Question 1. Mr. Redl, as you know, last fall, the National Telecommunications and Information Administration's (NTIA) contract with the Internet Corporation for Assigned Names and Numbers (ICANN) to perform the Internet Assigned Number Authority (IANA) functions was allowed to lapse, effectively transitioning oversight of the IANA functions from the U.S. government to the global multi-stakeholder community.

What do you see as NTIA's role going forward with regard to ICANN and the global multi-stakeholder community model for Internet governance, and how engaged will you be in representing U.S. interests at ICANN's Governmental Advisory Committee, should you be confirmed?

> *Answer:* Both Congress and the Trump Administration (through the President's FY18 budget) have expressed support for the multistakeholder approach to Internet governance and NTIA remains the United States' representative on ICANN's Governmental Advisory Committee. I believe that NTIA should continue to serve as a vigorous advocate for the United States' interests at ICANN and other fora where Internet governance issues may be raised. I believe that the power of the Internet to bring free speech and free-market commerce to every corner of the world is one of the most potent gifts the United States has given the world, and as such, if confirmed I plan to be very involved in working to preserve, protect, and expand the reach of the Internet.

Question 2. Mr. Redl, as you know, the ICANN is a California-based nonprofit corporation that serves as the convening authority for the global multi-stakeholder community. One of the key concerns of those who criticized last year's transfer of the IANA functions from NTIA oversight to ICANN and the global multi-stakeholder community, was that it could lead to ICANN moving outside the jurisdiction of the United States. My understanding is that place and jurisdiction of incorporation and operations, including governance of internal affairs, tax systems, and jurisdiction of places of physical presence are all still open topics for discussion. Needless to say, ICANN shifting its legal jurisdiction of incorporation to another country would be deeply concerning to many in Congress.

> *Question 2a.* Do you share the concern about ICANN shifting its legal jurisdiction to another country? Will you commit to informing Congress if you observe any efforts by ICANN to move to another country?

> > *Answer:* The accountability mechanisms created by the multistakeholder process and adopted by ICANN are rooted in the laws of the state of California. Therefore, if confirmed, I will work with Federal agencies and Congress work to ensure that ICANN remains headquartered in the United States.

Question 2b. Another concern voiced by many critics of last year's transition of the IANA functions from NTIA oversight to the multi-stakeholder community was whether it would enhance the role of authoritarian regimes in Internet governance. Will you commit to informing Congress if you observe any actions by authoritarian regimes to enhance their role with respect to Internet governance?

> *Answer:* As a congressional staffer, I witnessed firsthand, on several occasions, attempts by some countries to impose more government control over governance of the Internet. The cooperative relationship between all parts of the U.S. government is necessary to ensure that these countries don't succeed. If confirmed, I will work with Congress to counter any actions by authoritarian regimes to enhance their role with respect to Internet governance.

Question 3. Mr. Redl, we are all aware that certain nation-states such as Russia and China, as well as the United Nations (UN), through its agency known as the International Telecommunication Union (ITU), are constantly seeking opportunities to replace the global multi-stakeholder community approach to Internet governance with a top-down, government-controlled model. Obviously, government control of the Internet would have profoundly negative implications for free expression, free enterprise, and democratization.   Many worry that the UN will again seek to implement a top-down model for Internet governance at the ITU's World Telecommunications Development Conference in Buenos Aires in October and at the 2018 ITU Plenipotentiary Conference in Dubai.

Should you be confirmed, what efforts will you engage in to preserve the global multi-stakeholder model, and to prevent a top-down approach to Internet governance such as that envisioned by the UN?

> *Answer:* Preserving the multistakeholder approach to Internet governance will be an ongoing challenge not only for the United States government, but for all stakeholders the world over. Challenges to this successful approach will certainly continue given the importance of the Internet in global discourse and commerce. At a minimum, it is critical that NTIA have the resources to be present at every step of these multistakeholder and multilateral processes. As Chairman Upton often reminded the staff of the Energy and Commerce Committee, "you have to be there on the takeoff if you want to be there for the landing." Without strong, informed voices like those of the talented professionals at NTIA engaging at every stage of the debate, we run the risk of giving ground to those who do not share our vision of the Internet. If confirmed, I will work with the staff of NTIA, and across the U.S. government, to ensure that we are represented wherever these debates are happening.

