and by all levels of Government to communicate with citizens and increasingly leverage the network to improve the delivery and efficiency of services.

Pittsburgh in partnership with Carnegie Mellon University and Google is deploying a connected platform that will integrate road sensors, traffic cameras and information kiosks to create a living laboratory at a city scale for the next-generation technologies. This

platform will be used to improve traffic patterns in real time, allowing city departments to efficiently predict road wear and schedule maintenance and to allow people to explore and interact with the city more effectively. Fast, available and ubiquitous broadband infrastructure provides the basis for these next-generation solutions.

I for one am a big fan of making every tool in the toolbox available to local governments to make sure that they have access to the best networks and the best platforms in order to improve the lives of the people living there.

Mr. Chairman, I would love to work with you on putting together some legislation to address some of these challenges.

Let me start with Ms. Socia. How can localities leverage shared infrastructure to expand access and increase the deployment of broadband? As cities like Pittsburgh build this infrastructure to address our own municipal needs, how can we and other municipalities use what we are building to expand access more broadly and what, if anything, stands in the way of municipalities leveraging the infrastructure?

Ms. SOCIA. Really interesting work has been done all over the country, as you suggested. Many of our cities are using smart infrastructure to do really interesting work, determine particulates in the air and checking asthma rates and using streetlights that also have cameras in them for public safety. We are seeing a lot more of that happen, and I think there are barriers for cities to doing this work as well, and some of them are the State regulations that prohibit their building out their own infrastructure, and in some case, it is, as was mentioned earlier, issues of how densely populated, the circumstances of their current financial situation. All of those things impact the capacity of a city to actually build out their own.

Mr. DOYLE. Thank you.

Mr. Slinger, I am curious. What dividends has Google Fiber found in communities where you have deployed your gigabit broadband to? Has it impacted jobs or the local economy or education or local government? What are you finding in these communities?

Mr. SLINGER. Yes, we are seeing a great economic impact in the cities that we are in. There have been reports that Kansas City, Missouri, is not working on an economic impact analysis. Let me start by saying there are certain categories of employees where there is no unemployment, because obviously when you build a big network, there is a lot of demand for jobs for certain types of labor, and I think last week the Fiber to the Home Council released some research that showed that GDP growth in cities with a gig network rises and the average cost per home or, you know, value of a home goes up 3.1 percent in those cities, and that is new data from about a week ago.

But we also see, and we have heard from Mayor Holland and Mayor James in Kansas City that they have seen it as a draw to regional economic development. Other companies when deciding where to locate in the Midwest will now look at Kansas City and say hey, this place has a gig network, let us join.

Mr. DOYLE. I am curious too about the discrepancies that exist between price and speed. In Pittsburgh, for instance, I can get 500 megabits a second but it will cost me about $400 a month. When we look at cities like Chattanooga and Kansas City and Austin and other cities, residents can get a gig for less than $100. I am curious, maybe Mr. Moffett and Mr. Slinger and Ms. Socia, you could comment on why you think these discrepancies exist.

Mr. MOFFETT. Thank you for the question. My observation would be, you are right, there are a very wide range of economic models, and it is a challenge because there is no near-term variable cost that dictates a cost-plus model and so you see a lot of companies experimenting with different prices, in part because they are trying to figure out what the quantity demanded will be at different prices.

The challenge—but obviously you tend to have lower prices where you have multiple competing networks and then again it raises the question of whether the providers are earning a sufficient return at the market share and the prices that they are charging. In many cases they are not. This is a very difficult area to do economic research, however, because you will find that there are a lot of the companies who have different motives rather than simply profitability of the network itself.

Mr. DOYLE. I want to give Mr. Slinger just a—because I know our time is up.

Mr. WALDEN. Yes, we have go to——

Mr. SLINGER. Well, I would say that if you look at the cities in which we are already operating or cities where we have announced, we have seen incumbent prices drop immediately and speeds go up, so I think there is more room there.

Mr. DOYLE. Thank you. Thank you, Mr. Chairman.

Mr. WALDEN. We will now go to the gentleman from Louisiana, the Whip of the House, Mr. Scalise, for 5 minutes.

Mr. SCALISE. Thank you, Mr. Chairman. I appreciate you having this hearing.

Mr. Adelstein, I know you talked in your opening statement about a lot of the work that has been done to expand spectrum, of course, a lot of that within this committee where we have come together to make more spectrum available. I know the chairman has been a great leader in that effort too.

One part of that equation absolutely is expanding more spectrum, and then of course, the other part of that is your members—where you all come to actually build it out and to build that infrastructure to take advantage of the new spectrum. If you could maybe share with us some of the challenges or hurdles that your members face to make the investment that they need to make to take advantage of that spectrum and hopefully even make more spectrum available in the marketplace?

Mr. ADELSTEIN. Yes. You know, spectrum has been quite a hurdle. You saw that $41 billion was spent for a limited amount of spectrum recently, basically 65 megabits.

Mr. SCALISE. It is a little bit better than the CBO estimate, Mr. Chairman, wasn't it?

Mr. WALDEN. Which was zero, and it was $41.9 billion.

Mr. SCALISE. Hopefully the CBO recognizes the value of the spectrum that clearly everyone else seems to know about.

Mr. ADELSTEIN. I think the CBO estimated zero, and it was $41.9 billion, so they were off——

Mr. SCALISE. They were off by a little bit there.

Mr. ADELSTEIN. 41.9, yes. But the fact it, that was for a 12 percent increase in the available commercial mobile spectrum. So you just got a 12 percent increase in the throughput and you have 700 percent you need in the next 5 years. So we are down to 688 percent, a long way to go to build out to meet the needs of people, and as I said, local communities often are saying no to these facilities. We have—the business case has to be made in rural areas as we have discussed today, and overall investment is very difficult with those prices for spectrum. We can't afford to have regulatory drag on these investments, slowing them down, making it more expensive when there is not enough capital to build out to meet these needs already. I like to joke, you know you are in trouble when you quick solution is infrastructure, but that is kind of where we are at in this country, and as slow as it is, it is immediately available when it is built if you take that same spectrum and reuse it. So all of these burdens on Federal lands, in urban areas, the FCC has done a great job, this committee has done a great job of trying to address that, but we need to work with our partners and State and local governments as well.

Mr. SCALISE. And clearly on Federal lands too, we have been grappling with that here trying to remove some of those burdens, not just in the spectrum space but in a whole lot of other areas, especially as it relates to energy production where Federal lands and even in the local areas, some of those restrictions make it really hard to experience a lot of the economic opportunity we can. Thanks for that answer.

Mr. Moffett, I want to ask you, in some of your analysis, if you could share with us some of the similar challenges that—you know, what are some actions maybe that Congress or the FCC can take to further expand the opportunities for WiFi, for broadband?

Mr. MOFFETT. Well, as I said earlier, I think there are opportunities in Connect America Funds and making those available to a wider range of companies for bringing broadband to rural areas, but there is an overarching question here, and it relates to the question that Ranking Member Eshoo asked earlier about where are the bright spots. If you think about this as a larger value chain of microeconomics from everything from the content companies and the internet providers to the infrastructure providers, where the bright spots are is very clearly outside of infrastructure. The apps developers and the content companies are actually earning extraordinary returns, and there is a very knee-jerk and familiar regulatory impulse to say let's try to protect the companies that are making very high returns from the ones that are making very low returns. As an economist, that is a very odd structure.

Mr. SCALISE. Well, final question as I am running out of time, Mr. Slinger. When Google Fiber was being deployed, it has been reported you all were able to work with some local governments that gave some exemptions, maybe some expedited approval processes so that not just your but other new entrants were able to move

things a lot quicker. If you can talk in general about the ability for more local governments to take more of that deregulatory approach and how deregulation in a sense of helping expedite the expansion of technology has helped you and could help others to develop even more broadband?

Mr. SLINGER. Sure. And I am going to go back to the Fiber checklist which we published in 2014. Some of our major barriers obviously are getting access to poles and making it easy to do the make-ready construction and get the poles ready. One thing that has been suggested, I believe by the Fiber to Home Council, was if municipalities took a proactive step in doing pole maintenance, and while they are doing pole maintenance, if they could do that make ready, get rid of the old wires that aren't needed and make slots that would allow new entrants, Google Fiber or any other entrant, to get in quickly and attach to poles, that is one thing that would really help.

And again, "dig once" policies and access to the right-of-way, there is more we can do with local communities and more we could do with Federal highways to make sure that if someone is ripping up a road to do construction or repaving, that we put in conduit that anyone can use. Those are just smart things. They allow new market entrants and ultimately more competition and choice at the local level.

Mr. SCALISE. Thanks for your answers. I yield back the balance of my time.

Mr. WALDEN. The gentleman yields back the balance of his time.

Unfortunately, we are going to have to pull this to a close because we are down to about 4 minutes left in the vote.

This is not the last hearing. We expect to continue this work going forward. Your testimony has just gotten us to a really good starting place. We have a lot more work to do, some follow-up to do.

I know there are members who didn't get a chance to ask questions. We do have information to submit for the record, including from TIA, Comptel, CCA, Tech Freedom.

Mr. WALDEN. Mr. Olson, I believe you had a document you wanted to submit, some articles on broadband deployment.

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

Mr. WALDEN. And with that, I am afraid we are going to—unless, Ms. Matsui, do you want just a minute or two?

Ms. MATSUI. Yes, just a minute or two.

Mr. WALDEN. Go ahead.

Ms. MATSUI. I was curious, I wanted to ask Mr. Slinger some questions. I find what you are talking about very interesting because I look at this, and what you say is all very important about deploying broadband infrastructure, and I am from Sacramento, so we have wonderful areas that are doing great things. I am looking at a particular area in our city that is economically deprived, and we have a light-rail station that is going to be—a light-rail line that is going to be completed there with fiber and transit-oriented development stations. But yet we have schools and libraries that are just deprived and businesspeople there who just have no access. If we were to do something there, and I don't know whether we can have a special project, but I'm looking at this being very,

very special for economic development. Is that something that we can provide the access, as you say that you need, is that something that you or somebody else can take on as a project working with us? Because I am trying very much to help this area that feels very deprived, looking at the rest of my district that feel like they are on the move and they are not on the move, and I want to get them on the move if there is something we could do there.

Mr. SLINGER. Yes. There is a lot that we do really early stage with all the cities that we look at to make sure that they have the right kind of digital inclusion plans in place early, to make sure that the cities have a focus on it, and again, there is no silver bullet with any one company but we want to make sure that all providers and local community groups take this on, and as Fiber or any other technology is built out in those areas to really make sure people understand the relevancy of the Web, and hopefully get more people online.

Ms. MATSUI. OK. Well, thank you very much, and thank you, Mr. Chairman.

Mr. WALDEN. Thank you.

We are going to have to call it to a conclusion here. Again, we do have votes on the House floor followed by the Iranian briefing. So thank you to all of you for your testimony, your counsel. We look forward to being back in touch with you as we move forward and to others who have ideas for the Congress on how we can expand access to affordable broadband across the country, on Indian reservations, rural communities, urban communities, wherever it is not.

And we have some tribal letters for the record as well from Mr. Luján, which we are happy to accept.

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

Mr. WALDEN. And with that, we will adjourn.

[Whereupon, at 1:41 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

Welcome to the Subcommittee on Communications and Technology's hearing on Promoting Broadband Infrastructure Investment. Broadband Internet access has become the communications and commerce tool of our time. Whether it's renewing your car registration, streaming the latest episode of Silicon Valley, or video chatting with friends and family, broadband has fundamentally changed the way approach so many things. It has literally changed the old rules for how we live our lives. Which begs the question: why are we using old rules to regulate new networks?

The broadband market has changed significantly from its early days, and continues to evolve to meet our society's needs. Every city now wants to be a "Gig City," to attract the best and brightest entrepreneurs and to galvanize their economies. And our rural and tribal areas want to ensure that they are not left behind their urban counterparts.

Unsurprisingly, Americans are finding varied ways to meet this demand.

Trillions of dollars—public and private—have been invested in American broadband networks since 1996. According to one study, the U.S. broadband sector invests twice as much per household as its European counterpart. And USTelecom estimates that in 2014 alone, broadband providers spent $78 billion in capital expenditures to continue to grow and upgrade the national broadband infrastructure.

New entrants have also joined the picture. Although Google is one of the better-known entrants, other start-ups have jumped in to meet demand. US Internet, a wild card small start-up, is taking on incumbents by stringing 1 Gigabit fiber across

the poles of Minneapolis. Dan Gilbert is backing Rocket Fiber, a startup in Detroit, to trench 1–Gigabit fiber throughout the town.

In other instances, municipalities have built networks or crafted private public partnerships to bring 1–Gigabit networks to their town. For example, Ting has worked with Westminster, Maryland, and Charlottesville, Virginia, to bring high-speed broadband to those towns. Others are working to help municipalities determine the best course for accelerating broadband access. Former FCC official Blair Levin has launched Gig U.—an organization dedicated to facilitating buildout of high-speed network. And Deb Socia, our guest today, heads Next Century Cities, which helps cities and towns collect their experiences in attracting private investment, and—when necessary—procuring and deploying municipal networks.

Despite the clear demand for high-speed services, investment in network infrastructure is not for the faint of heart. A staggering amount of capital is required to deploy fiber, antennas, routers, and switches to build a network with useful scale. Those who invest often won't see returns for years; and the return comes only if the service satisfies enough customers to keep them coming back. There are real challenges to investing in broadband infrastructure, our laws shouldn't be among them.

With new players and incumbents looking to invest in infrastructure and compete for customers on the networks of tomorrow, the Federal Government should find ways to encourage deployment and eliminate barriers. Despite repeated calls to facilitate access to Federal lands and buildings, to simplify and expedite access to utility poles, and improve the process for tower and cell siting, these still present hurdles to efficient investment and deployment. Nor have we solved the issues that come with deploying on tribal lands, where the need to improve the communications network is very real.

We hope that today's hearing will start a discussion that reinvigorates a national debate on the best policies for continuing the model of private network investment that has made the United States a world leader in broadband. I'd like to thank our witnesses in advance for their testimony. We are looking forward to your insights.

PREPARED STATEMENT OF HON. FRED UPTON

Communications and commerce have never been easier, thanks to the networks that comprise the Internet. As a world leader in broadband, we take for granted what an expensive and immensely challenging task it is to build, maintain, and upgrade the networks necessary to drive the modern information society. There is an incredible infrastructure that makes tasks that once took hours and even days as simple and as instant as a click or a swipe. In Michigan and across the country, we all are reaping the benefits. But if we, as a country, are to continue our leadership in the global technology industry, we must have policies that promote investment in the infrastructure to support it.

This committee has always encouraged and promoted the deployment of communications facilities, and I am glad we have witnesses with such different backgrounds providing their unique insights today. My hope is that the discussion today will shed light on challenges to the economics of broadband networks and ideas that will help us replicate conditions that have already led to successful broadband deployment.

PREPARED STATEMENT OF HON. ROBERT E. LATTA

Thank you, Mr. Chairman. I appreciate you holding this hearing today and I thank our panel of witnesses for testifying on this important issue.

Access to broadband is essential. It is a primary driver of economic development and it empowers and connects communities—especially rural communities like I represent in Ohio. Americans are increasingly connected to networked and wireless devices forcing broadband networks to grow in both scale and scope to keep pace with consumer demands. That is why we need to seek opportunities to maximize buildout of broadband facilities, such as utilizing Federal lands and buildings as access points for broadband deployment of wireless antennas.

Our Nation's free-market, private-investment approach to broadband expansion has been very successful; therefore, I hope today we can identify policies that further encourage and advance investment in broadband infrastructure. Thank you, Mr. Chairman.

PREPARED STATEMENT OF HON. ANNA G. ESHOO

In the early 2000s, access to a broadband connection was considered a luxury. If you could download a music file in mere minutes, you were living the high life. In just a few short years, much has changed. Today, broadband access is ubiquitous with access to employment opportunities, education, health care and commerce. It's used for advanced research among our academic elite, and it's a conduit of democracy for a new generation of voters.

Yet 55 million Americans lack access to the broadband speeds needed to unlock everything the Internet has to offer. Equally alarming is the fact that more than half of U.S. households have just one choice for high-speed broadband service. Despite an impressive $46 billion investment by the top four telecom and cable companies last year, the U.S. still ranks 17th globally in Internet speed.

The fact of the matter is that there won't be another $7 billion broadband stimulus anytime soon. So "bold" and "innovative" should be our operative words when discussing broadband deployment policies. This is about our collective future. So where should we be bold, and where can we be innovative?

For years I've advocated for a "dig-once" policy. Quite simply, broadband conduit should be included during the construction of Federal highways just as gas and electric lines are. Recognizing the enormous benefits of this cost saving measure, President Obama included it as part of a 2012 Executive Order to accelerate broadband infrastructure deployment.

Many new broadband entrants also face challenges in accessing utility poles and other rights-of-way. According to former FCC Chairman Reed Hundt, the use of existing poles is nearly a tenth of the cost of having to dig underground trenches through streets and sidewalks. When a provider ultimately gains access to these rights-of-way, the terms should be fair, reasonable and nondiscriminatory.

