Before the
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE
Washington, D.C. 20230

In the Matter of	)	
The Benefits, Challenges, and Potential Roles for the Government in Fostering the Advancement of the Internet of Things	)	Docket No. 160331306-6306-1 RIN 0660-XC024

COMMENTS OF MOBILE FUTURE

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I. INTRODUCTION

Mobile Future submits these comments in response to the National Telecommunications and Information Administration request for comment in the above-captioned proceeding.[1] With mobile data traffic skyrocketing thanks to increased connectivity, and an ever increasing range of services, applications, and devices available to consumers and businesses alike, the United States, already a global leader in 4G LTE investment, deployment, and adoption, must take steps to ensure we maintain worldwide leadership as we deploy next generation 5G networks that will power even more possibilities for the Internet of Things.

As exponentially increasing numbers of devices connect to wireless networks, United States spectrum policy must support, respond to and anticipate the massive increase in data consumption ahead. Policies must also put in place a sustainable spectrum pipeline to ensure a seamless transition to 5G networks and plan for longer-term future spectrum needs. NTIA and the FCC must work to identify and clear spectrum used by Federal agencies for exclusive

[1] *The Benefits, Challenge, and Potential Roles for the Government in Fostering the Advancement of the Internet of Things*, Request for Comments, 81 Fed. Reg. 19956 (NTIA 2016).

commercial use, and Federal users must have incentives to use spectrum efficiently and to relinquish underutilized spectrum whenever possible, or share that spectrum whenever practical.

To maintain the role as a global leader in wireless, the U.S. must continue to foster deployment of wireless networks rather than impose restrictive regulations that deter investment in mobile infrastructure, such as the FCC's recent decision to subject mobile broadband to monopoly-era common carrier regulation. And to encourage network investment, we must also streamline infrastructure deployment processes for both small cell as well as larger scale deployments.

II. THE INTERNET OF THINGS IS GROWING DRASTICALLY AS CONNECTED DEVICES INCREASE MOBILE DATA DEMAND

Already there are more than an estimated nine billion connected devices around the world, but that number will grow rapidly with estimates ranging from 25 billion to 50 billion connected devices by 2025.[2] While the catchphrase refers to the Internet of *Things,* the real transformation it will make possible is in the quality and productivity of people's lives—and the opportunities available to them in our ever-innovating economy. Here is just a sampling of the progress already underway:

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[2] McKinsey Global Institute, *The Internet of Things: Mapping the Value Beyond the Hype*, at 17 (June 2015), http://www.mckinsey.com/~/media/McKinsey/dotcom/Insights/Business%20Technology/-Unlocking%20the%20potential%20of%20the%20Internet%20of%20Things/Unlocking_the_potential_of_the_Internet_of_Things_Full_report.ashx.

Homes

Every month, 328 million "things" connect to the Internet, and more and more this progress is coming home.[3] Already today, consumers are embracing emerging wireless technologies that enable remote home access, thermostat adjustments, fire and moisture detection and real-time security feeds. By 2022, a typical home could contain more than 500 connected smart devices keeping our households more secure, conserving resources, and making daily tasks more convenient.[4] With 21 billion "things" predicted to connect by decade's end[5]—from cars to clothes and everything in between—the demand for data and the 'need for speed' will only increase.

Transportation

By 2020, nearly 97 percent of new cars shipped in the United States will have built-in Internet connectivity,[6] and there will be more than a quarter billion connected cars on the road worldwide.[7] From connected and autonomous vehicles to intelligent public transportation, it is essential that the U.S. lead this aspect of the Internet of Things. According to the U.S.

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[3] David Evans, "Introducing the Wireless Cow," Politico, (June 29, 2015), available at http://www.politico.com/agenda/story/2015/06/internet-of-things-growth-challenges-000098.

[4] iControl, "2015 State of the Smart Home Report," (2015), available at https://www.icontrol.com/blog/2015-state-of-the-smart-home-report/

[5] Nathan Eddy, "Gartner: 21 Billion IoT Devices to Invade by 2020," InformationWeek, (Nov. 10, 2015), available at http://www.informationweek.com/mobile/mobile-devices/gartner-21-billion-iot-devices-to-invade-by-2020/d/d-id/1323081.

[6] John Greenough, "Here's How Big Connected Cars Will Be in Regions Around the World," Business Insider, (April 4, 2015), available at http://www.businessinsider.com.au/connected-car-shipments-innorth-america-asia-europe-other-regions-2015-4/.