> Additionally, the strength of the multistakeholder process is inclusive participation. It is incumbent on the United States – all stakeholders in the United States – to be informed advocates for the Internet that we depend on and love. That means working across the United States government to engage companies large and small, universities, advocates, and individual citizens to participate in the process. If confirmed, I will work to ensure that Americans and American interests are represented in these important debates.

Question 4. Mr. Redl, as you know, the First Responder Network Authority (FirstNet) is an "independent authority" within NTIA tasked with the creation and operation of a nationwide interoperable public safety broadband network. This spring, FirstNet selected AT&T to be its private partner to build out and operate this network, and it appears that the ambitious project to build a nationwide interoperable public safety broadband network is finally under way.

Keeping in mind that FirstNet is an "independent" authority within NTIA, what role do you envision playing as NTIA Administrator with regard to FirstNet, should you be confirmed?

> *Answer:* FirstNet has a very important task in front of it, and we stand on the cusp of its realization. NTIA has a specific role under the terms of the Middle Class Tax Relief and Job Creation Act of 2012 (MCTR) with respect to states that "opt-out" of FirstNet's radio access network (RAN). While I am hopeful that FirstNet and AT&T's plans for deployment of RAN in each state will be met with approval, the statute is very clear and states have the choice to opt-out if they believe they can better meet their public safety users' needs. In MCTR, Congress adopted provisions that require states that opt-out make certain showings to establish that a state can build and operate the RAN so that first responders get mission critical service. If confirmed, NTIA will follow the statute and work to ensure that opt-out states are able, through a network partner, to provide any first responder high quality, reliable broadband service for the long-term.
>
> Additionally, as FirstNet is an independent authority within NTIA, if confirmed I will work with FirstNet to ensure that its mission is achieved. The professionals at NTIA have a wealth of experience in networks and federal contracting that compliments the public safety experience amassed at FirstNet. There should be ways to work together to achieve the National Public Safety Broadband Network Congress envisioned.

Question 1. I worked with the Office of Management and Budget (OMB) on legislation that was ultimately included in the Bipartisan Budget Act of 2015 to provide more funding and flexibility for federal agencies to use the Spectrum Relocation Fund (SRF) for research and development related to their spectrum activities. It was our intention that this additional funding and flexibility would result in more efficient use of spectrum by federal users and free up more government spectrum for commercial use. OMB oversees the fund in consultation with the National Telecommunications and Information Administration (NTIA). Can this committee count on you to ensure that the SRF is being utilized by agencies to achieve these goals?

> *Answer:* Yes.

> > *Question 1a.* The U.S. Government Accountability Office (GAO) issued a report in 2011 that basically said that NTIA needed to improve its spectrum-management policies to promote more efficient use of federal spectrum. To put it bluntly, NTIA oversees the federal use of spectrum, but is sometimes "pushed around" by the large departments that utilize the spectrum. Often large organizations within the federal government do not have much of an incentive to relinquish valuable spectrum, even if they're not using it efficiently. Do you agree that changes should be made to NTIA's process when evaluating the spectrum needs of other departments and agencies, so that NTIA can more effectively manage such a valuable federal resource?

> > > *Answer:* Ensuring that Federal agencies have the spectrum resources to meet their missions efficiently is part of NTIA's mission and will continue to be a priority if I am confirmed. I believe that a functional process – one that adapts to the rapid changes in spectrum-based technology – is critical to achieving this goal. If confirmed, I will work to ensure that NTIA's processes continue to evolve to meet our national needs.

Question 2. As a concerned representative of rural Kansas, I have been focused upon both spectrum policy and how to effectively see wireless services deployed in the smaller, rural reaches of my home state. I gather from your previous experiences that you understand the challenges that places like Kansas face and that the NTIA has played a vital role in the past in helping assess the state of deployment across the nation. I hope you will work with me and my colleagues to ensure that rural Kansans are not relegated to inferior wireless service. An accurate assessment of not only what urban consumers have available but what rural consumers experience will be essential to helping guide this Administration's and Congress' policy decisions to build out to the "hard-to-reach" corners of this country. What tools are available to you at NTIA to ensure my constituents will have high quality wireless service?