Another barrier to broadband deployment comes from State laws, established at the behest of incumbent providers that restrict or ban municipal broadband networks. Earlier this year, the FCC voted in favor of bolstering 21st century broadband infrastructure in local communities by preempting State laws in Tennessee and North Carolina. Across the country, local communities including Palo Alto and Santa Cruz County in my Congressional district have demonstrated their desire to bring fast, affordable broadband to their residents.

Finally, through the power of unlicensed spectrum, Wi-Fi can expand broadband coverage in underserved communities, including rural and tribal lands. The 600 MHz band and its ability to penetrate walls and travel longer distances makes it uniquely situated to serve these and other communities on a nationwide basis.

These aren't by any means a cure-all prescription to what ails our Nation's broadband system. But they are concrete steps I believe Democrats and Republicans can support. More importantly, they are steps that will bring greater access to broadband for millions of Americans who need it.

I thank our distinguished witnesses for their commitment to promoting broadband infrastructure investment and I look forward to your testimony.

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

Thank you, Chairman Walden, for calling today's hearing. Thanks also to our witnesses for being here today.

This subcommittee has become an example of how real bipartisan efforts can create real results. Today we continue that tradition. Discussions about whether to invest in our Nation's infrastructure should not have two sides—whether we are talking about roads, bridges, or communications networks. The priority in Congress should never be if we should invest in infrastructure; it should be only how we invest. To build a sound infrastructure, both industry and the Government must contribute. Sacrificing either will only lead to failure.

Our focus today is on our Nation's broadband networks in particular. The Internet has become integral to all of our lives. And in many ways, our broadband infrastructure is a bright spot for our economy. While the Government contributes billions of dollars in grants and an updated Universal Service program, private investment has been the primary driver behind the growth of our networks. Over the past 20 years, the private sector invested $1.4 trillion in their networks —a trend I expect will continue. So it is no wonder that broadband capacity has doubled about every 2 years. And just as important, this investment creates real jobs across the country.

But despite this success, our work is not done. We are fortunate in New Jersey to be one of the most connected States in the country, but rural areas like Vermont

or Iowa and Tribal lands in New Mexico aren't so lucky. The most recent data released by the FCC shows that Americans living in those areas disproportionately lack access to broadband—53% of rural Americans and 63% of Americans living on Tribal lands and in the U.S. territories do not have access to the new benchmark definition of broadband. We must continue to look for ways to help these communities.

So I am interested to hear from our witnesses about what policies work and which ones need to be updated. I also want to hear about how to make sure our communications networks are resilient enough to withstand emergencies.

I hope that ideas generated today will be the inspiration for more bipartisan work going forward.

PREPARED STATEMENT OF HON. DAVID LOEBSACK

Thank you, Mr. Chairman.

Today's hearing is a crucial part of our national dialogue about the importance of rebuilding our infrastructure. Access to broadband is no longer an indulgence for the rich-it is an indispensable part of all of our lives. That is certainly true in urban areas-but it is just as true in the vast rural areas we have in Iowa.

I heard this loud and clear earlier this year during a Broadband Access Roundtable Tour that I took across my district. This is was not a short trip, either. I sat down to visit with my constituents in every one of the 24 counties that I represent. I took the time to make this trip because access to broadband is vital to survival in today's economy.

And at every stop—every one—I heard that we need to do more to expand the reach of high-speed Internet access. But broadband that costs hundreds of dollars is not good enough. Because low-income Americans deserve affordable Internet access whether they live in a city or on a farm.

Mr. Adelstein, I appreciate your testimony regarding the importance of utilizing spectrum efficiently to expand wireless broadband access. I agree that this limited resource needs to be optimized. That is why I introduced the Rural Spectrum Accessibility Act with Rep. Kinzinger, which will encourage spectrum license holders to lease unused spectrum to small rural carriers to expand wireless coverage in rural communities.

I'd like to thank the witnesses for being here today, and I look forward to hearing their suggestions on how we can move forward on this important issue.

PREPARED STATEMENT OF HON. BEN RAY LUJÁN

Thank you to the chairman and ranking member for scheduling this incredibly important hearing on promoting investments in broadband infrastructure.

As we all know, when it comes to broadband, too many Americans have been left behind.

The FCC reports that more than half of rural Americans and two-thirds of Americans living on tribal lands lack access to advanced broadband. In New Mexico, those numbers are 77 percent and 89 percent respectively.

As I've said before, if we can have Internet access at 30,000 feet in an airplane, we should be able to have Internet access all across rural and tribal America, including New Mexico.

By supporting investments in broadband, we support the entrepreneurs and innovators who want to build a brighter future for their people. By connecting schools, we can help children prepare to succeed in today's competitive economy, while investments in telemedicine ensure that seniors receive the care they deserve.

I look forward to hearing from our witnesses today on how we can scale this digital divide. And, I look forward to working with my colleagues to connect more people in rural America and on tribal lands.

ADVANCING GLOBAL COMMUNICATIONS
TIAONLINE.ORG

July 17, 2015

The Honorable Greg Walden
U.S. House of Representatives
2185 Rayburn House Office Building
Washington, DC 20515

The Honorable Anna Eshoo
U.S. House of Representatives
241 Cannon House Office Building
Washington, DC 20515

Dear Chairman Walden and Ranking Member Eshoo:

The Telecommunications Industry Association (TIA), the leading trade association for global manufacturers, vendors, and suppliers of information and communications technology (ICT), applauds you for holding a hearing on "Promoting Broadband Infrastructure Investment." As you consider this important topic, we urge you to focus on the following areas during the hearing:

In the five years since the adoption of National Broadband Plan, significant investment has taken place. The average connection speed for the U.S. as a whole in the second quarter of 2010 was 4.6 Mbps. Fast forward to 2014 – the U.S. has an average connection speed at 11.9 Mbps.[1] Not only is faster broadband more available than was previously the case, but users also have more competitive broadband alternatives to choose from:

- 95% of housing units have one wired broadband provider available;
- 99% have at least one wireless broadband provider; and
- 88% have at least two wired broadband options to choose from.[2]

Perhaps the most significant change regarding broadband in the past half-decade has been the dramatic increase in America's use of mobile broadband connectivity. This is most visible with the rapid growth of smartphone adoption. These devices are essentially handheld computers integrated with a mobile telephone, allowing consumers to use them in much the same manner as their home computers. With smartphones replacing feature phones, the growth in the smartphone universe is straining available wireless spectrum.

In 2012, for the first time, wireless subscribers spent more on data than they did on voice. Spending on data rose by a third in 2012, and during the next four years, it will increase by 94%. TIA projects that the overall wireless market–including voice and data services, wireless handsets, wireless infrastructure equipment, and services in support of the wireless infrastructure– will expand at a 7.6 percent compound annual rate, reaching an estimated $364.5 billion in 2016 from $272.3 billion in 2012. Innovation and growth have also gone well beyond the smartphones. Demand for bandwidth consuming devices such as netbooks and tablets are skyrocketing.[3]

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[1] See, Akamai, The State of the Internet: Q1 2015 Reporthttps://www.akamai.com/us/en/our-thinking/state-of-the-internet-report/index.jsp (last accessed July 17, 2015)

[2] *See*, NTIA, National Broadband Map, Year-End 2013.

[3] This data is derived from the TIA 2015 ICT Market Review & Forecast, a proprietary annual publication from TIA containing distilled data and analysis on information and communications technology industry trends and market forecasts through the end of 2018. This document is available for purchase at http://www.tiaonline.org/resources/market-forecast.

Continued investment in next-generation broadband networks promises major advances in education, healthcare, teleworking, e-commerce, public safety, and security. These capabilities are equipping users with the tools that are necessary to compete in the 21st century, making them far more productive, increasing their standards of living, and enhancing economic and physical security.

Even the definition of what actually constitutes broadband is becoming increasingly complex. The Federal Communications Commission effectively "raised the bar" earlier this year.[4] However, the practical broadband standard remains much lower for many applications.

Based on a number of metrics, broadband subscription rates lag availability, as many potential users do not regard the value proposition of broadband as sufficient to justify its cost. Unquestionably, broadband subscription remains only one multiple expenditure of time and income that is competing for consumer attention.

TIA anticipates that potential users are likely to be prepared to contract for a variety of broadband speeds and capacities that are tied specifically to the particular applications they value. For example, mobile broadband users clearly prefer the convenience of not being tethered to a fixed connection over speed. Email, and even video streaming, may not be sufficient to encourage consumers to adopt the FCC's new preferred broadband standard.

Yet, in the near-term future, TIA anticipates that the distinction between "Mobile" and "Fixed" will become less clear as more traffic moves to "Heterogeneous Networks." [5] These HetNets will blur the distinction between Mobile and Fixed, further obscuring broadband performance metrics. Quite unlike the experience of universal phone service in which users either had voice service or they did not, universal broadband and universal broadband speeds involve less clear-cut metrics.

TIA appreciates your continuing efforts on "Promoting Broadband Infrastructure Investment." Public policy can make a significant contribution to encouraging, as well as discouraging, continued investment at the pace experienced in recent years. TIA thanks you again, and we look forward to working with you on these important issues. For more information, please contact Mark Uncapher at 703-907-7733 or by email at muncapher@tiaonline.org.

Very best regards,

[redacted]

Scott Belcher
Chief Executive Officer
Telecommunications Industry Association

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[4] See, Federal Communications Commission, *2015 BROADBAND PROGRESS REPORT* AND NOTICE OF INQUIRY (Rel. *February 4, 2015)*

[5] "Heterogeneous Networks" refers to wireless networks using different access technologies. For example, a wireless network which provides a service through a wireless LAN and is able to maintain the service when switching to a cellular network, see Archi Delphinanto; Ben Hillen; Igor Passchier; Bas van Schoonhoven; Frank den Hartog (January 2009). "Remote Discovery and Management of End-User Devices in Heterogeneous Private Networks". 6th IEEE Consumer Communications and Networking Conference (CCNC 2009).

TIA Recommendations for Promoting Broadband

TIA regards broadband deployment as but one component of an overall "ecosystem" – combining connectivity with applications. Through economic and regulatory incentives for network deployments and upgrades, the U.S. Government can create investment in next-generation broadband infrastructure.

1. **"User subscription" Should Not be the Only Business Model to Pay for Broadband Connectivity**

TIA anticipates that applications will drive user demand for higher broadband speeds. As a corollary to this, the value users attach to specific broadband "rates" will be linked to specific application and services. To address this, it should be possible to link necessary connectivity requirements to the user's service.

"Just-in-time broadband capacity" could offer many consumers more value by giving reluctant adopters more flexibility and encouraging more adoption. As a result, users would be assured of not having to pay for more connectivity than necessary.

Examples of such potentially bundled connectivity services include:

- healthcare remote monitoring;
- advanced video streaming;
- video conferencing, such as for educational applications; and
- applications associated with the Internet of Things (IoT), such a remote sensors.

"Zero" & "Low" rating marketing strategies can make broadband more affordable by bundling the cost of connectivity with another service. TIA cautions that the Federal Communications Commission's Open Internet[6] order presents barriers to this approach. TIA encourages policymakers to be flexible in allowing competitive pricing alternatives in the marketplace. This approach provides a gateway to encourage investment in more robust broadband offerings.

2. **Support Broadband Ecosystem Applications**

As discussed above, given the widespread availability of broadband, further adoption depends upon compelling applications. Examples exist in:

- **Education**

The U.S. must continue to connect students and library users to the benefits of more robust broadband by increasing technological flexibility for E-Rate program participants, coupled with

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6 *See*, Federal Communications Commission, REPORT AND ORDER ON REMAND, DECLARATORY RULING, AND ORDER, Protecting and Promoting the Open Internet, GN Docket No. 14-28 (Adopted February 26, 2015, Rel. March 12, 2015)

greater incentives for efficient and economical investment decisions. However, local jurisdictions also have a responsibility to transition student materials, such as textbooks, to electronic devices.

- **Healthcare**

The U.S. health care system is harnessing advances in ICT products and services to extend the delivery of care beyond the walls of the hospital and the doctor's office. Government policies must promote the role of ICTs in advancing healthcare, particularly the harnessing of patient-generated health data from remote monitoring devices and services which improve the quality of care for Americans while reducing costs for patients.

- **Public Safety Communications**

ICT products and services are critical enablers in saving lives. A nationwide public safety broadband network is the critical enabler by ensuring that first responders and other public safety professionals have reliable access anywhere to cutting-edge technologies for mission-critical applications.

TIA supports the rapid adoption of "next-generation technology" into public safety communications networks, including the adoption of a sustainable FirstNet business model that provides for the necessary investment, beyond the initial funding under the Spectrum Act, needed to build, maintain, and upgrade the nationwide interoperable public safety broadband network.

- **Transportation Systems**

Pro-innovation and pro-competition policies will promote the societal and economic benefits of an advanced intelligent transportation system (ITS) ecosystem. Innovation and market competition must drive our nation's policy framework in order to enable the U.S. to lead the world in ITS technology. Voluntary, industry-led standardization can accelerate adoption and enable a cost-effective introduction of new ITS technologies, while providing a clearer technology evolution path that stimulates investment.

3. **Enhancing Global Cybersecurity**

Efforts to improve cybersecurity in critical infrastructure protection are critical to addressing current and emerging threats in a context of risk management. A global supply chain can best be secured through a risk management approach by promoting industry-driven adoption of international best practices and global standards.

Working together, government and industry must leverage a partnership framework to increase the effectiveness of dialogue between industry and government (domestic and foreign) experts to discuss international standards and best practices. Internationally accepted best practices relevant to the products at issue should be utilized as important considerations when developing cybersecurity risk management and protection policies.

4. **Avoiding a Spectrum Crunch through more Availability**

As discussed above, mobile broadband traffic has been increasing at a dramatic pace. Global mobile data traffic increased 81 percent in 2013, and is expected to rise 11-fold over the next five

years.[7] More spectrum is needed to keep pace with this exploding demand. The U.S. needs to make an additional 500 MHz of spectrum available for broadband use by 2020. The FCC has made a strong start by opening 5 GHz, AWS-3, and H block spectrum and is making progress on 600 MHz, 3.5 GHz, and an additional 5 GHz spectrum, but more must be done.

Innovative, next-generation broadband wireless devices, applications, and services require spectrum availability for both fixed and mobile broadband use; this can be achieved through further reallocations of federal spectrum, flexible regulations, improved spectrum management among users, and rapid implementation of voluntary incentive auctions. In view of mobile broadband dynamic growth and long-term needs, further efforts must continue to identify additional spectrum for availability in the next decade and beyond. Budgetary incentives and a long-term plan that supports predictability for both commercial and government uses will encourage more efficient use of this valuable resource.

5. Support for Research & Development

U.S. ICT research remains significantly underfunded. While the ICT industry accounts for $1 trillion of U.S. GDP – seven percent of the economy – federal research spending on ICT accounts for less than two percent of all federal R&D spending. Strategic and robust U.S. investment in telecommunications research, including a permanent R&D tax credit, multi-year federal research plans, immigration reform, and education in science, technology, engineering, and mathematics (STEM), will enable the U.S. to remain a technology industry leader.

The U.S. government must make long-term communications research a priority, and funds need to be directed to key areas: spectrum sharing; universal broadband; interoperable mobility; and homeland security related fields including interoperability, security, survivability, and encryption.

6. Flexibility to Address Accessibility

ICT products continue to positively transform the lives of those with disabilities. The ICT industry continues to work closely with the disability community to improve access to the technologies of today, while looking ahead to the products of the future. Increasing accessibility to technology for those with disabilities can be achieved through collaboration among stakeholders, policies that reflect technological neutrality and feasibility principles, and the usage of voluntary consensus-based standards.

Government should support pro-competitive policies that encourage marketplace solutions and rapid deployment of accessible technologies. There should be an emphasis on solutions which are technically feasible, with a focus on people-centric or scenario-based designs that are outcome-focused (as opposed to feature/function focused). Supported policies should include

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[7] See, Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2014–2019 White Paper, (rel. February 3, 2015, available at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html (last accessed July 17, 2015)

the allowance of voluntary, consensus-based standards as safe harbors for compliance with regulations when appropriate, and the use of blanket waivers for classes of nascent products.

When developing any accessibility policies, the government must ensure that the required technologies are technically feasible and provide sufficient time for industry to come into compliance.

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July 22, 2015

The Honorable Greg Walden
Chairman
Subcommittee on Communications and Technology
U.S. House Committee on Energy and Commerce
Washington, DC 20515

Dear Chairman Walden:

COMPTEL appreciates the opportunity to submit a statement for the record for the U.S. House Energy and Commerce's Subcommittee on Communications and Technology's hearing on "Promoting Broadband Infrastructure Investment."

Based in Washington, D.C., COMPTEL is the leading industry association representing competitive network service providers and their supplier partners. Our members are catalysts for creating economic growth, with capital investments of over $2.5 billion in 2012 and 2013 alone, improving the quality of life for all Americans through technological innovation, new services, affordable prices, and greater choice. These entrepreneurial companies offer a wide array of broadband voice, video, Internet and data offerings, using both wireline (copper/fiber) and wireless networks to reach their customers. Among the state-of-the art solutions they deliver are managed services, cloud computing, and unique applications that are developed and deployed via next-generation, IP-based managed networks.