[7] Verizon, "State of the Market: Internet of Things 2016," (2016), available at https://www.verizon.com/about/sites/default/files/state-of-the-internet-of-things-market-report-2016.pdf.

Department of Transportation, 82 percent of traffic accidents can be addressed with intelligent transportation.[8] Connected intersections can help traffic move quicker, saving time and money by reducing the amount of gasoline used by five percent and reducing carbon emissions by five percent.[9] And, consider just the ripple effect of more efficiently finding a parking spot: One recent study showed that drivers looking for parking at the UCLA campus alone logged 950,000 miles of travel, 47,000 gallons of wasted gas, and 730 tons of greenhouse gas emissions.[10] The smarter the car, the cleaner the air, the more gas money stays in consumers' wallets.

Agriculture

The Internet of Things is proving an essential tool in terms of helping farmers and ranchers produce more food with fewer resources. With the amount of farmland shrinking but the number of mouths growing,[11] precision agriculture and mobile broadband networks are connecting farmers with data from satellites, sensors and tractors to make better decisions that reduce chemical use, increase yields, decrease costs, reduce water consumption and feed more people.[12] Farmers also use GPS technology to help pinpoint exactly where every seed is placed

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[8] U.S. Department of Transportation, "Connected Vehicle Research in the United States," available at http://www.its.dot.gov/connected_vehicle/connected_vehicle_research.htm.

[9] Ellen Chang, "How a "connected" car could save you money," CBS News, October 15, 2014, available at http://www.cbsnews.com/news/how-a-connected-car-could-save-you-money/.

[10] David Evans, "Here's what IoT will do for transportation," VentureBeat, (September 9, 2015), available at http://venturebeat.com/2015/09/19/heres-what-iot-will-do-for-transportation/.

[11] According to the United Nations' Food and Agriculture Organization, food production must increase 70% to be able to feed the growing population expected to hit 9 billion in 2050. http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf.

[12] With remote sensors that provide more agricultural data, farmers are able to target resources to reduce input costs, reduce pesticide and chemical use, while improving yields by 5 or 10 bushels an acre. http://fortune.com/2014/05/30/cropping-up-on-every-farm-big-data-technology/; Studies

and then use wireless technology to help monitor their fields. One tool tracks the available nitrogen in a field and sends projections, alerts and recommendations to a farmer's iPad that can increase profits up to $100 per acre.[13] According to the United Nations' Food and Agriculture Organization, food production must increase 70% to be able to feed the growing population expected to hit 9 billion in 2050.[14] U.S. leadership at the intersection of IoT and agriculture can literally help feed a growing world.

Health & Wellness

Wearable devices equipped with biosensors to track wellness and exercise were leading ambassadors of the first wave of The Internet of Things. Last year alone, 13.4 million fitness trackers were sold in the U.S., nearly double the number sold in 2014.[15] The untapped potential at the intersection of Health IoT and mass consumer adoption is nothing short of revolutionary. Taking diabetes as an example: More than 29 million Americans live with this devastating

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indicate that expanding the use of precision agriculture could reduce water use by 11 to 50 percent, reduce use of fertilizers and pesticides, while boosting crop yields and decreasing environmental impact.
http://www.bsr.org/reports/BSR_CTIA_Wireless_and_the_Environment.pdf.

[13] Katherine Noyes, "Cropping up on every farm: Big data technology," *Fortune Magazine*, (May 30, 2014) available at http://fortune.com/2014/05/30/cropping-up-on-every-farm-big-data-technology/.

[14] Food and Agriculture Organization of the United Nations, How to Feed the World in 2015, available at http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf.

[15] The Verge, "NPD: 13.4M fitness trackers were sold in the US in 2015, up from 7.2M in 2014, totaling $1.46B in sales, up from $692M the previous year," February 1, 2016, available at http://www.theneeds.com/news/n11161529/npd-13-4m-fitness-trackers-were-sold-theverge.

chronic disease.[16] In 2015, Google received a patent for a contact lens that can monitor the wearer's blood sugar.[17] The artificial pancreas – a device that marries a wireless glucose meter and insulin pump to automatically monitor and correct blood sugar levels--[18]is helping people living with Type One Diabetes keep their blood glucose levels within the safe target range 72 percent of the time – up from 53 percent of the time with the separate devices.[19] Similar investments and advances are underway across the spectrum of chronic disease as well as in-patient care—promising radical improvements in both the quality and cost of both treatment and preventative care.

