Testimony of

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on

Facilitating the 21st Century Wireless Economy

before the

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Chairman Blackburn, Ranking Member Doyle, and members of the Subcommittee, on behalf of CTIA®, thank you for the opportunity to participate in today's panel on "Facilitating the 21st Century Wireless Economy."

CTIA appreciates this Committee's leadership on wireless issues and the steps taken to enable the U.S. wireless industry to lead the world in mobile broadband. Innovation in the wireless ecosystem is transforming how we live and work, in every community across the country and in every sector of the economy.

We are now in a global race to lead in the next generation of wireless, 5G. With the right policies in place, the U.S. wireless industry is poised to invest $275 billion over the next decade, add three million new jobs, and contribute half a trillion dollars to our economy. 5G, however, cannot happen without this Subcommittee's continued leadership and focus on securing a steady new supply of spectrum and developing modernized approaches to infrastructure siting.

Planning for the future "spectrum pipeline" is more essential now than ever before. With the recent successful close of the 600 MHz Incentive Auction, there are for the first time in years no additional spectrum auctions scheduled – although the demand for wireless services continues to explode.

The nation also needs to update its wireless siting policies, which were designed for yesterday's wireless technologies – not today's and tomorrow's.

Those outdated policies deter investment and threaten the benefits new technologies can deliver for U.S. consumers and the economy.

For these reasons, CTIA supports the Senate's MOBILE NOW legislation, which recognizes the key role that spectrum and infrastructure policies play in facilitating next-generation wireless networks and our next-generation economy. This Committee has the opportunity to build on MOBILE NOW's key steps and go further to establish a robust and lasting spectrum pipeline and modernized framework for wireless siting that will fuel investment, create jobs, drive economic growth, and enable the U.S. wireless industry to win the global race for 5G leadership.

Wireless is a Powerful Driver of Economic Growth

The wireless industry is an accelerant for economic growth and job creation. Recent studies highlight the wireless industry's significant impact on the U.S. economy today. By way of example:

- **Wireless invests in America.** U.S. wireless providers have invested more than $300 billion in their networks over the last 10 years alone, including more than $32 billion in 2015.[1] Indeed, a 2016 study of companies that invest substantially in the U.S. listed wireless providers as the top two "investment heroes."[2]
- **Wireless is a job multiplier.** More than 4.6 million Americans have jobs that depend directly or indirectly on the wireless industry.[3] And employing one person in the wireless industry results in 6.5 more people finding employment, an employment multiplier that outperforms scores of other sectors, including manufacturing.[4]
- **Wireless grows the economy.** The wireless industry as a whole generates more than $400 billion in total U.S. spending,[5] and the wireless industry's

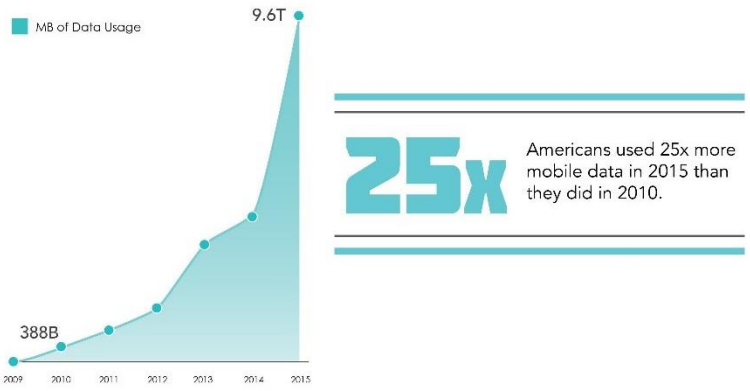
value-add is larger than the agriculture and petroleum and coal production industries.[6]

- **Wireless is only getting started.** The mobile industry is expected to make a value-added contribution of $1 trillion to the North American economy by 2020, representing 4.5 percent of GDP by the end of the decade.[7]

Sound spectrum and infrastructure policies are key to fueling our "mobile-first" lives and future economic growth.