The United States sits on the verge of a new era of investment, innovation, and choice in information and communications services. Consumers and businesses today enjoy access to unprecedented computing and communications platforms. These platforms include mobile computing, cloud computing, wired and wireless managed broadband and voice services, and broadband Internet access service. The innovations we take for granted today— unimaginable merely a few decades ago—have been the direct result of pro-competition, market-opening policies that benefit individual and business customers— competitive policies that have resulted in $1.4 trillion in investment from broadband providers since 1996.

There is an enormous opportunity to expand the reach of competitive broadband deployment, particularly to the customer doorstep. While there has been substantial investment in networks over the last twenty years, there remains more to be done to encourage additional network deployment. The hearing today provides an excellent opportunity to identify existing local, state, and federal barriers to broadband investment and to make a clear case for the benefits of developing a robust network deployment policy. The objective, hopefully, is to create a future where we have an abundance of competitive wired and wireless capacity based on a logical, comprehensive and bipartisan consensus centered on a national priority of ensuring residential and commercial access to numerous advanced broadband services.

For instance, COMPTEL member companies that are actively deploying fiber nationwide, including new network builders like Google Fiber and Rocker Fiber, frequently experience delays and barriers at the local level. Construction of advanced broadband networks requires access to existing poles and conduits on a timely and cost-effective basis. Delays in the "make ready" work, which includes rearranging of existing pole attachments, installation of new poles, and ensuring proper spacing of equipment can take as long as six months or longer.[1] Further, it is difficult to obtain reliable data regarding the location and ownership of existing infrastructure, if it is available at all. At the federal level, many of COMPTEL's member companies are also experiencing delays in constructing networks that run over federal lands, such as those under control of the Bureau of Land Management (BLM). Permit applicants regularly endure a one to four-year process to obtain rights-of-way over federal land. These delays, combined with a lack of sufficient information on existing infrastructure, are unnecessarily burdensome and have a severe impact on the ability of our members to deploy competitive network infrastructure efficiently and cost effectively.

The cost of video remains another barrier to competitive broadband deployment. Offering video services increases the value of the broadband network, providing better economics for new entrants deploying broadband infrastructure. In fact, as consumer demand for online video increases, the ability to offer video services is directly linked to the ability to deploy new broadband networks. Access to video services drives broadband adoption, which in turn helps to justify the business case for broadband deployment. When smaller carriers are able to offer video and broadband services together, data shows that broadband adoption increases by 24 percent.[2] However, network operators' ability to deliver video over their broadband services is hindered by outdated laws and rules that make the business case increasingly difficult for new entrants. The spiraling costs of retransmission consent, for instance, and difficulty in negotiating reasonable terms for access to popular programming, can limit video offerings, thereby reducing the overall competitive availability of video services.

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[1] See Comments of Google, Inc. to the Broadband Opportunity Council, available at http://www.ntia.doc.gov/files/ntia/google_inc_boc.pdf, at 3 (June 10, 2015).

[2] See COMPTEL, ITTA, NTCA letter to Chairman Thune on video reform, available at http://www.comptel.org/Files/filings/2015/6.22.15_%20Video_Policy.pdf (June 22, 2015).

COMPTEL looks forward to working with the Subcommittee to reduce these and other barriers to network deployments and craft reasonable policies and best practices to promote investment and greater competition in broadband services. History has shown that when new competitive networks are deployed, with multiple providers serving a market, the result is greater overall investment levels.

Thank you for the opportunity to provide this statement for the record. COMPTEL looks forward to working with you and the Members of the Subcommittee on broadband infrastructure investment and other matters.

Sincerely,



Chip Pickering

Chief Executive Officer

cc: The Honorable Fred Upton
The Honorable Frank Pallone
The Honorable Anna Eshoo



Competitive Carriers Association
Rural • Regional • Nationwide®

July 22, 2015

The Honorable Fred Upton
Chairman
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Frank Pallone
Ranking Member
House Committee on Energy and Commerce
2125 Rayburn House Office Building
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The Honorable Greg Walden
Chairman
Subcommittee on Communications and Technology
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Anna Eshoo
Ranking Member
Subcommittee on Communications and Technology
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Upton, Ranking Member Pallone, Chairman Walden, and Ranking Member Eshoo:

Competitive Carriers Association (CCA) respectfully submits this letter for the record regarding today's hearing on "Promoting Broadband Infrastructure Investment." Broadband access is a critical component of modern life, and CCA members provide innovative mobile broadband services, many to otherwise underserved or unserved areas of the United States.

Mobile broadband availability has spurred broad benefits, including access to telemedicine, education and employment opportunities, and enabled precision farming and agricultural advancements. Indeed, nearly half of all United States households are now "wireless only," and PEW Research recently found that "nearly two-thirds of Americans are now smartphone owners, and for many these devices are a key entry point to the online world." While this progress is commendable, the job is not done. CCA supports the Subcommittee's focus on continued broadband investment and growth, and particularly encourage efforts to provide mobile carriers with additional opportunities and foster greater certainty through procompetitive policies, including tower siting, Universal Service, and access to spectrum.

Facilities Siting

Competitive carriers depend on reasonable facilities siting policies in order to deploy critical wireless infrastructure needed to serve their customers. The Federal Communications Commission (FCC) has recognized that obtaining regulatory and zoning approvals from federal and local authorities is a significant constraint to the

deployment of wireless services. Efforts to streamline the process and remove unnecessary red tape encourage additional deployment of mobile broadband infrastructure.

Wireless infrastructure providers deserve prompt responses from state and local governments on siting applications in a timely manner. Shot clocks and other defined timeframes and parameters allow sufficient application consideration without creating unnecessary delays that can create obstacles for carriers to expand facilities. Failing to provide carriers with adequate information, clear reasons for denying a siting application, or provide timely responses, ties up limited resources better used to expand mobile broadband services. The Supreme Court's ruling in *T-Mobile South LLC v. City of Roswell*, which requires local and state governments to act expeditiously and clearly state their objections to tower siting, is a step in the right direction. Should further disputes regarding state and local authority continue to arise, we encourage Congress and the FCC to provide additional guidance to provide clear rules of the road for tower siting.

Many competitive carriers serve the most rural areas of the United States, and have often faced challenges obtaining rights of way for siting on federal lands. The Bureau of Land Management, National Parks Service, United States Forest Service, Fish and Wildlife Service, and other Federal agencies control significant portions of land, particularly in western and rural states. While expanded broadband infrastructure and mobile service will increase public safety and economic opportunity in and around these areas, competitive carriers seeking to deploy mobile broadband often have faced unreasonable delays and other impediments. To the extent current statutory or regulatory requirements cause delays or otherwise impede expansion of broadband infrastructure, policymakers should consider ways to streamline these requirements to promote deployment on federal lands, particularly in rural and hard-to-serve areas.

Facilities siting issues are not limited to new sites, and CCA applauds Congressional action through provisions to streamline siting in the Spectrum Act and recent FCC actions to update rules to accommodate smaller cells and more frequent updates to existing sites. These common sense policies will speed deployments of state-of-the-art mobile broadband facilities. As technology continues to evolve, policymakers must ensure that regulations keep pace with carriers' needs to maintain and deploy the infrastructure needed to provide service.

Removing red tape where appropriate can be instrumental in encouraging continued innovation and deployment in the telecommunications marketplace. Congress should continue to support competition and certainty in policies that guide siting applications and access to rights-of-way to deploy the latest mobile broadband facilities.

Universal Service Fund

Congress created the Universal Service Fund (USF) to provide reasonably comparable services in urban and rural areas, requiring that support be predictable and sufficient. Uncertainty regarding existing and future support has the potential to delay or prevent deployment of broadband infrastructure in rural and high cost areas.

Indeed, wireless carriers invest significant private sector resources to expand service in rural and high cost areas in large part because of USF support. These policies have enabled years of expansion of mobile wireless services in rural America. Questions regarding future support have the chilling effect of stalling deployments and forcing carriers to make difficult decisions regarding existing and planned services in rural areas, especially in some of the most challenging terrain. Congress must continue its oversight to ensure that USF support is sufficient and predictable to support wireless services in rural America. Uncertainty regarding future USF support has the potential to strand existing investments, leaving behind a legacy of rusty towers and reduced services. Understanding that USF will be the focus of future Subcommittee efforts, we look forward to continued engagement on this important issue.

In conclusion, CCA supports all efforts that provide carriers with certainty while eliminating or streamlining burdensome procedures to encourage investment and expansion in mobile broadband infrastructure and all things that connect to it. We appreciate the opportunity to contribute to the record for today's hearing, and look forward to continued work with the Committee, Subcommittee, its Members, and the FCC on these important issues to expand mobile broadband services and support competition in the industry. Please do not hesitate to contact me with any questions.

Sincerely,



Steven K. Berry
President & CEO

July 22, 2015

TECH FREEDOM

Hon. Fred Upton
Chairman
Energy and Commerce Committee
US House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Hon. Greg Walden
Chairman
Communications and Technology Subcommittee
Energy and Commerce Committee
US House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Re: Promoting Broadband Infrastructure Investment

Dear Chairman Upton and Chairman Walden,

We commend you and the Subcommittee on Communications and Technology for calling this hearing. For far too long, Congress and the FCC have been distracted by the divisive issue of how to regulate the Internet in the name of "net neutrality," losing sight of what most Americans think of when they hear that term: better, faster, cheaper broadband — and more competition. All Americans will benefit from policies that make broadband deployment, and new entry into the broadband market, easier.

In general, broadband policy in the U.S. has been far too preoccupied with how to manage scarcity — from the "net neutrality" debate to how to configure spectrum auctions and license transfers — and far too little focused on how to increase the supply of bandwidth and the ubiquity of useful broadband at affordable prices. Here, we present several conceptual models for promoting deployment of broadband, both wireline and wireless, with subtle variations within each model. We then lay out a general roadmap that governments could use to promote broadband deployment, from mere coordination and cutting of red tape, to deployment of conduits and dark fiber, all the way up to municipal ownership and operation of networks.

We propose that, in general, government-owned broadband be the *last* resort, not the first thing governments try in order to stimulate broadband supply. Such an approach would

promote Internet Independence in the broadest sense: ensuring that consumers are not dependent on monopoly providers but also not making them more dependent on government.

There is no one-size-fits-all approach to broadband deployment, so different models will be better suited to different areas, but following this general roadmap should allow for governments at all levels to promote broadband deployment while minimizing risk and still allowing for individualized plans that reflect the needs and desires of the local citizenries.

I. Conceptual Models for Promoting Broadband Deployment

The current debate over broadband deployment — to the extent that it even happens, given the preoccupation with "net neutrality" regulation on both sides of the aisle — centers on whether cities, states and the federal government should build and operate broadband networks. This false framing has helped to extend the political polarization into the broadband debate — and for no good reason.

The real question facing policymakers at all levels is simple: how to produce (a) the greatest investment and competition in broadband not only with (b) the smallest expenditure of taxpayer dollars, but also with (c) the least distortion of private markets and (d) the smallest risk of increased government control over the Internet?

Framed this way, it quickly becomes clear that there are, in fact, a range of things governments can do — and, perhaps even more importantly, *stop* doing — to promote broadband deployment. Government encouragement of broadband deployment and competition is not a binary, all-or-nothing choice, but rather a spectrum of options that vary widely along several key dimensions. The sheer number of such policies, and their nitty-gritty complexity, has, understandably, made it far simpler to focus the debate on the relatively simple abstraction of "muni broadband."

Here, we attempt to provide, for the first time, a conceptual model of the range of options available to policymakers, organized roughly in order from least to most interventionist — in terms of the three categories mentioned above: taxpayer investment, market distortion, and risk of government control. This is by no means a complete enumeration of a pro-deployment policy agenda, but it is a start. (As noted below, we urge the Committee to immediately task the Government Accountability Office with conducting a study to explore the details of implementing these ideas, their relative costs and benefits, and additional similar ideas.)

1. **Coordination & Cutting Red Tape**.
    a. **Permitting Process Reform**. Simply getting permission to build a broadband network or install towers or small cells can be prohibitive.
        i. Dedicated personnel to expedite approvals

ii. Clear deadlines for approvals process
iii. Streamlined permits — for example, some cities require permitting for fiber installations on a block-by-block basis

b. **Dig Once Coordination:** A study by the GAO showed that "Dig Once" policies can reduce the of the cost of deploying fiber under highways in urban areas by 25–33%, and by roughly 16% in rural areas.[1] These cost reductions may not see massive, but in the context of multi-million dollar builds, the total numbers may be enormous. More importantly, whether to deploy a new network (or upgrade an existing network) is always a *micro*economic question, to be decided on the margins: even relatively small cost reductions could be decisive as an ISP, or potential ISP attempts to obtain the capital necessary for deployment. Without spending any extra public dollars, governments can greatly expedite deployment by simply adopting these types of Dig Once policies.
   i. If a dig is already planned (at request of deploying ISP or as part of another project), solicit bids from any ISPs who want to come in and lay equipment while the ground is already dug up.
   ii. If a dig is very minor, or if the existing supply of conduit/fiber is already deemed adequate, no such solicitation is necessary, as it would delay the dig project without any corresponding benefit to broadband deployment.

c. **Allowing the IP Transition**. Many ISPs are currently forced to spend billions of dollars each year maintaining their legacy copper infrastructure. But for the FCC's rules, such investments could be put towards deploying new fiber optics and other state-of-the-art technology, rather than serving the telephony needs of an ever-dwindling population still reliant on their home telephone connection.
   i. Congress and the FCC need to finally embrace the IP Transition, and allow ISPs to retire their legacy copper networks when there are adequate alternatives available — such as 4G LTE mobile wireless coverage or a managed VoIP service — so that they can get on with building out the network that will support future communications needs.
   ii. As with the DTV Transition, it may even be wise for Congress to set a date when all legacy networks and the Public Switched Telephone Network can officially be shut down, and the United States can finally enter the Digital Age.

2. **Leveraging Existing Government Assets**.
   a. **Better Access to Information**. Government has unique access to hyperlocal information about each block in the city and what will be required to deploy a network. Since broadband deployment costs vary widely depending on

[1] Google Testimony at 4.

conditions, lacking easy access to this information can significantly increase the uncertainty in business planning, and thus the ability to raise capital.

i. Develop structured Geographic Information System databases of relevant deployment information (e.g., utility pole owners, approved local contractors, availability of land for local HQ, etc.).

b. **Government-Owned Land/Buildings.** The Federal government remains by far the largest land-owner in America, and municipalities own land that is particularly critical for broadband deployment.
   i. Earmark available government-owned land for future tower sitings, local HQs, and other network elements.
   ii. Enable and expedite collocations of wireless facilities on government-owned buildings.
   iii. Ensure that all government buildings are wired for high-speed broadband Internet access to increase online civic engagement and reduce duplicative paperwork.

c. **Pole Attachments**. Telecommunications carriers and cable companies have long had access to privately owned poles at "just and reasonable" rates governed by the FCC — because such poles are built on government-owned land (the underlying government asset) and it is generally not possible to build competing sets of poles (nor, generally, would it be cost-effective to do so, giving poles characteristics of a natural monopoly).
   i. The FCC's reclassification of all broadband providers recently extended these rights to new ISPs like Google Fiber without their having to qualify as telcos or cable companies. This is perhaps the one good thing about Title II reclassification — although it hardly justifies the overall costs of reclassification. Given the significant risk that reclassification may fail in court, Congress should do now what it should have done before reclassification: Amend 47 U.S.C. § 224 to equalize pole attachment rights for all providers.
   ii. Reclassification does not address the larger problem: current Federal pole attachment law applies only to privately owned poles, not those owned by local governments. Congress has every right, as a matter of federalism, to extend the pole attachment pricing rules to government-owned poles.

d. **Spectrum**: In general, radio spectrum is the federal government's greatest underutilized asset.
   i. Buildout of FirstNet will be a major step forward for governments' utilization of spectrum, but there is more that can be done to serve the communications needs of citizens.

ii. Using the television white spaces, spare capacity in the D Block, and/or future freed spectrum, governments can provide Wi-Fi in city centers and other public areas, typically by contracting out such service to a wireless provider who will actually be in charge of operating the networks.

e. **Existing Dark Fiber**. Municipally owned fiber optic cable has been around for decades, and in some places cities have invested early and deployed fiber that remains unused, or dark, in the ground.

i. Where government has laid dark fiber, solicit bids from ISPs willing to install the remaining network elements and offer service using the existing government assets.