> *Answer:* My experiences have shown me that if we want to have a coherent policy for bringing broadband to rural and hard-to-reach areas, we need to understand the

challenges. To that end, NTIA used to administer a program to ensure a National Broadband Map. This map provided a crucial tool to understand the scope of the challenge and to appropriately target support. Unfortunately, NTIA lacked the resources to continue to maintain the map and without updates it no longer represents the state of broadband in America. With appropriate resources, the National Broadband Map represents a first step in understanding the broadband needs of rural America.

In addition to understanding the scope of the problem, typically, in rural and hard-to-reach areas economics are the overarching challenge.

The economics of wireless are heavily impacted by population density. Each cell site in a rural area serves fewer customers and each site needs backhaul to bring the traffic into the larger network. Therefore, the investment in the site itself takes longer to recoup – sometimes longer than the lifecycle of the equipment given the rapid pace of wireless evolution. At least part of this challenge can be alleviated though smart policies and incentives to promote investment. NTIA has been hard at work to help address some of these challenges through the BroadbandUSA program – developing best practices and providing technical assistance for state and local governments to foster private-sector investment.

If confirmed, I will work with the staff of NTIA and across the Federal government to tackle these challenges.

Question 3. Due to the leadership of the Kansas 9-1-1 Coordinating Council and AT&T, Kansas is well-positioned to serve as a leading model in the operation of a nationwide interoperable public safety broadband network pending some additional decision-making within the state. How do you plan to use successful models of coordination, like those in Kansas, to attract other states' to opt-in to the program?

> *Answer:* The experience of states like Kansas were very instructive as FirstNet went through the State and Local Implementation Grant Program as well as the process of developing its RFP for a public-private partner. If confirmed, I will work with FirstNet – an independent authority within NTIA – to ensure FirstNet succeeds in its mission to deploy a nationwide interoperable public safety broadband network.

> > *Question 3a.* What are some of the major barriers or issues you expect to come across in your efforts to stand up this high-speed FirstNet system built specifically for the millions of public safety users in all 50 states and five U.S. territories?

> > > *Answer:* NTIA has a specific role under the terms of the Middle Class Tax Relief and Job Creation Act of 2012 (MCTR) with respect to states that "opt-out" of FirstNet's radio access network (RAN). While I am hopeful that FirstNet and AT&T's plans for deployment of RAN in each state will be met with approval, the statute is very clear and states have the choice to opt-out if they believe they can better meet their public safety users' needs. In MCTR, Congress adopted provisions that require states that opt-out make certain showings to establish that a

state can build and operate the RAN so that first responders get mission critical service. Going forward, NTIA's biggest challenge will be to faithfully follow the statute and work to ensure that opt-out states are able, through a network partner, to provide any first responder high quality, reliable broadband service for the long-term.

Question 4. The American Recovery and Reinvestment Act of 2009, commonly referred to as the 'Stimulus," provided $4.35 billion to NTIA to fund broadband projects through grants. As this Committee is once again posed to debate and hopefully pass an infrastructure bill that likely will include money to expand broadband, what assurances can you give this committee that NTIA will not pursue a policy of using government money to overbuild existing broadband networks? And will you commit to working with Congress to limit the opportunity of government policies that overbuild existing networks?

> *Answer:* If confirmed, I will work with the staff of NTIA to honestly and effectively implement the laws adopted by Congress. That includes any work to bring infrastructure to America's unserved population. And yes, if confirmed I will work with Congress to ensure our national investments in infrastructure are best targeted to serve the unserved.

> *Question 4a.* Americans today enjoy a wide platform of broadband delivery options. Will you commit that NTIA will pursue a policy that encourages the expansion of broadband to rural America on a "technology neutral" platform, especially when direct government funding is being used?

> *Answer:* Yes.

Question 5. There are numerous efforts underway to add Dynamic Spectrum Access to federal spectrum bands to facilitate sharing, but these are mostly being done as one-off solutions unique to specific bands. Would it be more efficient and effective in the long-term for NTIA to consolidate these under a single spectrum management system that can provide a common platform to support these band-specific efforts?