Education

Nearly three-fourths of teachers say that technology—from tablet textbooks to smartboards to opportunities to 3D print class science projects--empowers them to teach to a number of learning styles.[20] In addition to increasing student learning, wireless technology has

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[16] American Diabetes Association, Statistics about Diabetes, available at http://www.diabetes.org/diabetes-basics/statistics.

[17] Alexandra Sifferlin, "Google Granted Patent for Smart Contact Lens," Time, (March 25, 2015), available at http://time.com/3758763/google-smart-contact-lens/.

[18] Singe Brewster, "The internet of you: How wireless medical implants will change medicine," GigaOm, (June 27, 2013,) available at https://gigaom.com/2013/06/27/the-internet-of-you-how-wireless-medical-implants-will-change-medicine/.

[19] Reuters, "Artificial pancreas works for teens with type 1 diabetes," (February 4, 2016,) available at http://www.foxnews.com/health/2016/02/04/artificial-pancreas-works-for-teens-with-type-1-diabetes.html.

[20] PBS Learning, "PBS Survey Finds Teachers are Embracing Digital Resources to Propel Student Learning, (February 3, 2013,) available at http://www.pbs.org/about/blogs/news/pbs-survey-finds-teachers-are-embracing-digital-resources-to-propel-student-learning/.

the potential to save the education system $3 billion per year.[21] And, this learning doesn't end when students leave the classroom. More than 80% of students use a wireless device to complete homework. These devices are helping close the so-called "homework gap," bringing wireless broadband to the five million households with school-aged children nationwide that do not have broadband at home.[22]

With the increase in connected devices, data traffic across America's mobile networks increased 56 percent in 2015[23] and consumers used 9.6 trillion megabytes of data, three times as much as in 2013.[24] Consumer mobile traffic in the United States is expected to grow 5.9-fold from 2015 to 2020, a compound annual growth rate of 43 percent.[25] The Internet of Things will continue to increase demand for mobile data as wireless users find new ways to connect to each other and objects around them.

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[21] Tracy Chambers, "Teaching with Technology – Mobile Devices in the Classroom," IQ, (May 7, 2014,) available at http://iq.intel.com/teaching-with-tablets-mobile-devices-transforming-the-classroom/.

[22] John D. McKinnon, "FCC Expands Low-Income Phone Subsidy to Include Internet Service," Wall Street Journal, (March 31, 2016), available at http://www.wsj.com/articles/fcc-expands-low-income-phone-subsidy-to-include-internet-service-1459457202

[23] Cisco, *VNI Mobile Forecast Highlights, 2015-2020: United States – 2015 Year in Review*, (Feb. 1, 2016), available at http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country.

[24] CTIA, *Annual Wireless Survey*, (May 23, 2016), available at http://www.ctia.org/your-wireless-life/how-wireless-works/annual-wireless-industry-survey.

[25] Cisco, *VNI Mobile Forecast Highlights, 2015-2020: United States – Consumer Mobile Traffic*, (Feb. 1, 2016), available at http://www.cisco.com/c/dam/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country

III. UNITED STATES SPECTRUM POLICY MUST BE DESIGNED TO SUPPORT THE INTERNET OF THINGS AND THE TRANSITION TO NEXT GENERATION NETWORKS

Spectrum is the key input to existing 4G LTE networks and the 5G networks of the future that will support the Internet of Things. Consumer demand for mobile data continues to grow exponentially under 4G LTE, and will skyrocket under 5G - fueled in no small part by the fast-expanding universe of "connected things" that will power our nation's economy and improve people's lives. It is imperative that U.S. policies play a constructive role supporting this progress through policies that help ensure a robust, ongoing pipeline of spectrum and continued, world-leading private capital infrastructure investment.

The United States leads the world in 4G LTE deployment and adoption. Nearly 100 percent of consumers in America now have access to a high-speed 4G LTE mobile broadband network and approximately 98 percent have access to multiple providers.[26] Nearly 70 percent of Americans now own a smartphone,[27] and according to a recent NTIA survey conducted by the Census Bureau, 20 percent of U.S. households with Internet access rely solely on their mobile devices for connectivity.[28]

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[26] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Eighteenth Report, 30 FCC Rcd 13515, ¶ 38, Chart III.A.3 (WTB 2015) ("Eighteenth Wireless Competition Report").