3. **Building Smart Infrastructure**. If governments want to take an active role in stimulating investment, they should start with complements, not substitutes, for private broadband networks.

a. **Upgrading Poles**. Where poles are owned by municipalities, those municipal utilities could ensure, as part of regular maintenance, that they are ready for additional attachments or expand the space available for new providers.[2]

b. **Dig Once Conduits.** Instead of merely coordinating the installation of conduits among private providers whenever streets are dug up, municipalities can take a more proactive role to ensure that conduits are installed throughout a city.

i. **Private**: Government requires private providers deploying fiber in public rights of way to install standardized conduits available for lease to other companies (*i.e.*, their current and future competitors in the broadband market) at regulated rates — just as it happens today with pole attachments on government land.

ii. **Public**: Government does not wait for a private provider to ask to install a conduit, and instead deploys a conduit on its own — ideally alongside other infrastructure projects, as San Francisco is currently doing with its replacement of sewer mains — that it then offers to lease access to for other ISPs to deploy fiber in, thereby recovering the costs of the conduit over time.

c. **Dark Fiber**: If, after adequate conduit is deployed, no private ISPs are willing to deploy fiber, government purchases and deploys fiber inside the conduits, which it then offers to lease to private ISPs for use in providing service, thereby recovering the costs of the fiber over time.

4. **Government-Owned Networks**. In some areas, even coordinating digs and deploying conduit and dark fiber is not enough to convince ISPs to deploy, so the government

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[2] Google Testimony at 4, available at http://docs.house.gov/meetings/IF/IF16/20150722/103745/HHRG-114-IF16-Wstate-SlingerM-20150722.pdf.

must go a step further, purchase the remaining network elements, and even run the network as a public utility if that's what it takes to deliver adequate broadband service.

a. **Illustrative Examples**:
    i. **Muni broadband**: Chattanooga, Tennessee's EPB
    ii. **Muni Wi-Fi**: Wi-Fi in Baltimore public areas
    iii. **Middle Mile**: KentuckyWired project; Westminster, MD and Charlottesville, VA partnership with Ting
b. **Potential Variations:**
    i. **Pure wholesaler**: Resellers provide *all* service.
        1. This is similar to the dark fiber model of building smart infrastructure, except that government also installs the remaining network elements, and leases access to the network to resellers who will provide all service to end-users, with government recovering the cost of building the network over time through such lease agreements.
    ii. Open Access Model: Resellers *can* provide service.
        1. Rather than relying upon resellers to provide all service to end-users, the government forms a public utility or local cooperative to operate the network and provide service to end-users at regulated rates; however, upon request, the government must open up the network for leased access by resellers.

II. Dangers of Government Ownership

Some insist broadband networks should be owned and operated as government utilities, similar to water and electric services. But while these may (generally) be natural monopolies, it is far from clear that the same is true of broadband. The natural monopoly in the Internet exists not at the network layer, but one layer deeper: the conduits and poles that carry broadband networks.

Furthermore, there is good historical reason to think that ownership and the utility model would not be a good fit for broadband. In particular, the three main concerns with government ownership of broadband networks can be traced to the effects of upgrade cycles, the lack of natural monopoly, and the risk of increased government control and surveillance.

Broadband speeds have been growing at a tremendous rate since the commercial Internet was first popularized in the late 1990s, but they have barely been able to keep up with demand. And as users increasingly utilize high-bandwidth applications like IPTV and 4K video streaming, ISPs will need to keep upgrading their infrastructure to keep pace. By nature of being deeply involved in the business on a day-to-day basis, private companies are in a superior position to

keep up with state-of-the-art technologies and implement the technical upgrades necessary to meet future broadband demand. While government bureaucracy and the utility model might be adequate to meet broadband needs in the near-to-medium term, in the long run they will likely be unable to keep up, and such municipal networks may fall behind or even go under.

Indeed, it is not a given that any one broadband network is going to be profitable and sustainable. Some of them inevitably fail, due to mismanagement, dwindling populations/subscribers, or other unpredictable factors. Thus, it is better to not put all of one's eggs in a single basket, and instead allow multiple ISPs to serve a single market, since — unlike utility poles and public rights-of-way — broadband is not a natural monopoly. Consumers can access the Internet from their homes over a coaxial/fiber cable, a copper/fiber connection, and/or wireless alternatives. Although each of these solutions will have slightly different characteristics and performance levels, some may be particularly well suited to certain segments of the market while others will be better suited to other segments, and there is good reason to think that most markets will be able to support at least two or three broadband competitors. Such facilities-based competition and distributed risk are incompatible with the public utility model of government ownership, and, for at least most markets, are far superior.

Relying upon government ownership of networks risks not only letting consumers fall behind in upgrade cycles, but also crowding out private investment that otherwise would have gone towards deploying a second or third broadband network, thereby reducing the aggregate broadband investment in a particular market and leaving consumers worse off. Furthermore, placing government in the role of owning and operating broadband networks allows for even easier and more ubiquitous surveillance, without any private party intermediary able to resist or cry foul. This is not to say that government ownership and operation of broadband networks is never the right choice, but it is to say that there are great risks attendant with such government involvement, and governments would do well to keep these risks in mind when considering whether to rely on public or private capital in boosting broadband deployment.

III. Climbing the Ladder: Governments Should Give Markets a Chance

Government-owned networks should be a last resort, not the place the broadband deployment debate starts. Again, we urge a three-pronged approach to achieve maximum results for consumers with a minimum of taxpayer investment (and risk) — one that channels market forces to the greatest extent possible, rather than replacing them:

1. Minimizing regulatory and other bureaucratic barriers to deployment;
2. Catalyzing private investment; and
3. Promoting facilities-based competition between private providers, and relying on government-owned broadband networks only where the first two approaches fail to stimulate adequate broadband deployment and competition.

Specifically, we urge the Committee to consider revising the Community Broadband Act (a bill that has had bipartisan support in past Congresses) such that, before actually building a government-owned network, a municipality must (a) meet some minimum standard in cutting red tape, (b) make its own assets available to private providers, and (c) solicit bids not merely on the "opportunity to bid to provide the capability,"[3] but on the opportunity to lease Dig Once conduits once installed by the municipality.

The last requirement is critical — yet should be unobjectionable. If a city is going to build a broadband network, it will essentially have to install conduits anyway (or at least, dig up streets). Why not at least see if private providers might be willing to finish the job? Why should taxpayers have to pay for the installation of a single network when at least one private provider might be willing to cover the costs of building the rest of the network? Even if only a single provider responds to the initial request, having conduits installed, rather than building a government-owned network, leaves the door open to other private providers to cheaply take advantage of the conduit in the future (since fiber can be easily threaded through such conduits without the need for any additional digging). If no private provider responds, the city could simply build its own network as planned — with little delay or additional cost. At most, the difference would be (a) gauging the potential for private investment and (b) ensuring that, if the city does install its own network, it future-proofs the network by installing its fiber in conduits that private providers can use in the future and that will be cheaper and easier for the municipality to maintain and upgrade.

Such municipal networks would, ideally, also be on a purely wholesale basis: the government would not be in the retail business, but would allow private resellers to provide the service directly to consumers. Short of that, the network should at least be available to such resellers. This is precisely where such an open access requirement would be appropriate: where taxpayer dollars are used to build the network.

IV. Specific Suggestions (GAO Study, Follow Up Hearings)

The broadband deployment discussion must begin by acknowledging the painful reality that the National Broadband Plan was a failure — not in its vision or substance, but in the lack of operationalization by the FCC and other Federal agencies, Congress. To paraphrase Mark Twain's famous quip about the weather: "Everybody complains about broadband deployment, but nobody (at least in government) does anything about it."

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[3] Community Broadband Act, S. 240, 114th Cong. § 6(a)(5), (2015).

This, in turn, reflects a lack of institutional commitment to promoting broadband deployment. However, this hearing is a perfect opportunity to reopen these issues and kickstart a new conversation about broadband deployment. These are complicated issues that will take time to sort out, but Congress can and should take immediate steps to help resolve them. In particular, we ask that Congress commission a GAO study to examine the models proposed herein and the particular variations within each. For example, when considering government deployment of conduits and fiber, there are several key questions that should be considered, including:

- Who initiates the dig process: a broadband company (or other would-be-digger, like a utility) or a government entity?
- How does coordination work among entities that currently want to install fiber or other infrastructure (e.g., gas or water pipes)?
- Is there a standardized conduit installed for fiber-optic cable?
- How would future users gain access to such conduit?
- Who owns, or should own, such conduit?
- How is the installation of the conduit funded?
- Are there standardized models for internal wiring and connecting buildings to the curb?
- Do these models need to be updated to account for changes in technologies and/or for multiple providers serving a single building?
- Should internal wiring models apply only to newly constructed buildings, or can existing buildings be easily retrofitted?
- And how do such choices affect the overall costs of deploying a network and operating it over time?

Besides these specific questions, we propose the following general tasking language:

1) How can government at all levels maximize private investment in broadband, and competition among private broadband networks, with the smallest investment of taxpayer dollars (or public debt), while minimizing both distortion of private markets and the potential for greater government control?
2) How much progress has the FCC made in implementing the National Broadband Plan?
3) What kind of institutional structure could help to ensure that governments at all levels make reforms to their policies?

In addition, we urge the Committee to hold additional hearings on these questions going forward as more data become available. Some of the issues at hand would be best resolved by recommending best practices, rather than codifying them in legislation. Others require legislation, either at the state or national levels, to be effective. But in either case, no less important than getting the initial recommendations right is follow-through.

Once again, we commend the Chairmen, the Committee, and the Subcommittee for holding this hearing and actively investigating these pressing issues. We look forward to working more in this area as deliberations move forward and Congress begins to consider some of the key areas within broadband deployment, such as how to free up more government spectrum for wireless broadband, and how to update the Communications Act to embrace the IP Transition and the Digital Age.

Sincerely,

Berin Szoka, President
Tom Struble, Legal Fellow
Molly Nichols, Legal Intern

1. Cablevision Raises 'Flagship' Internet Tier Speed, *Multichannel News*, 6/23/15
2. Charter Raises Entry Level Speeds in St. Louis to 100 Mbps, http://interact.stltoday.com/pr/business/PR072814091117985 , St. Louis Today 7/28/14
3. AT&T Incites Broadband Challenge Against Comcast With Miami-Area 1 Gbps Launch, Fierce Telecom, 6/30/15
4. NTS, Ting Enhance 1 Gbps Reach In Texas And Virginia, Fierce Telecom, 6/15/15
5. Consolidated Brings 1 Gbps Broadband Service To Texas, Fierce Telecom, 6/8/15
6. Centurylink's 1 Gbps Availability Drives Consumer Awareness, Purchases Of Higher Legacy Speed Tiers, Fierce Telecom, 6/4/15
7. Comcast Announces 2 Gigabit Residential Service And New Extreme 250 Mbps Tier In California, Press Release, 4/17/15
8. Cox To Double Ultimate Internet Speed For Customers In Arizona, Press Release, 6/26/15
9. Cox Doubles Internet Speeds In Rhode Island, Press Release, 10/15/14
10. Time Warner Cable Increases Internet Speeds In First Phase Of Twc Maxx Launch In Dallas, Press Release, 6/11/15
11. Cable One Boosts Internet Speeds Up To 100mbps, Press Release, 3/3/15

Cablevision Raises 'Flagship' Internet Tier Speed
By Jeff Baumgartner
Multichannel News
June 23, 2015
http://www.multichannel.com/news/broadband/cablevision-raises-flagship-internet-tier-speed/391635

Cablevision Systems said it has increased the max downstream speed of its "core" Optimum Online high-speed Internet tier from 15 Mbps to 25 Mbps, a move that also happens to puts it in line with the FCC's new definition of broadband.

The downstream speed boost for the flagship tier, which starts at $39.99 per month as a standalone offering, is being provided to new and existing residential and business customers at no incremental cost, said Cablevision, an MSO that has been styling itself as a "connectivity" company.

Of recent note, Cablevision CEO James Dolan told an investor conference that the MSO's data service outperforms video by a 7-to-1 margin, and that operators much be ready to shift their business approach as high-speed Internet customers surpass video subs. Cablevision has been backing that up by introducing new packages tailored for cord-cutters, becoming the first MVPD distribution partner for the new HBO Now standalone OTT service, agreeing to offer Hulu, expanding its WiFi network to 1.1 million hotspots (via a mix of access points in public locations and in home-side routers), and launching Freewheel, a WiFi-only phone service.

Cablevision is also a member of Open Connect, Netflix's private CDN, and ranks near the top of the OTT provider's monthly ISP Speed Index.

"We are taking the next step as New York's premier connectivity company to provide a better, faster data experience both inside and outside the home at no additional cost," Kristin Dolan, chief operating officer of Cablevision, said in a statement about the speed bump. "This speed increase, along with Optimum WiFi, provides a superior broadband experience to meet and exceed the needs of our customers."

Cablevision, which tangles with Verizon FiOS, also offers cable modem tiers that provide downstream speeds of up to 50 Mbps, 75 Mbps, and 101 Mbps.

In January, the FCC raised the definition of broadband to 4 Mbps downstream/1Mbps up, to 25/3.

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CHARTER RAISES ENTRY-LEVEL INTERNET SPEEDS TO 100 MBPS AS PART OF CHARTER SPECTRUM LAUNCH

http://interact.stltoday.com/pr/business/PR072814091117985

Wes Shirley | Posted: Monday, July 28, 2014 09:11 AM

ST. LOUIS, Mo. – You may have seen the ads saying Charter Spectrum is coming – but what does it mean for residents in the St. Louis area? Quite simply, it means starting today, Charter Communications (NASDAQ: CHTR) will launch a new suite of all-digital services and begin to more than triple entry-level Internet speeds from 30 to 100 Mbps for customers in the St. Louis area at no additional cost. The launch of Charter Spectrum and massive speed increase follow the company's move to an all-digital network, with St. Louis selected as its flagship market for the 100 Mbps entry-level speed option.
"Charter is raising our entry-level Internet speeds at no additional cost to the benefit of the vast majority of customers," said Charter President and Chief Executive Officer Tom Rutledge. "That strategy differs from other providers who boast top tier Internet speeds that are either priced at a premium or have limited availability, and provides our customers with tremendous value in a simple set of products."

In addition to the significant Internet speed boost, Charter's new suite of digital services, titled Charter Spectrum, includes access to more than 200 high-definition (HD) video channels and advanced voice service that includes unlimited nationwide calling. New, free downloadable applications also allow customers to stream more than 130 channels of live TV on their tablets, smart phones or mobile devices anywhere inside their homes and with many programming options available for out-of-home viewing. Charter service does not require long-term contracts and is backed by a 30-day money back guarantee.
"Charter continuously invests in our network to deliver superior products and provide better service and the launch of our Spectrum services reflects that," said Rutledge. "Through these investments we will differentiate Charter from the competition."

Charter began its local move to an all-digital network in January, investing more than $170 million to upgrade its Missouri and Illinois-based network. In all, the company has invested more than $2 billion nationally in its network and is committed to moving to an all-digital platform across its entire 29-state footprint by the end of 2014.

The new residential Internet speeds will become available in the St. Louis area starting June 16. Other markets across Charter's 29-state footprint will realize speed lifts from 30 Mbps to 60 Mbps as the company moves to an all-digital network followed by the launch of Charter Spectrum.

For more information about the new Charter Spectrum suite of services and what it means for customers in the St. Louis area, visit www.charter.com/spectrum100 or call 1-888-GET-CHARTER.

AT&T Incites Broadband Challenge Against Comcast With Miami-Area 1 Gbps Launch
Sean Buckley
Fierce Telecom
June 30, 2015
http://www.fiercetelecom.com/story/att-incites-broadband-challenge-against-comcast-miami-area-1-gbps-launch/2015-06-30

AT&T (NYSE: T) has made the southeast Florida cities of Fort Lauderdale, Hialeah, Hollywood, Miami and surrounding communities the next targets for its 1 Gbps FTTP service, putting it in direct competition with Comcast (NASDAQ: CMCSA) which will offer an even higher speed 2 Gbps service.

Florida is a key area expansion area for AT&T's 1 Gbps service.

The telco will have to face off with Comcast, which announced in April it will be offering its 2 Gbps service to 1.3 million customers in Miami, Ft. Lauderdale, West Palm Beach and Jacksonville.

The launch in the Florida market comes only days after AT&T released news of further deployments in the Dallas-Ft. Worth and Chicago areas. Similar to Chicago, AT&T will compete head-to-head with Comcast (NASDAQ: CMCSA) for both

Internet and pay-TV subscribers with its U-verse with Gigapower service. It also rolled out service in the Charlotte, N.C., area earlier this month.

This latest expansion brings the number of cities where AT&T offers its GigaPower service to 14, with four more cities slated to receive the service. Ultimately, AT&T plans to expand its 100 percent fiber network in up to 25 markets.

Similar to other recent launches, U-verse subscribers will have a choice of three types of bundled services, along with locked-in price guarantees ranging from one to two years depending on the service tier they choose.

Gigapower has already launched in other parts of the Dallas-Ft. Worth market including Allen, Arlington, Dallas, Euless, Fairview, Fort Worth, Granbury, Highland Park, Irving, McKinney, North Richland Hills, University Park, Weatherford and Willow Park, Texas.

Given the investment it takes to roll out a FTTP network, AT&T is citing the success of the ongoing buildout as a way to justify building out GigaPower to more markets in its territory. In addition, the service provider has committed to expanding U-verse with GigaPower to another 2 million customer locations once its merger with DirecTV (NASDAQ: DTV) is approved.