> *Answer:* The current efforts to employ Dynamic Spectrum Access (DSA) are in their early stages. It is too early to know if these types of efforts will be successful at facilitating better sharing than other methods. Additionally, each spectrum band presents unique challenges both because of the spectrum characteristics, but also because of the nature of the incumbent operations. Work to expand DSA might prove to be a valuable way to get more from our spectrum assets, but at this point it is too soon to tell. If confirmed, I will work with the staff of NTIA, the FCC, and Federal incumbents to evaluate the effectiveness of DSA and its suitability to other bands of spectrum.

Question 1. What should happen if NTIA doesn't like an alternative plan from a state that chooses to opt-out of FirstNet building and operating the Radio Access Network within their state, and how will NTIA work with states who choose to opt-out?

> *Answer:* By law, an opt-out state must submit to NTIA an application for required spectrum rights from FirstNet and optional funds for construction of the radio access network (RAN) in its state. To qualify for either, the law requires a state to demonstrate five RAN attributes that are necessary to ensure that a first responder has consistent, sustainable, high-quality, and secure broadband service across the nation – regardless of whether a state or FirstNet operates the RAN in a state. NTIA is currently developing its Notice of Funding Opportunity, which will detail how a state may make these demonstrations. NTIA should only disapprove a state's opt-out application if a state fails to make those statutory demonstrations. If given the opportunity, I'll work to ensure that opt-out states clearly understand what they need to demonstrate to NTIA.

Question 2. Will NTIA work with states who choose the opt-out option to remedy any perceived deficiencies in their alternative plans, and what recourse does a state have if it disagrees with NTIA's findings on their alternative plans?

> *Answer:* NTIA has stated that applicants will be provided opportunities to remedy deficiencies before an application is recommended for disapproval. NTIA intends to rely on no less than three independent, subject matter experts to review applications based on review standards and criteria that will be clearly laid out in the grant guidance. NTIA will provide feedback from the technical review panel to states and provide the states with opportunities to remedy their application

Question 3. Can you give your commitment that if a state chooses to opt-out, that NTIA won't seek to thwart that choice, but will review an alternative state plan objectively and with an eye toward respecting a state's legally enshrined opt-out right?

> *Answer:* Yes.

Senator Heller
Questions for the Record to Mr. David Redl
Committee on Commerce, Science, and Transportation
June 8, 2017

Question 1. Given the Senate Commerce Committee has jurisdiction over both the FTC and the Internet, I want to bring to your attention concerns regarding the potential confusion arising from the Internet Corporation for Assigned Names and Numbers (ICANN) not implementing proper safeguards when awarding certain generic top-level domain strings (gTLDs).

Accountants in Nevada have provided me with some details about the Association of International Certified Professional Accountants' (AICPA's) situation with the pursuit of the .cpa gTLD, and I understand that you are familiar with that issue as well.

NTIA plays an important role in the proper operation of the Internet. What you can do as NTIA Administrator to ensure that consumers are not faced with fraudulent and deceptive practices that may arise from the awarding of a domain name to an entity that may misuse that domain and foster misrepresentations about certified public accountants?

> *Answer:* NTIA remains the United States' representative on ICANN's Governmental Advisory Committee and I believe that NTIA should continue to serve as a vigorous advocate for the United States' interests at ICANN. The accountability mechanisms at ICANN include tools to address disputes regarding new gTLDs. I understand that AICPA is engaged in this process. If confirmed, I will work with other federal agencies, including the Federal Trade Commission, to represent interests at ICANN on these and other matters.

Question 2. Everyone in Congress agrees spectrum is valuable, and we need it now to continue innovating, create jobs, and boost the economy.

But it seems that time is the critical factor. In the past, it's taken 13 years on average from start to finish to reallocate spectrum.

Looking at the 2012 legislation that reallocated spectrum, many of those bands had been identified long before the auction took place.

We need spectrum now, not 13 years from now.

What are your ideas for speeding up the reallocation process? Is there a specific reason it takes this long?