[27] John B. Horrigan and Maeve Duggan, Pew Research Center, *Home Broadband 2015: The Share of Americans with Broadband at Home Has Plateaued, and More Rely Only on Their Smartphones for Online Access*, at 2 (Dec. 2015), http://www.pewinternet.org/files/2015/12/Broadband-adoption-full.pdf.

[28] *Evolving Technologies Change the Nature of Internet Use*, NTIA blog, at 3 (Apr. 19, 2016), https://www.ntia.doc.gov/blog/2016/evolving-technologies-change-nature-internet-use

The transition to 5G networks will unleash substantial consumer benefits and improved government services. Fifth Generation networks will usher in new paradigms in connectivity to support, among other things, extremely high-definition video services, smart grid and critical infrastructure monitoring, smart city and smart agriculture applications, enhanced public safety capabilities, and improved access to health care. Realizing the full potential of the Internet of Things will require networks that are up to 100 times faster, react ten times quicker, support billions of simultaneously connected devices, reduce energy consumption and offer exceptional network reliability.[29]

Constructive spectrum policy will also have a significant positive impact on the nation's innovation economy. As the Federal Communications Commission recognizes, "mobile wireless [is] one of the most important sectors in the national economy."[30] The economic value of licensed spectrum made available for mobile wireless use is almost $500 billion, and the social

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[29] Jim Kohlenberger, *Mobilizing America*: *Accelerating Next Generation Wireless Opportunities Everywhere*, Mobile Future (Sept. 2015) ("Mobile Future 5G Paper"), http://mobilefuture.org/wp-content/uploads/2015/09/5G-Paper-1.pdf. *See also NGMN 5G White Paper* at 25, 66-70 (Feb. 2015), https://www.ngmn.org/fileadmin/ngmn/content/downloads/Technical/2015/NGMN_5G_White_Paper_V1_0.pdf; *5G Technology Evolution Recommendations*, 4G Americas at 15-22 (Oct. 2015), http://www.4gamericas.org/files/2414/4431/9312/4G_Americas_5G_Technology_Evolution_Recommendations_-_10.5.15_2.pdf.

[30] Eighteenth Wireless Competition Report at ¶ 1; *See also* Executive Office of the President Council of Economic Advisors, *The Economic Benefits of More Spectrum for Wireless Broadband*, at Exec. Summary (Feb. 2012), http://www.whitehouse.gov/sites/default/files/cea_spectrum_report_2-21-2012.pdf (stating that increased wireless broadband deployment will "increase the rate of growth in per capita income; spur economic activity through new business investment; and support many new high-quality jobs.").

benefits from that spectrum total at least 10 to 20 times that amount.[31] That value manifests itself as significant investment and spending by wireless providers and their suppliers, and jobs creation in the form of employees across the wireless ecosystem. For every one person employed in the wireless industry, an additional 6.5 people are employed.[32] By another measure, a recent report from Recon Analytics indicates that for every 10 MHz of spectrum made available, the U.S. economy grows by $3.1 billion and creates over 100,000 new jobs.[33]

The Government must work to create and fill a spectrum pipeline to plan for and support the massive increase in data that a vibrant Internet of Things will require. While Congress and the Administration have taken steps toward reallocating some spectrum to support the Internet of Things, more must be done to stay out front of the fast-growing demands of consumers and our wireless-fueled economy.

In the short term, the FCC's currently underway broadcast incentive auction will provide access to additional low-band spectrum in the 600 MHz band, and the FCC is moving forward with making spectrum in the 3.5 GHz band available for mobile broadband after years of coordination with NTIA to address Federal incumbents. The FCC is also looking at making spectrum above 24 GHz available for use serving wireless consumers.[34] The Commission should take swift action to make the millimeter wave spectrum available as soon as possible, and should

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[31] Coleman Bazelon and Giulia McHenry, *Mobile Broadband Spectrum: A Vital Resource for the U.S. Economy*, at 1 (May 11, 2015), http://www.ctia.org/docs/default-source/default-document-library/brattle_spectrum_051115.pdf.

[32] *Id*. at 23.

[33] Recon Analytics LLC, *The Impact of 10 MHz of Wireless Spectrum*, at 1-2 (January 26, 2016), http://www.ctia.org/docs/default-source/default-document-library/for-every-10-mhz.pdf.