On the technical side, the service provider's planned virtualized GPON strategy could also reduce the cost and complexity of rolling out FTTP services. The provider is virtualizing the GPON optical network terminals (ONTs) that it deploys in each of its central offices when rolling out GigaPower.

###

NTS, Ting Enhance 1 Gbps Reach In Texas And Virginia
Sean Buckley
Fierce Telecom
June 15, 2015
http://www.fiercetelecom.com/story/nts-ting-enhance-1-gbps-reach-texas-and-virginia/2015-06-15

While AT&T (NYSE: T) and Comcast (NASDAQ: CMCSA) continue to grab headlines with their 1 and 2 Gbps plans, alternative providers NTS and Tucows' Ting are also hot on the FTTH expansion trail, announcing that they are bringing 1 Gbps service to more areas of Texas and Virginia.

Following a recent rollout of 1 Gbps service in Lubbock, Texas, NTS is now making the service available via its Gigabit Fiber Network to local businesses in Midland Texas.

Similar to other rollouts, eligible business customers will be able to access speeds ranging from 75 Mbps up to 1 Gbps.

NTS said its Gigabit Fiber Network offers several different Internet packages, including varying levels of Internet speeds with symmetrical, asymmetrical and dedicated speeds available through fiber connections delivered directly to the building.

Over in Charlottesville, Va., Ting recently began offering residential customers its 1 Gbps service.

Ting's movement into the 1 Gbps FTTH space has been nothing short of swift. The service provider laid the foundation for its foray into the burgeoning FTTH space when it acquired InternetWorks, a local ISP that was in the process of building a gigabit-capable network in Charlottesville in December.

To date, the network now reaches nearly 3,000 homes and businesses, with a plan to cover the neighborhoods of North Downtown, Martha Jefferson, Locust Grove and Belmont in 2015 and the entire city in 2016.

Eligible customers can purchase the 1 Gbps service for just $89 a month.

Elliot Noss, CEO of Tucows and Ting, said in a release that unlike AT&T and Comcast, it has been able to announce its 1 Gbps rollout only a week after going live with its service.

"AT&T and Comcast have managed to get press releases out years before their Gigabit services have come to market," Noss said in a release. Ours comes over a week after launch. We clearly need to pick it up a notch."

###

Consolidated Brings 1 Gbps Broadband Service To Texas
Sean Buckley
Fierce Telecom
June 8, 2015
http://www.fiercetelecom.com/story/consolidated-brings-1-gbps-broadband-service-texas/2015-06-08

Consolidated Communications is moving ahead with its 1 Gbps fiber-to-the-home (FTTH) expansion effort, announcing that it launched the service for residents across its existing fiber network in the Houston area market.

As the second in a series of gigabit launches for the telco, Consolidated launched its first 1 Gbps service in the Kansas City market where it competes against Google Fiber (NASDAQ: GOOG) in late 2014.

Following Google Fiber's pricing playbook, eligible customers in Conroe, Katy, and Lufkin Texas will be able to purchase the 1 Gbps service for $69.95 per month. Unlike Google Fiber, Consolidated does not charge consumers construction or installation fees when they sign up for the 1 Gbps service.

In Conroe, which is located in Montgomery County of Texas, there has been an uptick in economic development driven by oil and gas companies. Similarly, Katy is another bedroom community where there are a lot of middle and high income residential developments. Meanwhile, Lufkin is a rural town that's 2 hours north of Houston where it has been enabling FTTH over existing fiber.

"Predominantly it's Katy, Conroe and a little bit of Lufkin, and we'll see that expand into other markets as the year goes on," said Rob Koester, vice president of consumer product marketing for CCI, in an interview with FierceTelecom.

By leveraging the existing fiber it installed number of new housing developments built between 2007-2010, Consolidated has been able to light new FTTH services in these three communities.

It has taken the same approach in other communities it operates in other states, including Kansas City, Illinois and soon eventually in California, a market where it will officially launch a 1 Gbps service later this year.

"We made the transition in the Greenfield space from copper to fiber and even HFC in Kansas all about the same time," Koester said. "Every geography is a little bit different depending on how quickly the growth engines were running, but in Texas that growth engine was running well for a number of years."

Texas is just one of several markets where Consolidated is making the 1 Gbps service available to customers where it has built out FTTH facilities.

The next stop for Consolidated's 1 Gbps service train will be California, a market where it recently completed a network trial of the product.

While Consolidated has not broken out how many customers subscribe to its 1 Gbps service, Consolidated's CEO Bob Udell told investors during the first quarter earnings call that penetration rate of the 1 Gbps service is around 5 percent.

Similar to CenturyLink (NYSE: CTL) and TDS Telecom, Consolidated has seen that as it rolls out 1 Gbps it continues to see uptick in a number of its lower speed service tiers, including 20 Mbps. During the first quarter, Consolidated reported that a growing number of Consolidated customers are subscribing to a 20 Mbps service or higher.

"We don't get a lot of demand for the 1 Gig service, and what we seen is that it makes the phone ring quite a bit," Koester said. "We won't see them jump to the 1 Gig even though it's a pretty attractive price point, but they will look at a 50 or 100 Mbps service, and we fully expect to see in our Texas markets as well."

###

Centurylink's 1 Gbps Availability Drives Consumer Awareness, Purchases Of Higher Legacy Speed Tiers
Sean Buckley
Fierce Telecom
June 4, 2015
http://www.fiercetelecom.com/story/centurylinks-1-gbps-availability-drives-consumer-awareness-purchases-higher/2015-06-04
CenturyLink (NYSE: CTL) is finding that in areas like Omaha, Neb., where it is rolling out its 1 Gbps fiber-to-the-home (FTTH) services, a growing number of consumers outside of the fiber footprint are purchasing higher speed tiers available on its copper networks.

Speaking at the Morgan Stanley Leveraged Finance Conference, Stewart Ewing, CFO of CenturyLink, told investors that the 1 Gbps rollout has created awareness that the telco is another broadband service source.

"Although we only covered 45,000 homes in the Omaha market, it made the phone ring," Ewing said. "Outside of the areas where we had fiber-to-the-home and where we were able to deliver 20 Mbps, 40 Mbps and in some cases 80 Mbps, it allowed us to sell to those customers as well because they were unaware of the fact that they could get the higher speed services for us."

In Omaha, the service provider built fiber to only 45,000 homes that leveraged an existing fiber-centric network built by Qwest in the 1990s to deliver video services.

Feeling satisfied with the uptick in Omaha, the telco announced plans in 2014 to extend its 1 Gbps service footprint to residential and business customers in select locations in 16 cities. During the first quarter earnings call, the telco said it plans to reach 700,000 residential homes with the 1 Gbps service by the end of the year.

CenturyLink hopes it will see a similar trend in the other nine cities where it has plans to build out the service to residential customers.

"The hope is with these other nine markets where we build small portions of those large cities in neighborhoods to make the phone ring in those markets as well to be able to continue to pick up high speed Internet customers and Prism IPTV customers," Ewing said.

But FTTH is only one part of CenturyLink's consumer service growth plan. The service provider continues to expand its Prism IPTV footprint into new markets--including Salt Lake City, which it announced just this week.

As of the end of 2014, CenturyLink passed about 2.4 million homes with the service with plans to add 500,000 home this year. It ended the first quarter with a total of 250,000 IPTV customers.

Today, much of the focus on expanding the IPTV footprint will be on larger cities, but it has not made final plans on the total amount of cities it would serve yet.

"In terms of how far we could extend it it's really hard to say," Ewing said. "We haven't really gone through and defined all of the potential markets we have, but our focus now is on the larger markets that we picked up with Qwest like Denver, Portland, and Minneapolis."

CenturyLink is upping the competitive ante against its new challenger Google Fiber in Utah, announcing that its Prism IPTV service is now available to a number of Salt Lake City and surrounding area residents and businesses.

At the same time, CenturyLink is seeing the economics to equip homes, particularly those that have been equipped with its GPON FTTH service is improving.

"The economics, at least where we're building GPON to the home, it costs us about $500-600 homes passed and if we're successful in selling a customer our video services it costs about another $500-$600 for a combination of the drop, the NID on the side of house, and the set top boxes," Ewing said. "We're working to reduce the cost of the set top boxes down over time."

###

Comcast Announces 2 Gigabit Residential Service And New Extreme 250 Mbps Tier In California
Press Release
April 17, 2015
http://corporate.comcast.com/news-information/news-feed/2-gig-internet-california

Comcast today announced it will launch Extreme 250, a new 250 Mbps Internet speed tier for California customers. The company also will increase its Performance tier from 50 Mbps to 75 Mbps and its Blast tier from 105 Mbps to 150 Mbps, both at no additional cost to customers. These changes will go into effect starting in May and continue throughout the year.

In addition, Comcast will roll out its residential multi-gigabit broadband service to nearly three million California homes starting in June. Gigabit Pro is a symmetrical, 2 Gigabit-per-second service that will be delivered via a fiber-to-the-home solution and offered to customers in the Chico, Fresno, Marysville/Yuba City, Merced, Modesto, Monterey, Sacramento, Salinas, San Francisco Bay Area, Santa Barbara County, Stockton and Visalia metro areas*.

"This is Comcast's 15th speed increase in 13 years. We are proud to boost our existing speeds and most importantly introduce new Internet tiers like the Extreme 250 and Gigabit Pro that will allow our California customers to do more online, across multiple devices," said Hank Fore, Regional Senior Vice President of Comcast Cable's California Region. "We will continue to look for opportunities to increase speeds to not only stay ahead of customer demands, but also to provide a wide range of options that meet customer needs."

Gigabit Pro will be available to homes within close proximity of Comcast's fiber network and will require installation of professional-grade equipment. The company has fiber at the core of its network and, for the past decade, it has invested billions of dollars to extend that fiber deeper into neighborhoods and closer to homes. To date, Comcast has built out more than 145,000 route miles of fiber across its service area, including throughout California, to serve residential communities with a fiber to the home solution.

Comcast has been doubling the capacity of its network every 18 months. Additionally, the company has been delivering multi-gig (up to 10 Gbps) Ethernet service to businesses in California since 2011.

Comcast first announced Gigabit Pro in Atlanta earlier this month.

About Comcast Cable:

Comcast Cable is the nation's largest video, high-speed Internet and phone provider to residential customers under the XFINITY brand and also provides these services to businesses under the Comcast Business brand. Comcast has invested

in technology to build an advanced network that delivers among the fastest broadband speeds, and brings customers personalized video, communications and home management offerings. Comcast Corporation (Nasdaq: **CMCSA**, **CMCSK**) is a global media and technology company. Visit **www.comcastcorporation.com** for more information.
** The new Internet speeds mentioned throughout this press release will not launch in the following areas: Arbuckle, Coalinga, Cool, Gustine, Huron, Isleton, Le Grand, Lodi, Maxwell, Planada, Rio Vista, Santa Cruz, Santa Nella, Scotts Valley and Williams.*

###

Cox to Double Ultimate Internet Speed for Customers in Arizona
Press Release
June 26, 2015
http://newsroom.cox.com/coxdoublesbroadbandspeedinphoenix

PHOENIX - Today Cox Communications announced that customers in Arizona who subscribe to Cox High Speed Internet Ultimate will benefit from even faster speeds beginning in September. This latest surge in maximum download speeds from 150 Mbps to 300 Mbps is the most recent in a series of broadband speed increases for Cox's Arizona customers. Cox will announce similar increases for Cox High Speed Internet Ultimate in other markets later this year.

Earlier in 2015, the company made the download speeds for Cox High Speed Internet Starter package five times faster and its Cox High Speed Essential package became three times faster. This latest speed increase comes on the heels of the company extending gigabit Internet speeds to residential customers, first offered in Phoenix in 2014. G1GABLAST℠, Cox's residential gigabit service, is available in Orange County, California; Omaha, Nebraska; Las Vegas, Nevada; Hampton Roads, Virginia; and New Orleans, Baton Rouge and Lafayette, Louisiana.

G1GABLAST delivers speeds 100 times faster than the average speed in the U.S. today and will be available in all Cox markets by the end of 2016. The company is actively deploying network infrastructure in parts of Arkansas, Rhode Island and Oklahoma with service to launch in those areas by the end of this year. Cox has offered multi-gigabit services to business customers nationwide for more than a decade.

"Cox continues to invest in our network and deliver what customers have come to expect from us: industry leading high speed Internet service and a customer experience like no other," said John Wolfe, senior vice president and Southwest region manager, Cox Communications. "Not only are we working hard to offer gigabit speeds to all of our customers, but we continue to increase speeds and add valuable features."

Delivering on its promise to provide the best high speed Internet service, Cox has increased Internet speeds more than 1,000 percent on its most popular packages over the past 14 years including doubling the speeds of its most popular speeds late last year. Along with a seamless streaming experience on multiple devices, with this latest speed increase, Cox High Speed Internet customers with the Ultimate service package can now:

- Download a 5 GB high definition movie in two and half minutes
- Download a 50 MB file in about one second
- Download 10 MP3 songs in less than a second
- Download a 25 MB YouTube clip in less than a second

Cox also offers access to the fastest in-home WiFi service with the latest in wireless Internet equipment. Outside the home, access to CoxWiFi hot spots is free for Cox customers who subscribe to Cox High Speed Internet Preferred, Premiere Ultimate or Gigabit packages.

"The benefits of an ultra-fast Cox High Speed Internet connection extend far beyond the home. When our customers are on the go, they can enjoy free access to CoxWiFi hotspots, plus the nation's largest WiFi network of over 400,000 CableWiFi hotspots across the country," said Wolfe. "These hotspots are located in public areas across the valley and nationwide, such

as restaurants, malls, sports arenas, parks and beaches including 1,200 CoxWiFi hotpots in the metro Phoenix and Tucson area."

In addition to increased mobility, Internet usage is doubling every two years and consumers are adding more and more devices to their home network. Today, the average home has more than six devices connected to the Internet and that number is expected to leap to 11 devices by 2017. Cox is committed to continually evolving its service offerings to stay at the forefront of these trends, has been the broadband leader in its markets over the past two decades for speed, availability and customer choice.

About Cox Communications

Cox Communications is a broadband communications and entertainment company, providing advanced digital video, Internet, telephone and home security and automation services over its own nationwide IP network. The third-largest U.S. cable TV company, Cox serves approximately 6 million residences and businesses. Cox Business is a facilities-based provider of voice, video and data solutions for commercial customers, and Cox Media is a full-service provider of national and local cable spot and digital media advertising. Cox is known for its pioneering efforts in cable telephone and commercial services, industry-leading customer care and its outstanding workplaces. For eight years, Cox has been recognized as the top operator for women by Women in Cable Telecommunications; Cox has ranked among DiversityInc's Top 50 Companies for Diversity 10 times, including the last nine years. More information about Cox Communications, a wholly owned subsidiary of Cox Enterprises, is available at www.cox.com and www.coxmedia.com.

###

Cox Doubles Internet Speeds In Rhode Island
Press Release
October 15, 2014
http://pbn.com/Cox-doubles-Internet-speeds-in-Rhode-Island,100739

WEST WARWICK - Cox Communications is doubling the speeds on its most popular packages of Internet service.

According to a press release from the company, Cox High Speed Internet Preferred is increasing from 25 megabits per second (Mbps) to 50 Mbps. Cox High Speed Internet Premier is increasing from 50 Mbps to 100 Mbps.

To demonstrate how fast 100 Mbps is, Netflix recommends a minimum speed of only 5 Mbps to view movies and television shows in HD. A high-resolution photo can be downloaded in less than a second, a music album in about seven seconds and a massive HD feature film in less time than it takes to microwave a bowl of instant oatmeal.

Nearly 75 percent of Cox's high-speed Internet customers subscribe to either Preferred or Premier Internet. The new speeds went into effect automatically on Oct. 14.

In addition to these packages, Cox also offers speeds as fast as 150 Mbps to customers with its Ultimate package. The increased speeds come after the company's announced plans to offer Gigabit speeds to all residential customers by 2016. Cox is the first Rhode Island Internet provider to make an announcement on one Gigabit speeds.

"Cox has invested more than half a billion dollars in our Rhode Island network in the past decade," Patricia Martin, vice president of field engineering and operations, Cox Communications, said in a statement. "We know that speed matters to our customers. It is especially important in today's world where more and more devices are connected through in-home Wi-Fi networks. We will continue to invest in our network to provide the best online experience possible."

###

Time Warner Cable Increases Internet Speeds In First Phase Of TWC MAXX Launch In Dallas
Press Release
June 11, 2015
https://www.timewarnercable.com/en/about-us/press/twc-increases-internet-speeds-dallas.html

Time Warner Cable (TWC) has begun the rollout of faster Internet speeds, with the first wave of customers in the Dallas area now having access to Internet speeds of up to 300 Mbps. All six of TWC's Internet plans will see significant increases by the end of the year as part of the "TWC Maxx" launch that features ultra-fast Internet speeds, state-of-the-art TV services and best-in-class reliability.