Growing Demand for Data Reflects Mobile-First Lives and Economy

Spectrum and infrastructure are also key to meeting demand for mobile, which has skyrocketed in recent years. The amount of data flowing over U.S. wireless networks more than doubled in 2015[8] to a level 25 times greater than in 2010.[9]

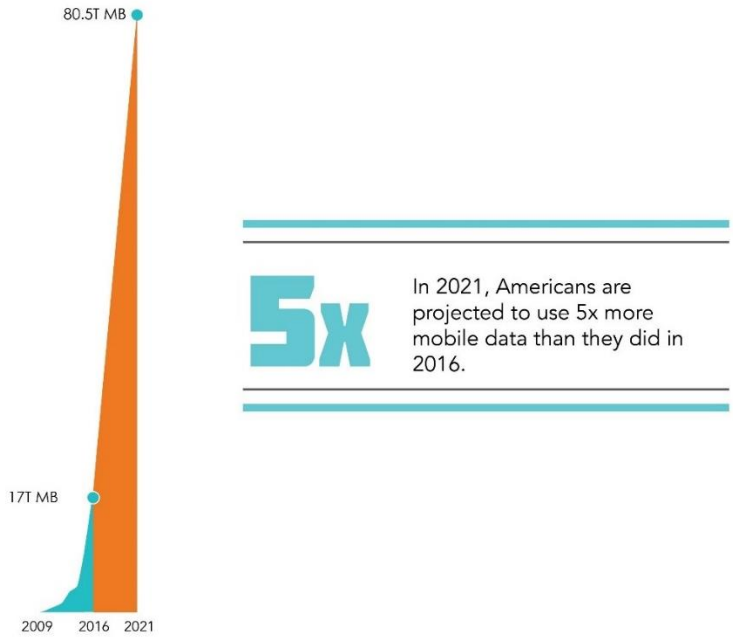


This is due to the advent of smartphones and tablets, massive growth in mobile video (64 percent of all U.S. mobile data traffic[10]), and the nationwide deployment of 4G LTE networks.

In just seven years, wireless providers have blanketed the country with $200 billion in network spending to deliver 4G LTE mobile broadband nationwide.[11] Today, 99.7 percent of Americans have access to 4G LTE service, and 95.9 percent can choose from three or more 4G LTE providers.[12]

Mobile broadband has unlocked opportunities for all Americans. Whether you are low-income, a person with disabilities, or live in a rural community, wireless has helped bring the United States closer to closing the digital divide.[13] In fact, nearly half of all American homes are "wireless-only."[14]

And there is no end in sight when it comes to growth in mobile demand. Cisco projects that mobile data traffic in the U.S. will grow by a factor of five from 2016 to 2021, or roughly 125 times mobile data levels in a decade's time.[15]



A Global Race to Lead in the Next Generation of Wireless, 5G

The United States has been the global leader in 4G LTE deployment and we are about to have a revolutionary breakthrough in the next generation of wireless – known as 5G. 5G networks will be up to 100 times faster and five times more responsive than today's networks. They will be able to support 100 times more wireless devices, from beacons to wearables.

We have the ability to lead in 5G as well. The wireless industry is conducting a number of 5G trials across the country, and the FCC recently opened up nearly 11 gigahertz of high-band spectrum that serves as an important down payment on the spectrum needed to support 5G. We are well-positioned to lead, but this time around, global competition is fierce.

Many nations are vying to seize the 5G leadership mantle, including South Korea, Japan, China, and a number of EU countries. Winning the international race to 5G means not only faster speeds, greater value, and increased choice for U.S. consumers, it also means empowering our businesses, schools, and hospitals with the tools they need to lead in the world. And, 5G leadership will mean millions of jobs and hundreds of billions in economic impact annually.

The deployment of 5G networks and increased competitiveness will create jobs for communities of all sizes. From more than 1,300 new jobs in Clarksville, Tennessee, to more than 2,800 in Pittsburgh, to nearly 800 in Bend, Oregon, and

more than 950 in Edison Township, New Jersey, cities and towns across the country will benefit from the rapid deployment of next-generation 5G services.

5G will enable a new generation of "Smart Communities," improving lives and creating savings for municipalities and consumers. With 5G, integrated technologies that assist in the management of vehicle traffic and electrical grids will produce $160 billion in benefits and savings through reductions in energy usage, traffic congestion, and fuel costs.[16]

5G will also unlock the Internet of Things. Machine-to-machine devices make up about 23 percent of all wireless connections today but are expected to grow more than five times to reach 58 percent of all wireless device connections by the end of the decade.[17]

5G will unleash innovation and growth for industries across our economy.[18] Sectors that are expected to leverage 5G's speed, connectivity, and responsiveness, include:

- **Health.** Wireless devices could create $305 billion in annual health system savings from decreased costs and mortality due to chronic illnesses.
- **Energy.** Wireless-enabled smart grids could create $1.8 trillion for the U.S. economy, saving consumers hundreds of dollars per year.
- **Public Safety.** Improvements made by wireless connectivity can save lives and reduce crime. A one-minute improvement in emergency response time translates to a reduction of eight percent in mortality.
- **Transportation.** Wireless-powered self-driving cars could reduce emissions by 40-90 percent, travel times by nearly 40 percent, and delays by 20 percent. That translates to $447 billion per year in savings and, more importantly, 21,700 lives saved.

