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ONE HUNDRED FIFTHTEENTH CONGRESS
Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
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MEMORANDUM

November 14, 2017

To: Subcommittee on Communications and Technology Democratic Members and Staff

Fr: Committee on Energy and Commerce Democratic Staff

Re: Subcommittee Hearing on "The Race to 5G and its Potential to Revolutionize American Competitiveness"

On **Thursday, November 16, 2017 at 10:00 a.m. in room 2123 of the Rayburn House Office Building**, the Subcommittee on Communications and Technology will hold a hearing entitled "The Race to 5G and its Potential to Revolutionize American Competitiveness."

I. BACKGROUND ON 5G

5G is a marketing term used to describe the next generation of wireless technology, although there is little consensus about precisely what that means. From early cellular phones in the 1990s to the smartphones and tablets of today, the different generations of wireless technology have advanced greatly, facilitated by the use of the public's airwaves—also called spectrum. Smartphones will certainly improve with access to 5G services. But other devices such as watches, cars, home appliances, and security cameras now use the airwaves to connect to the internet and will also be bolstered by 5G. Reports indicate that consumers and businesses will spend $2 trillion on connected devices in 2017, with nearly 8.4 billion internet-connected devices in the world. Some reports estimate that nearly 20 billion such devices will be in use by 2020.

The rapid adoption of internet-connected devices means that the technology must change to keep internet speeds adequate to handle the increase in traffic. 5G is expected to complement the current 4G/LTE technology with markedly faster download speeds of 10 gigabits per second. The maximum 4G/LTE speed is around one gigabit per second.

5G services can use a range of low, mid, and high band spectrum, including millimeter wave bands. The trade off with these higher millimeter wave bands, however, is that they do not travel as far and their signal can be stopped by foliage and rain. That can mean that additional antennas are needed to ensure coverage. The Federal Communications Commission (FCC) will be voting on Thursday on rules regarding the use of millimeter wave spectrum for 5G services.

5G standards have yet to be formally approved by standards-making bodies. Verizon and AT&T are conducting limited test trials of 5G technology, but reports indicate that widespread availability of 5G networks is not expected until 2020.

II. CURRENT PENDING LEGISLATION

Many bills have been introduced or circulated this Congress that would seek to spur the deployment of 5G technology in the United States. These bills generally do three things: (1) provide access to spectrum, (2) provide funding for deployment, or (3) speed-up deployment sitings.

Legislators have taken a few different approaches to providing spectrum for 5G. For example, Ranking Member Doyle's (D-PA) discussion draft, the 5G Acceleration Act would require the FCC to make spectrum available for 5G deployments and would give the FCC and the National Telecommunications and Information Administration flexibility in making decisions about which parts of the spectrum to make available. Representatives Matsui (D-CA) and Guthrie (R-KY) have introduced H.R. 1888, the Federal Spectrum Incentive Act, to incentivize government spectrum users to make additional airwaves available. Those members also introduced the H.R. 4109, the Federal Spectrum Auction Deposits Act to make a technical fix to help the FCC better conduct its spectrum auctions. Another bill, S. 1862, the AIRWAVES Act, takes a similar approach to the 5G Acceleration Act, but identifies particular bands of spectrum, among other things.

Other bills focus on providing funding and support for broadband more generally, including 5G deployments. For example, H.R. 2479, the LIFT America Act, cosponsored by all the Committee's Democrats would provide $40 billion to fund broadband deployments, including 5G. Representative Lujan's (D-NM) H.R. 4287, the Broadband Infrastructure Finance Innovation Act, would make low interest financing available for such projects. Other bills such as Representative Tonko's (D-NY) H.R. 3994, the ACCESS BROADBAND Act, would help streamline the federal process for securing deployment funding.

Finally, legislators have also circulated bills to streamline the siting of 5G infrastructure. These include:

- The bipartisan Energy and Commerce Committee discussion draft considered last Congress that would streamline multiple federal sitting processes;

- S. 1363, the Rural Broadband Deployment Streamlining Act, aims to shorten the siting process for facilities on federal lands;

- S. 1988, the SPEED Act, would carve out 5G deployments from environmental or historic preservation review; and

- Another discussion draft circulating in the Senate would preempt state and local siting authority in an effort to speed 5G deployment.

III. WITNESSES

Hon. Jonathan Adelstein
President and CEO
Wireless Infrastructure Association

Dr. Coleman Bazelon
Principal
Brattle Group

Mr. Chris Pearson
President
5G Americas

Mr. David Broecker
Founding CEO
Indiana Biosciences Research Institute

Ms. Shireen Santosham
Chief Innovation Officer
City of San José