Starting this week, more than 50,000 TWC Internet customers in the Dallas area will receive the faster Internet speeds as part of the first phase of the rollout. Areas in this first phase include Betts Road, North Irving, Plano, and Richardson. Customers in the Arlington, Bedford, Dan Morton, Frisco, Lamar (N. Arlington), Mesquite and Thornton areas will see their speeds increase by the end of June.

"Our customers have asked for faster Internet speeds and we're now able to provide these faster speeds at no additional cost to all of our customers in the Dallas area," said Ike Wells, regional vice president of operations for Time Warner Cable in Texas. "This is just the beginning of the benefits customers will see from our TWC Maxx initiative that will enhance our Internet, video and reliability."

Some customers will need to switch out their modems to receive the faster speeds and they have been communicated with via mail, email and phone messages with reminders on how to obtain a new modem.

Along with TWC Maxx, Time Warner Cable has rolled out almost 5,000 TWC WiFi® Hotspots located both in popular outdoor areas and in indoor small business locations throughout Dallas like restaurants, cafes, hair salons and doctor's offices. Qualified customers can currently enjoy more than 700 outdoor hotspots in high traffic locations, with more hotspots to be added through 2015. Outdoor hotpot locations, as of today, include:

Oak Lawn/Turtle Creek (including Reverchon Park)
Uptown
Deep Ellum/Baylor University Medical Center
University Park
Highland Park
Galleria area
Downtown/central Plano
Downtown/central Arlington
TWC WiFi is available free to Time Warner Cable residential Internet customers with qualifying service tiers (minimum Standard or Extreme) and all Business Class Internet customers.

The key components of TWC's new customer experience with TWC Maxx are:

New Internet Experience for Residential Customers

The Internet transformation beginning this month includes speed increases on TWC residential Internet plans at no additional cost, with customers experiencing increases up to six times faster, depending on their current level of Internet service. For example, customers who subscribe to Standard, formerly up to 15 Mbps, will now receive up to 50 Mbps, customers who subscribe to Extreme, formerly up to 30 Mbps, will now receive up to 200 Mbps; and customers who subscribe to Ultimate, formerly up to100 Mbps, will receive up to 300 Mbps, at no extra charge.

New TV Experience

The advanced TV experience includes an Enhanced DVR, which lets customers simultaneously record up to six different programs, and the ability to save 150 hours of high-definition (HD) programming on its 1TB (terabyte) hard drive, which is twice the storage of the largest prior model. Customers will also have access to an all-digital lineup and an expanded On Demand library that features 20,000 titles, growing to more than 30,000 by the end of the year.

Rock-Solid Network Reliability

As TWC has committed to new network performance standards companywide, this initiative will include a stringent review and upgrade of every network connection site (referred to as hubs) to ensure optimum service levels are delivered to every neighborhood. Each TWC hub serves thousands of customers with TV, Internet and phone services.

About Time Warner Cable

Time Warner Cable Inc. (NYSE: TWC) is among the largest providers of video, high-speed data and voice services in the United States, connecting 15 million customers to entertainment, information and each other. Time Warner Cable Business Class offers data, video and voice services to businesses of all sizes, cell tower backhaul services to wireless carriers and enterprise-class, cloud-enabled hosting, managed applications and services. Time Warner Cable Media, the advertising sales arm of Time Warner Cable, offers national, regional and local companies innovative advertising solutions. More information about the services of Time Warner Cable is available at www.twc.com, www.twcbc.com and www.twcmedia.com.

###

Cable ONE Boosts Internet Speeds Up to 100Mbps
Press Release
March 3, 2015
http://www.cableone.net/AAU/pressrelease/Pages/CableONEBoostsInternetSpeedsUpto100Mbps.aspx

Beginning in April 2015, Cable ONE will increase Internet upload and download speeds on its Premier and Ultra plans as a free upgrade to new and existing Internet customers in the majority of its markets. Speed increases will be available across 99 percent of Cable ONE's footprint by fall 2015.

Customers on Cable ONE's Premier 60Mbps plan will be automatically upgraded to 75Mbps download and 5Mbps upload speeds, and customers on the Ultra 70Mbps plan will be automatically upgraded to 100 Mbps download and 10Mbps upload speeds.

Cable ONE invested nearly $80 million in upgrading its infrastructure in 2014 and will invest another $40 million in 2015 in order to stay ahead of the increasing trend of multiple-device homes and bandwidth-intensive streaming services that are creating an ever-growing demand for fast and reliable Internet connectivity.

"These new, faster speeds underscore our commitment to delivering the fastest and most reliable Internet service in the markets we serve," said Joe Felbab, Cable ONE Vice President of Marketing. "Whether our customers are gaming, streaming, or simply a multi-device home, our new speeds will provide a faster, more seamless Internet experience."
As Cable ONE continues to upgrade its infrastructure, it will look to launch even faster speeds in the future.

Customers on the Premier and Ultra plans simply need to reboot their modem in order to get the faster speeds. For assistance or directions on how to reboot a modem, customers can visit Cable ONE's Support website at support.cableone.net and enter "Modem Reboot."

For more information about Cable ONE Internet, visit www.cableone.net.

About Cable ONE
Serving 720,000 customers in 19 states with high speed Internet, cable television, and telephone service, Cable ONE provides consumers a wide range of the latest products and services, including wireless Internet service, High-Definition programming, and phone service with free, unlimited long distance calling in the continental U.S.

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###

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NATIONAL CONGRESS OF AMERICAN INDIANS

The National Congress of American Indians
Resolution #MSP-15-036

TITLE: Preserve the Universal Service Fund Lifeline & Link Up Programs for All Tribal Lands and All Native Peoples

WHEREAS, we, the members of the National Congress of American Indians of the United States, invoking the divine blessing of the Creator upon our efforts and purposes, in order to preserve for ourselves and our descendants the inherent sovereign rights of our Indian nations, rights secured under Indian treaties and agreements with the United States, and all other rights and benefits to which we are entitled under the laws and Constitution of the United States, to enlighten the public toward a better understanding of the Indian people, to preserve Indian cultural values, and otherwise promote the health, safety and welfare of the Indian people, do hereby establish and submit the following resolution; and

WHEREAS, the National Congress of American Indians (NCAI) was established in 1944 and is the oldest and largest national organization of American Indian and Alaska Native tribal governments; and

WHEREAS, upon passage of the Telecommunications Act of 1996 the Universal Service Fund (USF) was charged by Congress to provide affordable, nationwide telecommunications service for low-income consumers, schools and libraries, high cost areas, and rural health care providers; and

WHEREAS, the Lifeline program was created under President Reagan's Administration to provide low-income consumers with a discounted monthly telephone bill, and this monthly discount was expanded under President Bush's Administration to support wireless cell phone services; and

WHEREAS, eligible low-income consumers participating in the Lifeline program can access a monthly discount of $9.25 on their telephone bills, and in recognition of the historic and disparate levels of telecommunications services that persisted on tribal lands, the Federal Communications Commission (FCC) expanded the Lifeline program in 2000 to provide an increased Lifeline discount for residents of tribal lands; and

WHEREAS, in addition to qualifying for the $9.25 monthly discount, low-income consumers residing on tribal lands qualified for an additional subsidy up to $25.00, for a total monthly telephone discount of up to $34.25 for residents of tribal lands; and

WHEREAS, on June 18, 2015, the FCC adopted a Second Further Notice of Proposed Rulemaking (FNPRM) and a Report and Order (R&O) to reform and modernize the Lifeline program to support access to broadband; and

WHEREAS, among the many proposals and questions announced in the FNPRM many will affect tribal communities such as the proposal to establish minimum service levels for both broadband and voice service, elimination of certification by telecommunications companies and establishing a third-party national entity to verify eligibility of applicants, and whether the current Tribal Lifeline and Link Up subsidies achieve the affordability goals for tribal lands residents; and

WHEREAS, among items adopted in the R&O, the FCC ruled to redefine its definition of tribal lands (47 CFR § 54.400(e)) to re-designate what constitutes "former reservations in Oklahoma", and instead references the Historical Map of Oklahoma reservation lands from 1870 to 1890 provided by the Department of the Interior, Bureau of Indian Affairs; and

WHEREAS, the FCC's new definition of tribal lands under 47 CFR § 54.400(e) will come into effect on December 15, 2015, and prior to the implementation of the new definition, the FCC has been charged with consulting tribal nations in Oklahoma to identify any additional maps or geospatial data that should be identified to recognize the boundaries of Oklahoma tribal lands; and

WHEREAS, NCAI Resolution #TUL-13-061, "Request that the Federal Communications Commission Preserve and Protect the Tribal Lifeline and Link-Up Programs" was adopted at NCAI's 70th Annual Convention in Tulsa, Oklahoma in October 2013, and called for the FCC, Congress, and the Administration to preserve the continuation of the Tribal Lifeline and Link Up programs for all tribal lands and all Native peoples.

NOW THEREFORE BE IT RESOLVED, that NCAI reaffirms Resolution #TUL-13-061, and urges Congress, the Federal Communications Commission (FCC), and the Administration to preserve, protect, and expand the Tribal Lifeline and Link Up programs to support broadband and voice services for all tribal lands and all Native peoples; and

BE IT FURTHER RESOLVED, that under the current Reform and Modernization of the Lifeline program, NCAI urges the FCC to adopt proposals that do not adversely affect Native recipients receiving and eligible to receive the Tribal Lifeline subsidy by the redefinition of tribal lands under 47 CFR § 54.400(e); and

BE IT FURTHER RESOLVED, that the FCC preserve its definition of "former reservation lands in Oklahoma" as specified by the Oklahoma Corporation Commission, and that NCAI rejects and requests the withdraw of the FCC's use of the Historical Map of Oklahoma Reservations between 1870 and 1890; and

BE IT FURTHER RESOLVED, that NCAI urges the FCC to have meaningful government-to-government consultation with sovereign tribal nations consistent with *Executive Order 13175 and the* FCC's *2000 Statement of Policy on Establishing a Government-to-Government Relationship with Indian Tribes*; and

BE IT FURTHER RESOLVED, that NCAI supports the FCC's focus of enhanced tribal support provided that it does not exclude, urban, suburban, or high density areas within tribal lands; and

BE IT FINALLY RESOLVED, that this resolution shall be the policy of NCAI until it is withdrawn or modified by subsequent resolution.

CERTIFICATION

The foregoing resolution was adopted by the General Assembly at the 2015 Midyear Session of the National Congress of American Indians, held at the St. Paul River Centre, St. Paul, MN, June 28 to July 1, 2015, with a quorum present.

[redacted]

Brian Cladoosby, President

ATTEST:

[redacted]

Aaron Payment, Recording Secretary

NATIONAL CONGRESS OF AMERICAN INDIANS

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NORTHEAST
Lance Gumbs
Shinnecock Indian Nation

NORTHWEST
Fawn Sharp
Quinault Indian Nation

PACIFIC
Rosemary Morillo
Soboba Band of Luiseno Indians

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Ivan Posey
Shoshone Tribe

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The National Congress of American Indians
Resolution #MSP-15-024

TITLE: Support for Policy on Universal Service Fund for Voice and Broadband Services on Tribal Lands

WHEREAS, we, the members of the National Congress of American Indians of the United States, invoking the divine blessing of the Creator upon our efforts and purposes, in order to preserve for ourselves and our descendants the inherent sovereign rights of our Indian nations, rights secured under Indian treaties and agreements with the United States, and all other rights and benefits to which we are entitled under the laws and Constitution of the United States, to enlighten the public toward a better understanding of the Indian people, to preserve Indian cultural values, and otherwise promote the health, safety and welfare of the Indian people, do hereby establish and submit the following resolution; and

WHEREAS, the National Congress of American Indians (NCAI) was established in 1944 and is the oldest and largest national organization of American Indian and Alaska Native tribal governments; and

WHEREAS, a primary goal and desire for tribal communities across the nation is to obtain access to vital telecommunications infrastructure that provides broadband and voice phone coverage on tribal lands; and

WHEREAS, over the past few years leadership at the White House, the Administration, and Members of Congress have become informed of and acknowledged the ongoing lack of broadband coverage on tribal lands and that this lack of coverage continues to impact tribal healthcare and social services, education, economic development, public safety, small business development, tribal governance, and emergency management services; and

WHEREAS, Section 254 of the Telecommunications Act of 1996, ensures that all Americans, regardless of where they live, will have access to communication services at reasonable rates, and this universal service principle has proven vital for carriers providing communication services to tribal areas; and

WHEREAS, the Universal Service Fund (USF) is an $8 billion dollar fund that provides support for the high-cost mechanism, Schools and Libraries (E-rate) Program, the Rural Healthcare Program, and the Low-Income (Lifeline and Link Up) Programs to rural and tribal areas; and

WHEREAS, the Federal Communications Commission (FCC) has observed that greater financial support may therefore be needed in order to ensure the availability of broadband on tribal lands; and

WHEREAS, NCAI has partnered with and supported the National Tribal Telecommunications Association (NTTA) and its member tribally-owned telephone companies to advance tribal-centric solutions to bridge the Digital Divide in Indian Country by raising tribal concerns related to USF programs to Congress and the Administration; and

WHEREAS, as recommended by the 2010 National Broadband Plan, tribes, tribal organizations, and tribal telecommunications providers have strongly urged the FCC to create a tribal broadband mechanism/factor in the Rate-of-Return portion of the high-cost fund; and

WHEREAS, NCAI has passed Resolution #RAP-10-006, "Call for Congressional Funding of a Tribal Broadband Fund and FCC Tribal Programs;" and

WHEREAS, NTTA has adopted a statement of position including recommendations for next steps in reforming the federal universal service programs for Rate-of-Return carriers and areas they serve; and

WHEREAS, NTTA has continuously requested that the FCC take into account the higher costs associated with providing broadband service to tribal areas as it reforms the USF high-cost Mechanism, and on February 27, 2015, NCAI filed a Petition for Reconsideration to the FCC to halt interim reforms to USF high-cost support mechanisms on the grounds that the FCC has not engaged in formal consultation with tribal nations prior to adopting its interim Report and Order on December 18, 2014.

NOW THEREFORE BE IT RESOLVED, tribes, tribal organizations, and tribal telecommunications providers urge the Federal Communications Commission (FCC) to create a high cost support tribal mechanism/factor or similar Universal Service Fund mechanism in the Rate-of-Return portion of the high-cost fund that addresses the unique and economic challenges for all carriers serving tribal lands; and

BE IT FURTHER RESOLVED, that the FCC must augment and strengthen existing public policy goals of Universal voice, broadband, and media services on tribal lands; and

BE IT FURTHER RESOLVED, NCAI urges that FCC increase the size of the high-cost fund of the Universal Service Fund because the current funding is insufficient to meet the needs for deploying broadband to tribal lands especially given the increases in broadband speed the FCC has asked carriers to deploy; and

BE IT FINALLY RESOLVED, that this resolution shall be the policy of NCAI until it is withdrawn or modified by subsequent resolution.

CERTIFICATION

The foregoing resolution was adopted by the General Assembly at the 2015 Midyear Session of the National Congress of American Indians, held at the St. Paul River Centre, St. Paul, MN, June 28 to July 1, 2015, with a quorum present.

[redacted]
Brian Cladoosby, President

ATTEST:

[redacted]
Aaron Payment, Recording Secretary

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

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September 14, 2015

Mr. Jonathan Adelstein
President and CEO
PCIA – The Wireless Infrastructure Association
500 Montgomery Street, Suite 500
Alexandria, VA 22314

Dear Mr. Adelstein:

Thank you for appearing before the Subcommittee on Communications and Technology on July 22, 2015, to testify at the hearing entitled "Promoting Broadband Infrastructure Investment."

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 Monday, September 28, 2015. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 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,

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

PCIA
The Wireless Infrastructure Association

September 28, 2015

Greg Watson, Legislative Clerk
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Re: Jonathan Adelstein's response to the questions for the record

The Honorable Gus Bilirakis

1. **Mr. Adelstein, I'm interested in your testimony about streamlining the siting process of wireless infrastructure on Federal Lands. You mention public safety as a benefit, and claim that facilities can be sited in an environmentally and historically responsible way. We've supported the buildout previously here in Congress and the Administration is on the record with their mandate for speeding deployment on federal lands. Why do you think the GSA and other federal agencies have been slow to expedite this process so far, and how detrimental has this pace been?**

Congress mandated GSA to further broadband access for Americans by making a number of improvements to the process of siting wireless infrastructure on Federal property, including requirements to set standard rates and complete common forms and applications for all Federal agencies to utilize. The goal, of course, was to provide clarity to agencies and the broadband industry. However, progress on meeting the congressionally-mandated requirements has been frustratingly slow. In fact, it is over three years after the law was enacted and GSA has still not finalized the standard fee structure nor completed the common forms and applications. Simply put, GSA has not properly implemented the intent of Congress. As members of the both the House and Senate have said, we cannot wait an additional three years for GSA to implement Congress's clear instructions. A streamlined and expedited process for siting on Federal property is needed now to improve public safety, increase buildout in rural and urban communities alike, spur economic growth, and provide much needed revenue to the Federal government. In fact, PCIA supports legislative efforts to streamline the process of siting communications infrastructure on Federal lands. Current legislation in the Senate would require agencies to implement standard fee schedules, common forms and contracts, and expectancy of lease renewals and regular progress reports to Congress. We look forward to working with this Committee on similar legislation in the House.

