

REMARKS OF COMMISSIONER GEOFFREY STARKS

ATIS' NEXT G ALLIANCE: THE ROADMAP TO 6G

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Thank you for having me today. I'm excited to spend a few minutes discussing how industry and policymakers can work together to ensure North American leadership in 6G. Based on our 5G experience so far, I'm optimistic. Just a couple years after the first US deployments, 5G service and adoption are growing fast. Over the next five years, North America is projected to have over 500 million 5G connections. While consumers enjoy the faster speeds, commercial users are taking advantage of 5G's low latency and other capabilities to create amazing new use cases. 5G technology is being used to create smart cities, monitor for pipeline breaks, manage inventory, and even perform remote surgery. Ultimately, 5G promises to make us safer, healthier, and more competitive.

But while 5G service continues to expand, people around the world are already beginning to think about 6G -- the next generation in wireless technology. Indeed, even as some Asian countries began to deploy 5G in 2019, they were announcing commitments to 6G research and development. Europe has also been active with its "6G Flagship Project," which is conducting R&D into smart networks and 6G services.

Fortunately, the United States also has been hard at work. One of my first actions as an FCC Commissioner was to approve the first order in the Commission's *Spectrum Horizons* proceeding. In that decision, we opened the 95 GHz to 3 THz frequency bands to experimental and unlicensed use. Universities around the country are performing valuable research on future wireless infrastructure models, technologies, and use cases. And our host organization -- the Next G Alliance -- is coordinating North American private sector efforts on 6G, growing to more than 75 members since it was formed in October 2020.

It's certainly not too soon to think about 6G. As this group well knows, the typical planning cycle for a new wireless technology service is about 10 years, meaning that we hope to see operational 6G networks by 2030. These networks will be able to use higher frequency bands than 5G with substantially greater capacity and reduced latency. 6G is expected to support data rates of 1 terabyte per second -- hundreds of times than the fastest 5G. As for latency, 6G networks could achieve one microsecond latency communication -- a thousand times faster than 5G.

6G will be the first wireless technology that incorporates artificial intelligence with a foundation of fully merged mobile and cloud systems. This will allow for tremendous increases in speed and efficiency, permitting use cases that we are still dreaming up. For example, 5G holds significant promise for applications like virtual and augmented reality. 6G will take that to the next level, allowing for incredibly detailed graphics and 24k video. For all the talk of the "metaverse," 6G may be the first wireless technology that could deliver fully immersive extended reality, including realistic touch or "haptic" experiences.

I'm a big fan of smart cities and believe that 5G networks could help our communities better manage their transportation issues, energy consumption, and sewage and water resources. While 5G allows for real-time monitoring of a city's operations, 6G's high data capacity and ability to use thousands of sensors could allow for the creation of a virtual representation of an entire city –an urban “digital twin” that policymakers could use to operate, plan, and evolve their communities.

Those are just a couple examples of 6G's promise. To realize that potential, policymakers, industry, and academia must work together. For the FCC, that means continuing the work we've already undertaken in the *Spectrum Horizons* proceeding. We must examine what other bands would be ideal for the 6G applications that will demand wide channels and high capacity.

Open RAN could be another important contributor to the 6G transition. I've long supported Open RAN network architecture as a meaningful option that could expand the supply chain, reduce costs, increase innovation, and improve security. 6G service may be years away, but carriers installing Open RAN radios may ultimately have the ability to upgrade those units to 6G via a software update rather than a costly hardware replacement effort. The Commission should lay the groundwork for this transition now by supporting the development and adoption of Open RAN technology. We should continue our efforts to raise awareness of Open RAN's potential, while examining its security aspects and how to encourage competition in this growing area.

As we develop the roadmap to 6G, we must remember several considerations. First, many of the technical characteristics that will contribute to 6G's performance could also produce security vulnerabilities. 6G's anticipated reliance on artificial intelligence, remote sensors, and disaggregated networks creates potential opportunities for bad actors to disrupt our economy and even our public safety. Industry and policymakers must ensure that security standards are baked into 6G, rather than bolted on.

Second, 6G presents both an environmental challenge as well as an opportunity. Like 5G, 6G has the potential to increase our energy efficiency and reduce our emissions in areas like manufacturing, agriculture, and transportation. But as the Next G Alliance stated in a recent report, the information, communications, and technology sector already consumes as much as 9 percent of the global energy supply. By the time 6G networks begin to launch in 2030, that figure could rise to 20 percent. Over that same period, we could see the number of IoT devices reach more than 125 billion. Figuring out how to reduce carbon emissions and electronic waste must be part of the 6G conversation, even as we look forward to the environmental benefits otherwise generated by advanced networks.

Finally, the 6G revolution must leave no one behind. As I've said before, the increasing importance of online communication has caused our digital divide to evolve into a state of Internet inequality. Even as broadband has allowed many of us to see our doctors remotely and work and learn from home, millions of other Americans continue to lack any broadband service

at all. We need to ensure that 6G networks are available to all Americans, regardless of location or income, so everyone can realize the benefits of this technology.

2030 may seem far off, but the work to achieve leadership on 6G must begin now. I appreciate the efforts of the Next G Alliance and other parties to ensure that we are thinking about these important issues, and I look forward to hearing more in the future. Thank you.