Each of these industry sectors is leveraging the wireless platform today and stands to benefit from the increased speeds, connectivity, and responsiveness that 5G is poised to deliver.

Policies to Facilitate the 21st Century Wireless Economy

By focusing on spectrum and infrastructure siting, policymakers can preserve continued U.S. leadership in wireless, ensure the availability of 4G LTE and 5G services for American consumers, and foster continued U.S. economic growth.

Spectrum Fuels the Wireless Economy. Members of this Subcommittee have demonstrated a keen understanding of the critical role spectrum plays and have worked in a bipartisan way to free-up more spectrum that will serve the public.

The Federal Communications Commission is also taking several notable steps to help meet the need for more wireless broadband spectrum, including opening up key high-band spectrum to help realize the transition to 5G and launching the first-ever spectrum incentive auction. The successful 600 MHz Incentive Auction in particular will soon deliver 70 megahertz of new mobile broadband spectrum, and an additional 14 megahertz for unlicensed uses like Wi-Fi and LTE-U/Licensed Assisted Access services. That auction raised $19.7 billion, making it the second largest FCC auction ever – by spectrum repurposed and by revenue. Our members are keenly interested in ensuring timely access

to this spectrum, which has the ability to better serve rural areas of the country. We support a seamless repacking process for remaining broadcasters and are committed to working collaboratively to achieve the 39-month transition. Any delay would put at risk 5G development, rural buildout, and be inequitable to those companies investing nearly $20 billion in new spectrum.

Recognizing the need to plan for future growth, in 2015 Congress also required federal agencies to relinquish 30 megahertz of spectrum over the next decade to support consumers' ever-increasing need for mobile broadband services. Still, fully 60 percent of spectrum in the "beachfront" bands from 225 MHz to 3.7 GHz is predominantly under federal government control.

Refueling the Spectrum Pipeline. We appreciate this Committee's continued attention to the spectrum pipeline and the need to identify additional spectrum bands that can meet the ever-increasing demands for mobile broadband services. The process of bringing spectrum to market is time consuming – it takes on average 13 years to reallocate spectrum for wireless broadband use. The AWS-3 band, for example, was a 13-year journey to free up 65 megahertz of spectrum that culminated in a 2015 auction resulting in more than $40 billion in revenues to the U.S. Treasury. As noted above, for the first time in years there are no auctions scheduled to refuel the spectrum pipeline, which only underscores the urgency of beginning this process for more bands today.

In considering MOBILE NOW, this Committee has the opportunity to take significant further steps to identify and repurpose spectrum to meet the public's

growing reliance on wireless connectivity. We encourage this Committee to provide a clear plan for additional licensed spectrum across a wide and diverse range of frequencies to meet tomorrow's needs.

As part of this process, government should continue to review spectrum currently allocated for federal use and consider ways to incentivize federal agencies to use their spectrum resources more efficiently and effectively. The direct impact of new spectrum is dramatic. For every 10 megahertz of licensed spectrum made available, the U.S. GDP increases by more than $3.1 billion and U.S. employment increases by at least 105,000 jobs.

A Mix of High-Band, Mid-Band, and Low-Band Spectrum. The FCC's decision last year to repurpose high-band spectrum for mobile services was an important step for U.S. leadership in 5G. Congress should direct the FCC to enhance those rules with targeted reforms and to promptly move forward with allocating the 18 gigahertz of high-band spectrum the agency previously identified. In making additional spectrum available, the FCC should emphasize large contiguous blocks of exclusive, licensed spectrum.

This Committee played a critical role in the auctioning of low-band spectrum under 3 GHz in the past three years, and should leverage the Administration's efforts to identify additional federal spectrum for potential reallocation and future auction.

It is equally important for the government to make available additional mid-band spectrum, including more spectrum in the 3 GHz band. A mix of spectrum is optimal for wireless growth because each spectrum band has its own advantages and disadvantages. Different providers may favor one or the other depending on the mix of products and services they plan to deploy. Ensuring that the pipeline contains low-, mid-, and high-band spectrum will promote more robust investment.