[34] *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Notice of Proposed Rulemaking, 30 FCC Rcd 11878 (2015).

initiate a follow-on proceeding to look at additional bands not included in its initial Notice of Proposed Rulemaking.

NTIA should work with the FCC to identify additional spectrum that can be reallocated to serve mobile consumers and support U.S. leadership in the Internet of Things, both in spectrum bands below 6 GHz and in higher bands. The 2012 Spectrum Act expresses a clear priority for reallocation of Federal spectrum for exclusive commercial use, requiring that NTIA's evaluation of a band for possible reallocation "give priority to options involving reallocation of the band for exclusive non-Federal use" and that NTIA "shall choose options involving shared use only when it determines, in consultation with the Director of the Office of Management and Budget, that relocation of a Federal entity from the band is not feasible due to technical or cost constraints."[35]

Assistant Secretary Strickling and FCC Chairman Wheeler have expressed a commitment to taking the steps necessary to meet the President's goal of making 500 MHz of spectrum available for wireless broadband by 2020.[36] And Congress's inclusion of spectrum pipeline provisions in the Bipartisan Budget Act of 2015 is another small step in the right direction. However, those provisions require Federal agencies to relinquish just 30 MHz of underutilized spectrum and allow them nearly a decade to do so. This is an unacceptable pittance in light of

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[35] 47 U.S.C. § 923(j).

[36] *Joint Statement Following the Biannual Spectrum Planning Meeting on Friday April 1, 2016, between FCC Chairman Tom Wheeler and Assistant Secretary for Communications and Information and NTIA Administrator Lawrence E. Strickling* (Apr. 1, 2016), https://www.ntia.doc.gov/speechtestimony/2016/joint-statement-following-biannual-spectrum-planning-meeting-friday-april-1-201. In 2010, the National Broadband Plan noted that the FCC had only 50 MHz of spectrum in the pipeline that could be assigned for broadband use, and recommended making an additional 500 MHz of spectrum available for broadband by 2020. *Connecting America: The National Broadband Plan* at 10 (2010), https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf.

the more than 350 MHz of additional licensed spectrum experts project U.S. consumers and our wireless economy will need by 2019.[37] And this 350 MHz projection does not account for the drastic increase in data demands that 5G networks will bring by 2020. Given that it takes nearly a decade to reallocate spectrum from Federal to commercial use, we are already behind. NTIA should work with the FCC and other Federal agencies to bring a much-needed sense of urgency to these matters and prioritize deployment of a long-term spectrum pipeline, so the United States has the spectrum capacity necessary to maximize the potential benefits of the Internet of Things for consumers and maintain the U.S. economy's global wireless leadership position.

To successfully and continually fill the spectrum pipeline, Federal users must have incentives to use spectrum efficiently and to relinquish underutilized spectrum. Current policies do not create sufficient incentives for efficient Government spectrum use, nor do they bring market forces to bear on Federal users. Consistent with the Commercial Spectrum Management Advisory Committee's ("CSMAC") recommendation, OMB took steps in the budget process toward encouraging agencies to choose spectrally efficient systems, revising Circular No. A-11 pursuant to the 2012 Spectrum Act to include directives requiring agencies to: consider the economic value of the spectrum being used in their budget justifications for procurement of major systems; indicate whether the system procured was the most spectrally efficient among those meeting the agency's requirements; indicate whether the system will or could operate on

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[37] Bipartisan Budget Act of 2015, Pub. L. 114-74, § 1004; Coleman Bazelon and Giulia McHenry, *Substantial Licensed Spectrum Deficit (2015-2019): Updating the FCC's Mobile Data Demand Projections* (June 23, 2015), http://www.ctia.org/docs/default-source/default-document-library/brattle_350MHz_licensed_spectrum.pdf.

shared spectrum; and certify that commercial alternatives and non-spectrum-dependent alternatives were considered. [38]

New incentive mechanisms should be developed to protect the overwhelming public interest in making more spectrum available for the mobile Internet. In addition to recovering the costs of relinquishing or sharing Federal spectrum from the Spectrum Relocation Fund,[39] these mechanisms could include allowing agencies to receive additional financial or operational benefits from their relocation efforts. The focus primarily should be on mechanisms that promote relinquishment of Federal spectrum for exclusive commercial use given the clear preference for relinquishment in the 2012 Spectrum Act. The Government should also continue to pursue solutions along the lines of the Federal Spectrum Incentive Act,[40] which was introduced in 2015 but not passed into law, and NTIA should continue to seek input from CSMAC on creating incentives for Federal users to relinquish or share underutilized spectrum.[41] Finally, NTIA and the Office of Management and Budget should take additional measures,

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[38] Office of Management and Budget, Circular No. A-11: Preparation, Submission, and Execution of the Budget (Jun. 2015).

