

Before the
Federal Energy Regulatory Commission

Technical Conference regarding
Reliability of the Bulk-Power System (Docket No. AD19-13-000)
Panel III: Managing Changes in Communications Technologies on the New Grid

Testimony of
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Chairman Chatterjee, Commissioners LaFleur, Glick, and McNamee, my name is John Kuzin, and I'm here today on behalf of Qualcomm, an American company founded more than three decades ago. Our company, founded and still headquartered in San Diego, now employs 30,000 people worldwide and has grown rapidly as the mobile phone industry has taken off. To my knowledge, this is the first time Qualcomm has testified before this Commission, so I'd like to provide a brief overview of our company.

Qualcomm. Qualcomm is the world's leading supplier of mobile communications chips for smartphones and other wireless devices and the world's leading inventor and licensor of new wireless technologies. Qualcomm spends over 20 percent of our revenues on R&D. As a result of those expenditures over the last three decades, our R&D investments have resulted in transformative inventions, including most recently, a broad array of mobile technology innovations relating to 5G technology.

Spectrum. The technologies we have developed, starting with 2G and progressing all the way to 5G, and the chips we've designed to support those technologies, depend on one key input the federal government controls: Spectrum. Qualcomm has been an active participant in the federal government's ongoing efforts — most notably the hard work of the Federal Communications Commission and the National Telecommunications and Information Administration within the Department of Commerce — to enable a steady stream of new spectrum bands for new mobile technologies, such as 5G as well as the latest version of Wi-Fi. This includes new, licensed exclusive use spectrum, new unlicensed spectrum, and new shared spectrum opportunities in low-band spectrum (below 1 GHz), mid-band spectrum (from 1 to 7 GHz) and high-band millimeter-wave spectrum (above 24 GHz), which until 5G was developed had never before been used for mobile communications.

6 GHz Unlicensed Sharing. One of the bands the FCC has proposed to open for sharing between existing incumbent licensed point-to-point fixed links and new 5G and Wi-Fi unlicensed devices is the 6 GHz band (5.925 to 7.125 GHz). This band is heavily used by tens of thousands of fixed links, most of which operate using antennas installed on top of buildings. Qualcomm and other technology companies are working with the FCC and incumbent users of the band, including the Utilities Technology Council and its members, to develop a path forward to allow for new low-power unlicensed devices while fully protecting incumbent licensed fixed users

from harmful interference and allowing both to continue to deploy services using the 6 GHz band. This band currently supports the communications needs of diverse industries, including the utility industry, public safety, the wireless industry, and the cable industry. These incumbent uses are critically important, and we would not be supporting allowing unlicensed use of this band if it could not be done without protecting the current incumbent users. Because the point-to-point incumbent links are fixed and their operational parameters are in an FCC database, protecting them from unlicensed operations is straightforward. The 6 GHz band presents a great opportunity for new unlicensed technologies to support new devices, services, and applications for these incumbent industries as well as millions of American consumers.

5G Technology. 5G technology is being designed to use every sliver of available spectrum to deliver a new level of wireless connectivity that was not possible with earlier technology generations — speeds more than a hundred times faster, with greatly improved reliability and latency as low as one millisecond to support new applications and services. Working with our mobile industry partners, we were able to accelerate the 5G standards development work by a full year, and 5G networks and devices now are being rapidly deployed in the U.S.

5G Connectivity. 5G has the potential to transform every industry, driving productivity gains and economic growth and enabling 5G to be used for all the things that today require wired broadband connections. By 2035, we estimate that 5G could produce over \$12 Trillion worth of goods and services.

The 5G New Radio will support three broad areas of connectivity. *First*, enhanced mobile broadband that provides the same type of connectivity we all enjoy today with 4G, but 5G will provide much higher data rates that can support Ultra HD video everywhere. *Second*, massive Internet of Things (“IoT”) connectivity that allows billions of sensors to be connected efficiently. *Third*, Ultra-Reliable, Low-Latency Communications (“URLLC”) that provide real-time connectivity for advanced applications such as industrial automation.

Benefits for Utilities. The low latency connectivity 5G enables can be used for communications between various parts of a utility plant. Expensive cabling can be replaced with wireless connectivity providing easy reconfigurability. Industrial automation companies are investing in this productivity improvement area, and the energy sector can benefit from these new

technologies as well. For the utility transmission and distribution plant, distributed control and remote monitoring of assets will benefit from 5G connectivity. Finally, smart metering — highly reliable 5G-based machine-to machine connectivity will allow large numbers of customer meters to be connected economically.

Thank you. I look forward to answering your questions.