A Mix of Licensed and Unlicensed Spectrum. CTIA also favors a policy that supports both licensed and unlicensed spectrum, recognizing that licensed spectrum is the foundation for our world-leading 4G LTE networks. Licensed spectrum provides exclusive access and clear interference protection rights, delivering the certainty necessary for carriers to invest billions of dollars in network deployment. This exclusivity is also critical to delivering the high-quality, secure, and reliable service that consumers have come to demand. Congress previously recognized the high value of licensed spectrum in enacting the 2012 Spectrum Act, which designated specific bands for licensed, exclusive operations, and required that unlicensed users fully protect licensed operations against harmful interference. CTIA suggests that any legislation moving forward should also recognize this important principle.

Licensed spectrum is a proven difference maker for the economy. One recent study found that the introduction of 20 megahertz of AWS-1 spectrum

increased U.S. GDP by $48.6 billion from 2011 to 2014.[19] And the economic value of all licensed spectrum made available to date is estimated to be approximately $500 billion, with social benefits at least 20 to 30 times that amount.[20]

Modernizing Infrastructure Siting Policies. Finally, while MOBILE NOW includes some important federal siting provisions that CTIA supports, we believe more can be done to address state and municipal siting reforms. We must move forward with modernizing our nation's infrastructure siting policies so that spectrum can be fully utilized and wireless networks can be rapidly and efficiently deployed. Unfortunately, many current federal, state, local, and tribal siting laws and policies were designed to review large 200-foot tall cell towers one by one, not to process small cells that are far less intrusive – literally the size of a pizza box – more numerous, and leverage existing structures. 5G will require initial deployment of as many as 300,000 new small cells around the country in just the next few years – roughly as many cell sites as have been built over the last 35 years. This new technology clearly requires new laws. MOBILE NOW includes federal siting reforms that are much needed, but to deploy 5G across the country, Congress must also tackle broader siting challenges as it has done in the past.

As a nation, we need to update those laws and policies to remove barriers to efficient deployment of small cells and 5G services. These outdated policies are slowing wireless providers' significant investment and must be addressed. Chairman Ajit Pai and Commissioners Michael O'Rielly and Mignon Clyburn have

all spoken about the need for better and faster processes to encourage wireless deployment and CTIA commends their efforts to develop those solutions. States and localities have increasingly recognized the benefits of modernized local siting and permitting processes, yet many obstacles remain. FCC action in coordination with Congress will be key to addressing these issues.

As this Subcommittee considers proposals to devote potentially hundreds of billions of government dollars to infrastructure investment, the wireless industry stands ready to invest billions of its *own* dollars, if policymakers update national and local siting and zoning rules to reflect the wireless networks of today and tomorrow.

To speed deployment of broadband services, CTIA supports streamlined policies for federal agencies to enable small cell deployment on federal lands, properties, and buildings. In particular, streamlined processes for siting on federal lands in rural and remote areas would greatly improve the ability of the wireless industry to serve these hard-to-reach customers. Congress can directly help in this area by, for example, establishing clear and reasonable deadlines for agency responses with appropriate "deemed granted" remedies, requiring fees to be based on agencies' actual and direct costs, and fully implementing the 2012 Tax Relief and Job Creation Act's provisions for common forms and processes.

In addition, Congress and the FCC should once again address burdensome local permitting processes; modernize right-of-way access and pole attachment

policies; and streamline and clarify the historic preservation and environmental review processes. CTIA commends Chairman Pai and the Commission for initiating a new proceeding that is directly aimed at removing barriers to infrastructure deployment and speeding construction of urgently needed network facilities. We suggest Congress also adopt reasonable shot clocks for new site and collocation permit applications and broader application of existing deemed granted remedies. Additionally, while preserving state and local governments' zoning review authority, Congress should act to ensure that permit fees and other charges for wireless siting reflect small cells' minimal impact and be limited to the actual, direct costs to localities for processing these applications.

By promoting sound infrastructure policies at the federal, state, local, and tribal levels, we will enable wireless providers to invest resources more quickly – expediting connectivity, adding jobs, and advancing 5G leadership.

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CTIA appreciates the opportunity to work with this Subcommittee, Congress, and other interested parties to ensure that this country has spectrum and infrastructure policies that allow the wireless industry to meet growing consumer demands and support U.S. economic growth to its fullest extent. We look forward to engaging with you to accomplish these objectives.

Thank you for the opportunity to testify today. If CTIA can provide any additional information, please let us know.

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