[39] The Bipartisan Budget Act of 2015 includes provisions to allow funds from the Spectrum Relocation Fund to be used for research and development or other planning activities to improve spectral efficiency in order to make spectrum available for exclusive or shared commercial use. Bipartisan Budget Act of 2015, § 1005.

[40] Federal Spectrum Incentive Act of 2015, H.R. 1641 and S. 887 (introduced Mar. 26, 2015).

[41] *See* CSMAC, *Incentives Subcommittee Report* (Jan. 11, 2011), https://www.ntia.doc.gov/files/ntia/publications/incentivessubcomm_report_final_01112011.pdf; CSMAC Meeting Presentation, *Final Recommendations: Spectrum Sharing Cost Recovery Alternatives* (Aug. 26, 2015), https://www.ntia.doc.gov/files/ntia/publications/recommendations_csmac_fedagencycostrecoverysubcom_08262015.pdf.

including conducting an annual review of Federal agency spectrum holdings and use, to encourage efficient spectrum use through the budget and procurement process.

When it is not technically feasible for agencies to relocate entirely from a particular spectrum band, agencies should be encouraged to make spectrum available on a shared basis. Initially, agencies should be encouraged to share spectrum with each other to increase spectrum efficiency and to potentially clear a portion of Federal spectrum to make it available for exclusive commercial use. Agency sharing should be encouraged in a unified way across the Government, for example by NTIA and OMB in the budget and procurement processes. When inter-agency sharing is not possible, Federal and non-Federal sharing opportunities should be pursued – with the over-riding priority remaining clearing as much spectrum as possible for consumers and our economy in order to maximize the public benefits of wireless innovation, including those made possible by the Internet of Things.

IV. THE GOVERNMENT SHOULD FOCUS ON POLICIES THAT FOSTER DEPLOYMENT OF WIRELESS NETWORKS

The Government should work to develop policies that foster wireless network deployment, recognizing the central importance of these efforts to a competitive U.S. innovation economy and to making real for all Americans the many benefits that the ongoing Internet of Things revolution makes possible. Policymakers can play a constructive role by avoiding and eliminating regulations that may deter investment, and by streamlining infrastructure deployment processes, as outlined in President Obama's 2015 Presidential Memorandum.[42] The United States' mobile leadership has been made possible by a progressive, light-touch regulatory

[42] Presidential Memorandum, *Expanding Broadband Deployment and Adopting by Addressing Regulatory Barriers and Encouraging Investment and Training* (Mar. 23, 2015).

approach that Administrations, Congress, and the FCC have embraced over the past three decades. The FCC's pre-emptory decision to accede to a policy framework advocated by President Obama, and subject mobile broadband to outdated, monopoly-era common carrier regulations last year was an abrupt change of course in this proven approach and presents a serious risk to the continued investment in mobile networks in the United States which thus far have continued to exceed any other single sector in our economy.[43] With litigation of the decision likely to stretch on for years, Congress should instead step in to craft a legislative solution that would grant certainty in the mobile marketplace.[44]

To ensure continued strong, reliable and dynamic wireless service for consumers, policymakers should continue to focus on streamlining and facilitating broadband infrastructure deployment related to both small cell deployments and traditional larger scale deployments, as both will support 5G networks and the Internet of Things.[45] Mobile providers will also need

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[43] *Protecting and Promoting the Open Internet*, Order on Remand, 30 FCC Rcd 5601 (2015).

[44] Following the FCC's ill-advised Open Internet Order, the FCC recently proposed broadband privacy rules that differ significantly from the White House framework and the FCC's existing approach to the rest of the online ecosystem. *Protecting the Privacy of Customers of Broadband and Other Telecommunications Services*, Notice of Proposed Rulemaking, 31 FCC Rcd 2500 (2016); The White House, *Consumer Data Privacy in a Networks World: A Framework for Protecting Privacy and Promoting Innovation in the Global Digital Economy*, at 2 (Feb. 2012) ("White House Privacy Framework), https://www.whitehouse.gov/sites/default/files/privacy-final.pdf. Adopting rules for mobile networks that differ greatly from the rules that apply to device manufacturers, app developers, and operating system providers will create confusion for consumers arbitrarily upset the balance of competition. The FCC should instead work with NTIA and the FCC to initiate a process that engages all stakeholders to create flexible and consistent rules across the Internet ecosystem.

