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September 17, 2018

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

*Re: Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment, Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment, Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion; WT Docket No. 17-79, WC Docket No. 17-84, GN Docket No. 17-199*

Dear Ms. Dortch:

Deloitte hereby submits its recent white paper, "5G: The chance to lead for a decade"<sup>1</sup> to the above-captioned FCC proceeding. Deloitte's white paper notes that developments in 5G are fast advancing, and that it is critical to remain a first-mover to reap the greatest benefits. First-mover advantages in 5G will be enhanced by the value of network effects, which will be distinguished by more devices (and more types of devices) connecting to the Internet than ever before. To achieve global leadership in establishing 5G standards and obtaining the economic rewards that accompany that leadership, significant investment is needed to build necessary infrastructure, especially regarding small cell deployments.

Deloitte begins the paper noting that, as with many technology standard evolutions, the value of being a first-mover in 5G will be significant. Being first to LTE afforded the United States macroeconomic benefits, as it became a test bed for innovative mobile, social, and streaming applications.<sup>2</sup> Being first to 5G can have even greater and more sustained benefits to our national economy given the network effects associated with adding billions of devices to the 5G network, enabling machine-to-machine interactions that generates data for further utilization.

In the paper, Deloitte predicts 5G will expand the network effect dramatically by extending the reach of the Internet to almost any kind of connection, by almost any kind of device, and anywhere a wireless signal can reach. Markets that attract the most users first will also influence further innovation as 5G networks mature and become ubiquitous. As different kinds of devices connect, new

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<sup>1</sup> Deloitte LLP, *5G: The chance to lead for a decade* (2018).

<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-5g-deployment-imperative.pdf> ("Paper").

<sup>2</sup> Craig Wigginton, Dwight Allen, Carl E. Steidtmann, Kevin Thompson, and Christine Brodeur, *The impact of 4G technology on commercial interactions, economic growth, and U.S. competitiveness*, Deloitte Development LLC, August 2011.

use cases will emerge for collections of devices previously considered unrelated, attracting even more investment and economic benefit.

Significant investment in new network infrastructure is needed to deploy 5G networks at-scale in the United States. 5G's speed and coverage capabilities rely on network densification, which requires the addition of towers and small cells to the network. Improved speed and capacity stem from the ability to utilize large blocks of contiguous spectrum and higher frequencies. This requires carriers to add 3 to 10 times the number of existing sites to their networks.<sup>3</sup> Most of this additional infrastructure will likely be built with small cells that use lampposts, utility poles, or other structures of similar size able to host smaller, less obtrusive radios required to build a densified network.

U.S. carriers have been proactive and aggressive in their 5G investment and deployment. As U.S. carriers and other stakeholders continue to develop budgets and capital expenditure commitments, they will also need to resolve how to monetize the billions in capital expenditure they will need to spend. Lessons from declining ARPU during evolutions from 3G to 4G/LTE show that monetization requires careful attention and the successful introduction of new products and services.

As the paper relays, policymakers and governments around the world may propose government intervention, possibly in the form of subsidies or nationalized infrastructure, in an effort to improve the 5G business case and speed its deployment. However, Deloitte urges the Commission to focus on three factors. First, the U.S. should consider establishing a light-touch policy framework to address 5G's inherent externalities that limit the value created by infrastructure investment from accruing to the carriers. Second, the paper indicates that private sector leadership (such as negotiating attributable profits across carriers, Internet content/application providers) is preferable to government intervention in the marketplace. Third, Deloitte recommends that in addition to a light-touch framework, policymakers should actively target improvements to reduce the friction associated with deploying next generations of communication infrastructure at the state, local, and federal levels. This includes accelerated permitting processing and inventory of public sector small cell assets (lampposts, power, etc.)

Respectfully Submitted,



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<sup>3</sup> Small Cell Forum and Deloitte analysis (page 4 of the paper).

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