The Honorable Kevin Cramer

1. **Permitting, historical preservation, and environmental protection issues often cause delays and frustration for companies – particularly small companies – attempting to deploy broadband.**

A. What are the most common regulatory barriers to broadband deployment and what can be done to streamline the process for providers to obtain the necessary permitting and other approvals needed to build on federal and protected lands?

Currently, a number of barriers hamper broadband deployment, including unreasonable delays at the state and local level, state and Federal policies on pole attachment rates, and the byzantine process of siting infrastructure on Federal lands. The need for certainly is amplified when deploying broadband on Federal property, which often requires burdensome reviews, interagency activities and coordination. PCIA has been very active in working with agencies across the Federal government, Congress, and the White House to find ways to expedite the siting process. In 2012, Congress, propelled by the leadership of the Energy and Commerce Committee, put forward a framework to make it easier to site communications facilities on Federal lands and properties through standard applications and agreements. Also in 2012, President Obama issued an Executive Order to promote infrastructure buildout on Federal lands and created a cross-agency working group charged with meeting the mandate of speeding deployment on Federal lands and properties.

Unfortunately, the process to site wireless infrastructure on Federal lands has not sufficiently improved. New legislation will help agencies work with industry to bring broadband service to difficult-to-reach Federal lands and hard-to-access Federal buildings. PCIA is continuing to work with members of both the House and Senate on legislation to streamline and expedite the Federal siting process to require Federal leasing agencies to provide standard fee schedules, common forms and contracts, an expectancy of lease renewals, an ombudsman to oversee negotiation process, and regular reporting on progress to Congress.

B. How can the newly-created Broadband Opportunity Council help simplify the regulatory process?

As PCIA stated in its comments to the Broadband Opportunity Council (BOC), the BOC can help simplify the regulatory process by, at minimum, assisting in the creation of knowledgeable and trained points of contact within agencies. To ensure applications are moving forward and maximize efficiency, agencies should designate an expert agency staff member with appropriate

training and knowledge of the importance of broadband access on Federal lands to oversee application processing.

The BOC should also institute a standardized fee schedule, longer lease terms, and automated lease term renewals for broadband infrastructure deployments on Federal property. Adopting streamlined broadband facility siting application procedures and forms and encouraging deployment transparency and information sharing would also help simplify the regulatory process. Additionally, the BOC should encourage collaboration between industry and state, local, and tribal governments to address the needs and benefits of removing barriers to broadband deployment. PCIA also recommends that the BOC work to increase agency coordination with and amongst Tribal Nations to harmonize notification, consultation, fees, and review systems.

C. Will the size of the BOC – 25 federal agencies and departments – hinder or help the effort to promote deployment through regulatory reform?

PCIA has advocated for several agencies to work together to harmonize deployment procedures and create consistency across Federal agencies. It is useful to have as many of the relevant agencies as possible working together with a common goal -- promoting broadband deployment. With the right level of organization, having these agencies cooperate would be helpful, rather than a hindrance. At the same time, PCIA has long advocated for escalating points of contact within each agency. Ensuring there are positions and individuals within each agency with an ongoing understanding of the need for wireless broadband deployment and the ability to move applications forward will help ensure missions are not confused and the work is performed efficiently.

The BOC recently developed good recommendations that we hope the necessary agencies can successfully implement. PCIA is glad to see that the BOC embraced commenters' recommendation to seek advice from the FCC; however, the Council should have gone further and ensured that the FCC was one of the members of the BOC.

2. The Bureau of Indian Affairs has had a proceeding open for more than a year, looking at how to streamline the BIA grant process for rights-of-way on Indian lands. This proceeding is driven out of recognition that existing rules, which were last updated in 1980, are burdensome and outdated. What is your sense of how the process is going? Are you hopeful it will make it easier for your members to build new wireless facilities so our tribal populations have greater broadband access?

I grew up in South Dakota and deployment of broadband to unserved or underserved communities, including tribal lands, was one of my areas of focus at the FCC and the Rural Utilities Service, where I served as Administrator. At PCIA, we have worked to try and promote

the business case for broadband in rural America, including tribal lands.

At the same time, the solution has to be one of partnership. My members also speak of trouble siting wireless infrastructure due to escalating tribal consultation fees and tribes who, after demonstrating interest in a project, later become unresponsive. This only halts shovel-ready projects and drains capital from projects that could ultimately reach rural parts of America. We have to reset this conversation and address this issue from a holistic approach.

3. **I am told leases to place new sites on lands regulated by the Bureau of Land Management or the National Park Service can take two or three years to negotiate depending on the site, with even simple lease renewals routinely taking 12 to 18 months. Would you support requiring BLM and the Park Service to agree to a streamlined, more predictable process for managing these applications, and would adoption of such a process be likely to expand consumers' access to wireless coverage in rural areas?**

As I mentioned in my testimony, predictability and consistency are vital to network planning and investment in any arena. This is especially true when it comes to building broadband infrastructure. Many companies seeking to deploy wireless broadband infrastructure avoid Federal properties altogether and instead work with nearby private property owners -- sometimes across the street -- because negotiations with the Federal government take on average about four years compared to about 22 months with private owners. By facilitating access, the Federal government can increase revenues through lease payments to the Treasury while at the same time improving broadband access for its citizens.

Wireless network providers are looking for certainty when deciding where to invest in building broadband networks. Congress can play a very helpful and constructive role in providing certainty and consistency across agencies. PCIA will continue to work with Members on legislative and regulatory fixes to encourage greater investment in broadband deployment.

4. **How does the Forest Service compare to BLM and the National Park Service in timely processing of siting applications? Does the Forest Service also need a streamlined process for considering siting requests?**

Consistency and predictability across the entire Federal government is critical. Each of these agencies could benefit from greater accountability regarding escalation points of contact and communication regarding national broadband policy goals out to the field, in regional offices across the country. USFS and BLM have done a good job in creating an ongoing dialog with industry and amongst themselves to work to bring best practices to the siting conversation. NPS, with its upcoming Centennial celebration and Go Digital campaign, is engaging with industry to

identify issues and rapidly seek solutions. However, there remain systemic issues with respect to how these agencies deal with siting applications. Not all agencies have the ability to retain fees for the issuance of leases or easements. Still others lack the appropriate command and control to escalate an application that has languished far too long. PCIA and our members would like to see a standard process that cuts across all Federal agencies, including standardize fee schedules. This commonality throughout the Federal government would provide much needed predictability for broadband investment. PCIA believes Senator Rubio's Wireless Innovation Act would provide the proper framework for predictability and accountability in this space.

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States
House of Representatives
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September 14, 2015

The Honorable Stephen Roe Lewis
Governor
Gila River Indian Community
P.O. Box 97
Sacaton, AZ 85147

Dear Governor Lewis:

Thank you for appearing before the Subcommittee on Communications and Technology on July 22, 2015, to testify at the hearing entitled "Promoting Broadband Infrastructure Investment."

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 Monday, September 28, 2015. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 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,

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

Thank you for the opportunity to testify before the House Energy and Commerce Committee's Subcommittee on Communications and Technology. It was a distinct honor to engage with the members of the Subcommittee on this vitally important policy matter – ensuring that Americans living on tribal lands have access to broadband. Below I have provided responses to the questions for the record and hope that this represents the initial phase of an ongoing dialog with the Committee.

The Honorable Greg Walden

1. Governor Lewis, how do we improve access to technical expertise in the Native American community to promote deployment in the same way the Gila River Community has? Does BIA or ONAP assist in providing such technical expertise or training?

A: You are right to acknowledge the importance of training and technical expertise in this area. Telecommunications networks are complex. Early on, Gila River Telecommunications hired industry experts that have assisted it in not only managing its network but also in training Community members to do the technical work associated with running a telephone company. Today, over 60 percent of Gila River Telecommunications workforce is Native Americans. We recognize that we are blessed to have had this opportunity to develop in this way and our experience speaks to the value of self-determination.

BIA, unfortunately, does not have a program that provides technical training in this area.

ONAP is a critical tool the FCC established in 2010 to help advance an understanding of the importance of broadband throughout Native communities. ONAP engages in tribal consultation and training sessions throughout the country to fulfill this mission. These sessions include a "Broadband and Telecom 101" component designed to assist attendees from tribal governments and project managers from tribes in gaining a basic level of technical and policy understanding. Once a base level of understanding is provided, the sessions delve more deeply into various aspect of communications policy so that tribal governments understand what policy tools are available to assist in promoting broadband deployment.

One way to improve technical expertise would be through technical school training. Unfortunately, for many living on tribal lands technical schools are too far away from where they live. Distance learning would be an obvious way to erase those miles, but it requires robust broadband access, something that as we discussed at the hearing is lacking on many tribal lands.

I think this is an area where your leadership on the Subcommittee could help spotlight the importance of training and the opportunity robust broadband presents. I look forward to working with you and others on the Subcommittee to identify how we can promote technical training through distance learning.

2. While the FCC hasn't raised the definition of broadband to 25 Mbps yet for CAF grants, it may be heading there. Wouldn't raising that definition to require higher speed service both raise the overall costs of deployment? Would the higher cost of deployment reduce the amount

available for tribal deployment and also make tribal deployment, which is already very high-cost due to low population density, seem even more expensive?

A. Increased speed will help those living on tribal lands realize the full economic and societal benefits associated with broadband access. As the National Tribal Telecommunications Association (NTTA) stated in a filing at the Federal Communications Commission (FCC), residents and businesses on tribal lands may require relatively higher broadband speeds due to the lack of physical access to goods and services. In that filing, NTTA urged the FCC to adopt a forward-looking definition for broadband that go beyond 25 Mbps. It noted that additional investments would need to be made through the universal service fund in order to achieve greater speed. In a subsequent filing by NTTA, the association has proposed that as part of the FCC's reform the rate-of-return universal service high cost mechanism that the Commission adopt a Tribal Broadband Factor, which I spoke about at the hearing. The Tribal Broadband Factor would be a specific, targeted mechanism that would provide additional support to any rate-of-return carrier serving tribal lands that agrees to deploy broadband to the tribal areas of their service territory. I am attaching both of these filings to my response so they can be made a part of the record.

Thank you again, Chairman Walden, for the opportunity to discuss these issues with the Committee members. I look forward to continuing this dialog with you and the other members of the Committee.

The Honorable Ben Ray Lujan

Governor Lewis, it is always great to see you and I want to thank you for the kind words in your testimony.

As you said, when it comes to broadband access, tribal communities have real needs and face real challenges. I firmly believe that our Committee must act to provide tribal communities with access to next generation communication services.

I hope that the upcoming GAO report - which I was proud to request with Ranking Members Eshoo and Pallone - will provide us with further guidance on how we can overcome these challenges together.

I am committed to ensuring that tribes have a seat at the table at the Federal Communications Commission, which is why I champion the Office of Native Affairs and Policy.

1. Can you discuss what ONAP has meant to Gila River and other tribal communities? And can you speak to the breadth of their outreach?

A. ONAP has been an effective liaison between the Federal Communications Commission (FCC) and tribal governments. An example of its great work includes the establishment of the

Native Nations Broadband Task Force. The task force includes elected officials from a number of tribes and offers an opportunity to engage in direct dialog with the Commission.

In addition, ONAP reaches out to tribal communities through its tribal consultations. These events, which are held throughout Indian Country, offer Native Americans an opportunity to learn from and dialog with the FCC on communications policy.

Moreover, ONAP provides a "voice at the table" on the FCC's rulemakings. Through ONAP's leadership and expertise, policies have been adopted by the Commission that seek to address specific needs in Indian Country. ONAP still has much work to do, as does the Commission, but having that voice in the agency has helped ensure tribal needs are considered.

2. Previously, I have pushed to make ONAP a permanent office at the FCC. Do you believe that this would be beneficial?

A. I do believe that making ONAP permanent would be beneficial. As noted above, it is a vital resource and giving permanent status would ensure that its work continues over the years to come.

3. Does ONAP have the resources and support it needs to complete its mission? Should ONAP and the FCC be doing more to connect tribal communities?

A. ONAP has been effective and I understand that as a result of sequestration its funding, like other parts of the FCC, has been curtailed. To the extent Congress could make additional funding available to ONAP, that funding would be helpful in ensuring that ONAP is able to fulfill its mission.

The FCC is currently working to reform the universal service mechanism that supports rate-of-return carriers' deployment and maintenance of broadband services.

Earlier this year, I sent a letter to the FCC expressing concern that they did not initially consult tribal stakeholders. Though I know that the FCC has since engaged, tribal consultation must not be an afterthought - especially since this effort represents an opportunity to expand access to broadband.

4. Governor Lewis, in your testimony, you mention that the National Tribal Telecommunications Association (NTTA) has submitted a proposal to the FCC to create a Tribal Broadband Factor. Can you talk more about this proposal and can you discuss why you believe it is needed?

A. As the Committee is aware, the level of deployment of broadband on tribal lands lags significantly behind not only urban areas, but also non-tribal rural areas. Beyond being an economic engine for growth, broadband enables better educational opportunities and the ability to deliver healthcare services that would otherwise be unavailable. Simply put, broadband is needed on tribal lands.

As part of the FCC's review of the universal service mechanism that provide support for the deployment of broadband to high-cost areas, NTTA has put forward a proposal that would provide additional support to encourage that deployment. This support would be tailored to tribal census blocks and would offer the carrier serving those blocks additional support in exchange for a commitment to deploy within a time certain. Therefore, the NTTA proposal is designed to meet the Commission's goals of ensuring that its support dollars are used to address an identified need (deploy broadband to tribal lands), in a specific, targeted way (only available to tribal land census blocks) and that such support is offered with adequate assurance that it will be used to meet the identified need (carriers would have to commit to deploying in order to access the funds).

NTTA has met with the FCC and continues to discuss this proposal with them. Those conversations have been beneficial and I can assure you, we will continue to engage in a constructive way with the FCC. Thank you for your interest and advocacy on this important proceeding. I look forward to continuing to work with you to ensure that this opportunity is not missed.

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

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September 14, 2015

Mr. Craig Moffett
Senior Research Analyst
MoffettNathanson LLC
1180 Avenue of the Americas
New York, NY 10036

Dear Mr. Moffett:

Thank you for appearing before the Subcommittee on Communications and Technology on July 22, 2015, to testify at the hearing entitled "Promoting Broadband Infrastructure Investment."

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Sincerely,

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

Craig Moffett

Additional Questions for the Record

Following testimony on July 22, 2015

"Promoting Broadband Infrastructure Investment"

September 29, 2015

Questions from Chairman Walden

Cable and telecommunications carriers pay a different rate for use of utility poles – with cable paying less than telecom, often giving rise litigation over rates paid by the attachers. Given that track record, should the FCC standardize the rate for all broadband providers across the board for all providers of broadband? How should the FCC go about doing so?

It is hard to argue *against* the idea of standardized pole attachment rates, not only for reasons of cost but also for reasons of expedience. Anything that lowers the cost and reduces uncertainty and delay in deploying broadband would have a beneficial impact. With that said, however, in my experience pole attachment rates have never been cited as a significant impediment to earning a sufficient return on investment in broadband facilities. The costs of pole attachment are material but ultimately almost never determinative of economic viability.

I understand that you have roughly estimated the cost of deployment for Google Fiber in Kansas City to be something along the lines of $2000 to $2200 per household. You also estimated (a while back) that Verizon's cost per household in its FiOS buildout to be somewhere along $4000 per household. Can you explain in plain terms what the difference is here? Why did it cost Verizon more?

There are three broad drivers of Google's lower costs per connected household versus Verizon's. First, the costs of certain elements of fiber deployment have fallen in the intervening five years. The costs of the electronic elements in the network, including the ONT (Optical Networking Terminal) have fallen. And more importantly, the invention of so-called "bendable fiber" has enabled lower labor costs, as fiber can now be installed more quickly. Second, and perhaps more importantly, Google has received significant subsidies from local authorities in Kansas City, including access to pre-existing conduit, and in some cases pre-existing fiber, but also including tax breaks, free office space, streamlined rights of way, and preferred access to facilities. Third, and perhaps most importantly of all, Google has been permitted to pre-screen communities to target only those where demand is the highest. This so-called "demand aggregation" has been criticized as the equivalent of "redlining," but it has inarguably resulted in lower cost, inasmuch as it ensures that shared costs – including the cost of the fiber passings – are amortized over the largest possible number of subscribers. Verizon FiOS did not enjoy any analogous benefit.

Question from Congressman Gus Bilirakis

Mr. Moffett, in the same regard, is the implementation of a streamlined process to contract and site broadband facilities on federal land an alternative that would be more economically beneficial to all providers and help increase wireless reach in rural areas.

As I observed in the first question above from Chairman Walden, anything that lowers the cost and expedites deployment would be beneficial to the deployment of broadband facilities, particularly wireless. Recently adopted rules to expedite tower siting should be particularly helpful in this regard. It is important to recall, however, that each wireless tower not only needs a permit for the tower itself, it also requires electrical power and a wired, often fiber, connection, referred to as backhaul. These connections require their own rights of way, and in rural markets these may often have to traverse Federal lands. Expediting that process could streamline deployment. That said, as noted also noted in the first response to Chairman Walden above, rights of way are only one cost, and typically not among the most important ones, in the total cost of deployment.