[45] The FCC recently sought comment on proposed amendments to the 2001 Nationwide Programmatic Agreement for the Collocation of Wireless Antennas that would exclude certain Distributed Antenna Systems and small cell deployments from review under Section 106 of the National Historic Preservation Act. *Wireless Telecommunications Bureau Seeks Comment on Proposed Amended Nationwide Programmatic Agreement for the Collocation of Wireless Antennas*, Public Notice, WT Docket No. 15-180, DA 16-519 (rel. May 12, 2016). The proposed

access to backhaul and fiber connectivity, including from cable providers, to support the massive increase in data that consumer engagement with the Internet of Things will demand. In 2012, the President released Executive Order 13616 directing Federal agencies to streamline application processes and promote access to Federal lands.[46] In 2015, the Broadband Opportunity Council, convened pursuant to President Obama's 2015 Presidential Memorandum, noted while Federal agencies had made progress, more could be done to help service providers obtain the necessary approvals to build infrastructure on Federal lands, use Federal assets, or cross Federal rights-of-way.[47] Several Federal agencies committed to taking concrete steps to facilitate infrastructure deployment: the Department of Transportation has issued policy guidance to leverage highway rights of way; the Department of the Interior and the Department of Agriculture are working with the Advisory Council on Historic Preservation and other relevant agencies to explore ways to streamline the Section 106 historical review permitting processes for projects on Federal lands; OMB, the White House Office of Science and Technology Policy and the National Economic Council are working with Federal agencies to create an inventory of infrastructure assets that can support broadband; and the Department of the Interior is working to expand utilization of towers on Tribal and rural lands.[48]

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amendment are a good step toward streamlining small cell and DAS deployments, and the Government should continue to look for similar opportunities for streamlining.

[46] Exec. Order No. 13616, *Accelerating Broadband Infrastructure Deployment*, 77 Fed. Reg. 36903 (Jun. 20, 2012).

[47] *Broadband Opportunity Council Report and Recommendations* at 23 (Aug. 20, 2015), https://www.whitehouse.gov/sites/default/files/broadband_opportunity_council_report_final.pdf.

[48] *Id.* at 23-24.

Wireless carriers invested almost $32 billion in 2015 in infrastructure and other network upgrades.[49] Significant opportunities remain for executive departments and agencies to streamline and facilitate broadband infrastructure deployment and do their part for mobile consumers and our modern, connected U.S. economy. In particular, Federal agencies should continue efforts to adopt smart policies that promote and enable widespread wireless communications facilities deployment, including DAS and small cells, on Federal property. In addition, the common Wireless Telecommunications Industry Application should be finalized and implemented. Finally, effective, pro-consumer timelines should be established for permitting processes, and those timelines should provide for expedited approval of upgrades, modifications, collocations, and lease renewals as compared to new site applications.

V. CONCLUSION

The United States leads the world in mobile, and must take policy steps now to maintain its leadership position in the evolution to 5G networks that will support the Internet of Things and the extraordinary economic and quality-of-life benefits it will make possible for our citizens. The United States must develop a comprehensive spectrum policy designed to meet the surging data demands that consumers and our economy will require as they take full advantage of the Internet of Things. Additionally, our nation must focus on policies that foster private capital investment and deployment of wireless networks including avoiding and eliminating burdensome regulations and streamlining infrastructure deployment processes.

Today, we have barely scratched the surface of what the Internet can make possible – both today's Internet of people, and tomorrow's Internet of Things. With a thoughtful and

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[49] CTIA, *Annual Wireless Survey*, (May 23, 2016), available at http://www.ctia.org/your-wireless-life/how-wireless-works/annual-wireless-industry-survey.

constructive approach, a spirit of public-private collaboration and a collective sense of urgency around issues of capacity—both spectrum and infrastructure—the U.S. can lead this next chapter of the ongoing wireless revolution, unlocking the full scale of the opportunity and transforming Americans' lives and our economy in the process.

Respectfully submitted,

By: /s/ Jonathan Spalter
Jonathan Spalter, Chairman
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