> *Answer:* Finding opportunities for reallocation, and actually moving very expensive and technologically complex government systems can be a complicated and time consuming

process. Congress has already begun the process of making this process more fluid through the changes made to the Spectrum Relocation Fund and the concept of a spectrum pipeline. While it will continue to take time to evaluate, upgrade, or relocate government spectrum systems, doing so on an ongoing basis with SRF funding for research and development will help us continually find opportunities. If confirmed, I look forward to further reviewing the various processes and identifying efficiencies where able.

Question 3. Given that NTIA manages federal spectrum, my view is that your most important job, if confirmed, is to find more spectrum to bring to market.

Is there anything Congress can do to give NTIA more authority and more leverage to convince federal agencies to give up some of their spectrum?

> *Answer:* The work Congress has done to adapt the Spectrum Relocation Fund to provide incentives for Federal agencies to part with spectrum or upgrade systems along with the spectrum pipeline are in the process of delivering results. If confirmed, I will work with the NTIA staff, Federal agencies and Congress to provide the right incentives for efficiency that can go a long way toward meeting our spectrum needs.

Senator Fischer
Questions for the Record to Mr. David Redl
Committee on Commerce, Science, and Transportation
June 8, 2017

Question 1. Mr. Redl and Mr. Kan, there are numerous examples of autonomous technologies, whether it's trucks, ports, or railroads, which are moving to a more connected transportation system. We need to ensure the federal government will keep pace with these technologies. Regulatory silos, in which agencies across the government are creating duplicative and counter-productive regulations, are also a concern.

What will both of you do to incentivize the growth of new technologies safely? And what methods can the government adopt to ensure duplicative regulations and silos do not hinder these technologies?

> *Answer:* The FY17 Omnibus Appropriations Act included report language encouraging the Commerce Department to "continue its consideration of how to appropriately plan for and encourage the proliferation of network connected devices, including soliciting input from: industry stakeholders; subject matter experts; businesses…and relevant Federal agencies." If confirmed, I will work with the staff of NTIA to implement this provision and convene an interagency group to review the policy issues impacting the Internet of Things, including those related to transportation.

Question 2. Mr. Redl, Senators Booker, Gardner, Schatz, and I have been working to develop a better understanding of the Internet of Things here in the Senate. As the administrator of the NTIA, you would have a significant role in developing the government's position on IoT. What do you see as the greatest challenges facing IoT technologies, and what can we do to promote innovation?

> *Answer:* I believe the greatest challenge for IoT will be cybersecurity. While most Americans have embraced the idea that they need to do more to protect themselves when they are on their computers or smartphones, IoT presents different challenges. Many don't regard their thermostats, lightbulbs, cars, or appliances as computers that may have cybersecurity risks, but in the age of IoT, they can be. If we want to promote innovation, we must ensure that Americans trust the IoT devices in their lives. NTIA already plays a role in both cybersecurity and in the Internet of Things. If confirmed, I will work with the staff at NTIA and across the Federal government to promote smart IoT policies that incorporate security and protect American consumers.

Question 3. Mr. Redl, the American Recovery and Reinvestment Act (ARRA), commonly referred to as the 'Stimulus Act,' provided $4.35 billion to NTIA to fund broadband projects through grants. As Congress is once again posed to debate and an infrastructure bill that may include money to expand broadband, what assurances can you give this committee that NTIA will not pursue a policy of using government money to overbuild existing broadband networks?

Answer: I share your concern that Federal dollars be spent to bring broadband to unserved areas, rather than competing with private capital in areas that already have broadband. If confirmed, I will work with Congress to ensure our national investments in infrastructure are best targeted to serve the unserved.

Question 4. Mr. Redl, the Global Positioning System (GPS) plays a critical role in today's "precision agriculture" and will continue to do so as farmers face the ever-increasing need to produce more on less land using less seed, water, fertilizer, and pesticide. The expanding use of GPS on rural croplands and ranchlands may be the largest single technological advancement for farmers and ranchers in the past 30 Years. With the help of location and navigation services made possible by precision GPS, farmers today can use advanced tracking and automated machine systems to conduct tilling, seeding and spraying operations at levels of precision within 2 cm. Farmers are always looking for ways to avoid personnel and equipment downtime, analyze soil, seed and other inputs crops for optimum yield and efficiently manage inputs. Based on government crop statistics, annual reported costs of each input, and actual field savings data from the past 10 years, U.S. farmers could save $8.2 billion annually by using GPS technology. If GPS technology is compromised or cannot be used in the future, rural American economies that are tied to the agricultural sector will be harmed, U.S. leadership in agricultural production and trade will suffer, and American consumers would likely see a significant uptick in food costs across the board.