FRED UPTON, MICHIGAN
CHAIRMAN

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September 14, 2015

Mr. Michael Slinger
Director, Google Fiber Cities
Google
1600 Amphitheatre Parkway
Mountain View, CA 94043

Dear Mr. Slinger:

Thank you for appearing before the Subcommittee on Communications and Technology on July 22, 2015, to testify at the hearing entitled "Promoting Broadband Infrastructure Investment."

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.

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Sincerely,

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

Google

September 28, 2015

Responses of Michael Slinger, Director, Google Fiber Cities
House Energy and Commerce Subcommittee on Communications and Technology
Hearing on "Promoting Broadband Infrastructure Investment," July 22, 2015

Question for the Record from the Honorable Greg Walden

1. Mr. Slinger, Google Fiber chose not to roll out small business offerings immediately in Kansas City. Google Fiber began service small business in November of 2014 – some 2 or 3 years after residential service began in Kansas City. Was there a particular level of service that you felt that Google Fiber could not offer straightaway? Were there regulatory or legal constraints that prevent Google fiber from doing so?

Google Fiber's decision not offer a small business service at the same time we began delivering residential service in Kansas City was not based on regulatory or legal constraints. Late last year, we began offering Google Fiber for Small Business in Kansas City, and have since expanded to Provo, UT and Austin, TX. We wanted to focus on residential service first to meet the high consumer demand. Moreover, we needed to better understand the needs of small business so that we could offer a service that would meet those needs and deliver the same innovation and value our residential customers have experienced. To do so, Google Fiber for Small Business includes a symmetric gigabit Internet connection, an option for up to 5 static IPs, the flexibility to provide your own router, and 24x7 customer support.

2. Mr. Slinger, knowing what you now have learned about fiber deployment, would you recommend that municipalities build out their own fiber networks? What would be the best way to go about bringing high-speed networks to a small town or city? How does that change for a very small town – e.g. a town of 1200 people?

While it may not make sense for most local governments to operate broadband networks themselves, we think faster, better broadband for all Americans is too important to remove any option for deployment. Along with investments by Google and other private providers, cities like Lafayette, LA and Chattanooga, TN have been investing in their own networks to ensure that their communities have the same advantages as other communities with access to privately constructed high speed broadband networks.

Another interesting approach is the public/private partnership model offered by the city of Westminster, MD and Ting. The City financed, owns, and maintains the fiber; Ting leases the fiber and provides all equipment and services. Ting's lease reduces the City's risk, while enabling Ting to offer Gigabit Internet in Westminster without having to build a fiber network from scratch.

Google believes it is important for users to be able to control their own Internet connections and for communities to make their own choices to suit their local needs for broadband. The factors bearing on whether to build, enter into a public/private partnership, or wait for a private broadband provider to invest in the community vary from community to community. It is difficult to generalize what is best for a community of any size.

Question for the Record from the Honorable Kevin Cramer

1. One of the main drivers of broadband investment is video. The ability to provide desirable video content has a direct effect on broadband adoption and ongoing operation of broadband-cable networks.

A. Are reforms needed to enhance consumer video experience and ensure outdated rules or other failures in the video distribution market do not undermine our nation's broadband goals?

Offering video services increases the utility of a broadband network, provides more choice for the user, and improves the economics for new broadband infrastructure entrants. It also opens additional avenues for distributing diverse public media and for content creation, as well as consumption. However, the inability of new entrants to negotiate reasonable prices and terms for access to popular broadcast stations and cable programming networks makes it difficult to attract and retain subscribers for these smaller broadband networks, thereby serving as a barrier for more ubiquitous and affordable broadband access. Thus, the difficulty of obtaining programming on prices and terms that will allow for competition with incumbent video service providers renders new entrants and small providers unable to offer competitive multichannel video services. This in turn hinders deployment of high-speed networks, resulting in less broadband competition and inferior broadband networks.

A specific action that can be taken to eliminate outdated rules undermining our nation's broadband goals is fixing the current co-op structure for negotiating rates and terms for programming agreements. Pursuant to the current co-op regime, individual programmers can opt out of collective agreements with providers, and can charge rates that vary widely based on each individual co-op member's subscriber base. This structure gives large incumbents a significant advantage over competitors seeking to establish or expand their services, because incumbents can obtain greater volume discounts as a result of their larger subscriber bases. Multichannel video service—and broadband Internet access generally—will become more

competitive and more attractive to consumers if access to content is made available on commercially reasonable prices and terms to competitive providers.

Another failure in the video distribution market is the stranglehold that large, incumbent MVPDs have on video navigation devices. Because they lack the ability to procure devices at retail, consumers are paying significant fees to rent set-top equipment that has not kept pace with the rest of the consumer electronics industry. To resolve this problem, policymakers can promote retail competitive availability of video navigation equipment. Similar to the recommendation in the National Broadband Plan, policymakers should explore ways to increase consumers' abilities to acquire at retail competitive navigation devices (e.g. set-top boxes) to access video programming from MVPDs and over the Internet. This will help encourage broadband deployment and adoption by increasing innovation in consumer access to video service offerings purchased from MVPDs alongside those available online.

The Downloadable Security Technology Advisory Committee ("DSTAC") was tasked in the STELA Reauthorization Act of 2014 "to identify, report, and recommend performance objectives, technical capabilities, and technical standards of a not unduly burdensome, uniform, and technology- and platform-neutral software-based downloadable security system" to promote the competitive availability of navigation devices in furtherance of Section 629 of the Communications Act. Adoption of a technology- and platform-neutral software solution would enable device-makers to create better and more tailored ways for consumers to interact with their video service. This, in turn, would strengthen demand for advanced broadband networks supporting these video services and technologies. The DSTAC filed a report with the FCC on September 4, 2015 detailing its findings and recommendations, on which the FCC has since sought comment. The FCC should act quickly on the DSTAC's report finally to bring Congress's goals in adopting Section 629 to fruition.

B. While net neutrality rules are focused partly on concerns about how network operators could treat content providers, what about the concerns of how content providers use bargaining power and threaten affordable consumer access to content?

Broadband competition is impeded by the inability of new and smaller video service providers to obtain programming at prices that allow them to design affordable consumer offerings. Video programming distributors with large subscriber bases, including incumbent cable operators, obtain sizable discounts on popular programming that do not reflect correspondingly lower costs of delivering the content to these large providers. To resolve this disparity, policymakers and regulators should require that discounts provided by both broadcast stations and cable programming networks are cost-based. For instance, Section 628 of the Communications Act makes it unlawful for a video programmer that is vertically integrated with a cable operator to discriminate between multichannel video programming distributors with respect to the prices, terms, and conditions of sale of satellite cable programming. Although the statute allows cost-based discounts, the FCC has not required cable-affiliated programmers to demonstrate

that the discounts they give the largest distributors are cost-justified. The FCC's policy of allowing non-cost-based discounts under the guise of permitted volume discounts undermines broadband entry and deployment.

Question for the Record from the Honorable Ben Ray Lujan

1. Mr. Slinger, far too many Americans in rural communities lack access to broadband services. Now, while I would love to see Google Fiber in Northern New Mexico, it may not make sense everywhere. As a result, I believe that we have to look for creative and innovative ways to connect more people. For example I know that Google has purchased a New Mexico-based startup, Titan Aerospace in hopes that their solar-powered satellites could be used to bring Internet access to remote areas.

A. Can you and the other witnesses discuss additional innovative solutions to this issue?

As compared to building broadband networks in urban areas, deploying in rural areas is a totally different challenge, with different economics. In many situations, wireless technologies provide a better path to offer broadband service in these areas. While we don't have any undertakings specifically focused on this challenge today, ideas like Project Loon (our initiative to develop balloon-powered Internet access) and Titan Aerospace could help greatly improve access in rural areas.

Project Loon is an effort to beam internet access down from balloons that hover safely in the stratosphere, 20 km above the earth's surface and well above weather events, wildlife and planes. The project started as an experiment. While others had tried to provide Internet access through balloons that were tethered to the ground, our hunch was that a ring of balloons, flying around the globe, could be a better, more effective, and cheaper way to deliver access. Loon balloons ride the winds by moving up and down into different layers of wind, allowing balloons to move at different speeds and in different directions. By predicting wind patterns and controlling across a fleet of balloons, we aim to create continuous coverage for our service areas, so when one balloon leaves a served location, another can take its place. The Project Loon team is now engaged in testing with a number of telcos outside the United States, including Telefonica, Telstra, and Vodafone, and we're in commercial discussions with various potential partners about integrating Loon into their networks.

Providing access to remote or rural areas was a key reason why we acquired **Titan Aerospace**. The Titan team is building a new type of super-lightweight, solar-powered airplane capable of hovering in one area of the stratosphere. Google thought this could be a way to beam Internet down to a targeted area on the ground below, perhaps to supplement existing services with

extra bandwidth, or to provide access in an area that's suddenly offline (such as after an earthquake or other disaster).

Loon and Titan would be able to work in tandem. As Loon's constellation of balloons provides coverage to wide areas, Titan aircraft could be maneuvered to provide additional capacity to particular areas based on demand. In both instances, partnerships with telcos could enable provision of service to people on the ground. Users should be able to just have access, and not have to worry about what technology is being used to provide it.

We also see a lot of promise for continued innovation in the wireless area, which is why I'll end on the importance of **white space and spectrum sharing.** All wireless relies on a crucial input: radio spectrum. Today, ongoing improvements in technology allow sharing of spectrum on a much broader and more flexible basis, and Google is investing to help facilitate even more spectrum sharing. For instance, in the U.S., Google built a database to help make use of unused spectrum between TV channels, called "white spaces." The database aims to allow dynamic sharing to maximize the beneficial use of spectrum. Registered devices can query a database and determine, for a given location, what frequencies can be used while protecting licensed entities and wireless microphone signals from harmful interference. The result is affordable access to otherwise vacant spectrum and more efficient use of spectrum resources.

FRED UPTON, MICHIGAN
CHAIRMAN

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ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

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September 14, 2015

Ms. Deb Socia
Executive Director
Next Century Cities
1200 18th Street, N.W., Suite 700
Washington, D.C. 20036

Dear Ms. Socia:

Thank you for appearing before the Subcommittee on Communications and Technology on July 22, 2015, to testify at the hearing entitled "Promoting Broadband Infrastructure Investment."

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 Monday, September 28, 2015. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 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,

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

NEXT CENTURY CITIES | Connecting Communities

September 25, 2015

Representative Greg Walden
House of Representatives Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Walden,

Thank you for your letter dated September 14 regarding additional Member questions for the record following the July 22, 2015 "Promoting Broadband Infrastructure Investment" hearing, hosted by the House of Representatives Energy & Commerce Subcommittee on Communications and Technology. I sincerely appreciated the opportunity to address your subcommittee and also appreciate this opportunity to offer further information on our work at Next Century Cities. Please find below our answers to the Members' questions:

The Hon. Greg Walden

When do you recommend that a community build out its own network? What are the factors under consideration? What does your coalition generally recommend when it comes to improving access to broadband access (sic)?

Next Century Cities tends not to make these types of specialized recommendations to individual communities. We believe that communities need to study their situations carefully because every community has a unique mix of assets, service providers, needs, and challenges. As a national organization with over 100 member communities, we rarely have a sufficiently strong grasp of the local dynamics that are needed to make a case by case assessment for a community.

We often get questions from communities that are seeking to make this decision and we try to guide them by educating them, connecting them with other communities that have been in similar situations, and working to ensure they have the authority to enact any plan they develop.

Some of the factors we often see communities considering are whether both residents and local businesses have high quality Internet access available on reasonable terms from multiple service providers. High quality Internet access goes far beyond speed or capacity to include measures from technical metrics to basic reliability to customer service. Additional factors include how responsive ISPs are to local needs and how likely Internet Service Providers (ISPs) are to continue investing in the community and providing a high quality service in the future. Finally, we see communities wrestling with how to ensure everyone in the community can connect. Here, it is important to analyze whether existing programs are achieving universal access and are sustainable moving forward.

Our general recommendation is for communities to become actively involved in multiple ways. Options include working with incumbent providers where they are willing; investing in physical infrastructure; partnering with one or more independent ISPs; developing digital inclusion efforts; becoming a service provider; and ensuring community anchor institutions are involved in these processes as well. Internet access has become far too important to local economies and for citizens' quality of life for local governments to take a back seat when it comes to ensuring local needs are being met.

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Ms. Socia, you discussed two rural towns that are now offering 1 GB services in your statement. Could you describe their model for long-term sustainability? Could you discuss how they plan to continue investing in the network in order to maintain and keep pace with the technology?

The two towns are Mount Vernon, Washington, and Ammon, Idaho, both members of Next Century Cities. Both of these communities have expanded their fiber networks on an incremental, low risk basis without borrowing any funds. Rather than leasing expensive, low capacity lines from existing providers, they have adopted a course of self-provisioning for their internal needs. We have seen this approach pay dividends in hundreds of communities and unlike higher risk approaches that have on rare occasions failed to generate the expected benefits, we cannot name an Institutional Network that has failed.

Often due to a lack of competition, when local governments lease connections from incumbent providers, they pay far more that would be required to self-provision higher capacity connections. Many communities have recognized that if they self-provision networks, they can operate in a financially sustainable manner while achieving additional goals as well, such as encouraging competition for local businesses and/or residents. Additionally, the costs of operating fiber optic networks is quite low compared to older, legacy networks. Though the upfront costs of building such a network can be high, the costs of running it are more reasonable, especially when compared to paying what amount to monopoly rents in a number of cases.

Mount Vernon has been operating a fiber network for 20 years in a sustainable fashion. Built with a combination of some grants and funds that otherwise would have been used to lease services from incumbent providers, the network has been expanded opportunistically at low cost without borrowing to connect local businesses. Initial grants were from the State of Washington's Community and Economic Revitalization Board.

The network is available to many independent ISPs both via dark and lit circuits to serve local businesses. Ten ISPs currently offer services ranging from voice to 10 Gbps connectivity. The ISPs pay the city a percentage of the revenue gained by using the network. Mount Vernon reports a 293 percent increase in fiber builds since the beginning of 2012.

With twenty years of operational experience and no debt, there are few doubts about its long term sustainability. A relevant question is how it can expand to serve the entire community. We have seen other communities, such as Danville, Virginia, continue to expand incrementally to residential neighborhoods using only net income from existing operations. Others have decided to take on debt to rapidly expand across the city, trusting their many years of operating in this industry to build a strong business plan.

Ammon's fiber network in Idaho is much newer than that of Mount Vernon, though it too is open access, facilitating connections from independent ISPs rather than directly offering services. As in Mount Vernon, it is not yet citywide though it intends to offer connections to every address eventually. Like many municipal networks, Ammon's got its start by being the most cost-effective means of delivering high quality, affordable connectivity to local government facilities. In building the network, city leaders recognized the value of including enough fiber to meet future needs as well as other needs that might arise – connecting local businesses or wireless towers for instance.

New connections are currently paid upfront by the customer, who then pays an ongoing maintenance and operation fee of $35 per month. This amount is expected to decline as the costs can be spread across more subscribers over time. With no debt, these maintenance and operations fees are sufficient to cover future upgrades – though Ammon is careful in planning for future needs. For instance, the network is not purchasing anything that cannot support 10 Gbps connectivity.

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Both Ammon and Mount Vernon have reaffirmed what we have seen in many communities – the amount local governments, businesses, and residents are paying for services today can support investment in the highest capacity, next-generation networks when companies are held accountable to local needs.

The Hon. Gus Bilirakis

Ms. Socia, you have been successful in organizing many stakeholders together to focus on providing affordable, fast Internet to communities across the country. I have a lot of rural communities in my district, what's been the most effective tool in your experience to facilitate broadband development? Are there any successful, mature networks that rural communities can model buildout policies after?

We think you are asking the right questions. The first answer is that communities have to begin educating themselves on these matters. There are a variety of sources that we recommend from the Next Century Cities website (http://nextcenturycities.org) but a very good place to start is Broadband Communities magazine. Additionally, we recommend that they engage some of the local leaders from Lakeland, Florida, a community which has been involved in expanding Internet access locally for years.

There are a variety of models that rural communities may use, but many of them will involve working together to aggregate demand. Whether they choose to find a partner or invest in a publicly owned network, the economics are more favorable with multiple towns coordinating as a region rather than when individual communities act independently.

In Minnesota, a group of small towns in farm country have just established a new cooperative to expand fiber optic service, called the RS Fiber Cooperative. We believe that model will be duplicated in other areas around the country, particularly where local governments themselves do not wish to directly provide services.

If any of the communities in your district would like to discuss these approaches or have any questions for us, we would be very happy to work with them.

Thank you again for these questions and for the opportunity to speak on this important issue. I look forward to working with you in the future to increase access to next-generation broadband for all Americans, and please feel free to reach out if I can be of further assistance.

Sincerely,

Deb Socia
Executive Director
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