In the past few years, multiple federal agencies, including the FCC, the NTIA, the FAA and DOT, after significant testing, all recognized that a proposal to convert mobile satellite spectrum for the use of terrestrial wireless services would interfere with GPS and, among other problems, would harm high precision GPS services integral to U.S. agriculture. That proposal was rejected based on potential harm to GPS.

How would you ensure that any future spectrum proposals would not interfere with or undermine such GPS-based services?

Answer: GPS is one of the United States military's greatest technological advancements. Its use in the commercial sector and just how pervasively it powers our economy cannot be overstated. In addition to agriculture, nearly every aspect of our daily lives relies on the GPS constellation at some point in its lifecycle. Protection of GPS has been, and should be, a priority for NTIA. However, that does not mean that the remainder of the L-band cannot be maximized for other uses. Improvements in technology and coordination between users should be part of the discussion as we look to best ensure no part of the spectrum goes underused. If confirmed, working cooperatively with all of the stakeholders in the GPS community would be a priority when it comes to addressing additional uses in the L-band.

Question 5. Mr. Redl, many government and private commercial stakeholders have said that GPS is a critical national asset that has led to innovation not only in the agriculture sector in precision farming, but also in military, surveying, aviation, automotive, automatic highways, and consumer technologies.

Do you agree and, if so, what steps would you take to protect GPS from encroachment as the nation looks to find more and more wireless spectrum for re-allocation to mobile broadband?

> *Answer:* Protection of GPS has been, and should be, a priority for NTIA. However, that doesn't mean that the remainder of the L-band should not be maximized for other uses. Improvements in technology and coordination between users should be part of the discussion as we look to ensure no part of the spectrum goes underused. If confirmed, working cooperatively with all of the stakeholders in the GPS community would be a priority when it comes to addressing additional uses in the L-band.

Question 6. Mr. Redl, the introduction and use of GPS-enabled devices have brought significant advances in aviation safety and greatly benefited the flying public. Numerous studies have documented and quantified these life-saving benefits. Today, virtually all types of aircraft utilize GPS for navigation and approaches. For the majority of these aircraft, GPS is the primary means of navigation. As you may be aware, GPS is a critical building block for TAWS (terrain awareness and warning system), which has been responsible for reducing CFIT (controlled flight into terrain) accidents among US airlines. Such incidents have dropped from a leading cause of deadly crashes to zero.

Given how dependent pilots have become on GPS features in avionics equipment, particularly certified equipment, how would you ensure that their ability to rely on GPS continues uninterrupted in the future by potential interference from new spectrum services?

> *Answer:* Protection of GPS has been, and should be, a priority for NTIA. However, that does not mean that the remainder of the L-band cannot be maximized for other uses. Improvements in technology and coordination between users should be part of the discussion as we look to best ensure no part of the spectrum goes underused. If confirmed, working cooperatively with all of the stakeholders in the GPS community would be a priority when it comes to addressing additional uses in the L-band.

Question 7. Mr. Redl, GPS is the foundation for modernizing the nation's air traffic control system. The Capstone project in Alaska, the original precursor to nationwide roll-out of the new reforms, produced concrete evidence that GPS-enabled devices improve aviation safety.

What steps would you take to ensure that the full benefits of GPS, unimpaired by the effect of future spectrum proposals, remain available for modernizing the air traffic control system?

> *Answer:* Protection of GPS has been, and should be, a priority for NTIA. However, that does not mean that the remainder of the L-band cannot be maximized for other uses. Improvements in technology and coordination between users should be part of the discussion as we look to best ensure no part of the spectrum goes underused. If confirmed, working cooperatively with all of the stakeholders in the GPS community would be a priority when it comes to addressing additional uses in the L-band.