

November 8, 2019

The Honorable Ajit Pai  
Chairman  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

**Re: Unlicensed Use of the 6 GHz Band, ET Docket No. 18-295; Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz, GN Docket No. 17-183**

Dear Chairman Pai:

The undersigned parties represent a broad cross-section of public safety providers and critical-infrastructure industries (CII) that use the 6 GHz band for mission-critical communications throughout the nation.<sup>1</sup> This diverse group of organizations all share a common interest in preserving and protecting the 6 GHz band against interference to provide safe, secure, and reliable essential services to the public at large. Therefore, we join together in opposition to the Federal Communications Commission's (Commission) *Notice of Proposed Rulemaking* regarding unlicensed use of the 6 GHz band.<sup>2</sup> Given the significant risk that the proposed unlicensed operations could have on mission-critical networks that are used to protect the safety of life, health and property, and provide essential services to individuals, businesses, governments and others across the nation, unlicensed operations should only be permitted in the 6 GHz band if the Commission adopts more stringent interference protections for co-channel and adjacent channel microwave systems, including proven technology to mitigate the risk of interference by prior coordination of unlicensed operations, as discussed below.

We are very concerned that the proposed mitigation scheme for protecting public safety and CII users from interference—the Automated Frequency Coordination (AFC) system—is theoretical in nature and has not been tested or proven to work. Moreover, the Commission's current proposal does not contemplate a mechanism for ensuring that unlicensed users take responsibility for the cost impact of the interference resulting from unlicensed devices operating in the 6 GHz band. To mitigate the potential for interference to licensed microwave systems in the 6 GHz band, improvements are needed to the proposed AFC system. Given the significant risk that allowing unlicensed operations in the 6 GHz band could have on mission-critical communications networks, at the very least, the Commission should consider working with one or more federal laboratories to ensure that the untested interference mitigation measures proposed in the rulemaking will work before unlicensed operations are allowed in the 6 GHz band.

The 6 GHz band is uniquely suited for and heavily used by public safety providers and a variety of CII licensees for private point-to-point microwave systems. After being forced out of the 2 GHz band in the 1990s, CII have made very significant investments in the 6 GHz band because it is resilient to rain fading and has other characteristics that make it indispensable for CII communications. Thus, there are approximately 97,000 microwave links in the 6 GHz band, the vast majority of which are licensed by public safety or CII entities.<sup>3</sup> Given the critical nature of the communications carried on the 6 GHz band, the public safety and CII networks operating in this band are built to extremely high standards of reliability – 99.999 percent or 99.9999 percent availability. These networks must also transmit with

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<sup>1</sup> The signatories to this letter include organizations and industries from public safety and government, railroads and public transit, oil and gas, as well as utility sectors across the nation.

<sup>2</sup> *Unlicensed Use of the 6 GHz Band*, Notice of Proposed Rulemaking, ET Docket No. 18-295 (rel. Oct. 24, 2018) .

<sup>3</sup> This band is also used by the cellular carriers and other telecommunication providers to backhaul mobile device traffic.

extremely low levels of latency – 20 milliseconds or less of roundtrip delay from one point to another – over long distances. Any interference from unlicensed operations would have a widespread negative impact to essential services, including emergency response and recovery, electricity, heat, water and transportation, such as the following:

- **Public Safety:** Public safety organizations use 6 GHz licensed microwave radio links as their mission critical backhaul for 9-1-1 dispatch and first-responder radio communications. Public-safety microwave systems in the 6 GHz band form complex networks with the required high levels of availability, redundancy and reliability, given their role in supporting public safety’s mission to protect life and property. Allowing unlicensed operators access to the 6 GHz band will degrade the overall guaranteed protection and performance characteristics of these critical microwave links.
- **Railroads:** Freight, commercial, and commuter railroads rely on at least 1,600 private fixed microwave links in the 6 GHz band to safely coordinate train movements across the U.S. These links relay critical data regarding train signals and remote switching of tracks and routing of trains through rights-of-way, depots, and freight yards, as well as telemetry from trackside detectors and communication base stations located throughout the network. These microwave systems serve as critical backbones for the transport of railroad communications, including dispatch radio traffic, centralized train control systems, positive train control (which is the subject of a federal statutory mandate), phone systems, and crew train orders.
- **Utilities:** Electric, gas, and water utilities operate thousands of microwave links to support voice and data communications with personnel and critical assets such as substations and teleprotection systems on the grid. Given that grid operators must match the supply of electricity with demand for electricity instantaneously, these wireless communications must occur at a high rate of speed over long distances. Microwave links backhaul voice communications across utility service territories, including with personnel during emergency response to restore power in the aftermath of an outage. Some of these microwave systems are shared with public safety, further underscoring their criticality and the need to prevent interference to these communications.
- **Offshore Oil and Gas Production:** More than 300 offshore oil and gas production platforms in the Gulf of Mexico use a microwave network in the 6 GHz band to provide highly reliable backhaul network for mission-critical LTE and Wi-Max broadband wireless communication. According to a recent study commissioned by RigNet, the firm which operates the network, the proposed 6 GHz rulemaking would result in interference levels that could degrade critical emergency response communications and jeopardize safety.

There will likely be millions of unlicensed devices seeking access to the 6 GHz band, which will make protecting these public safety and CII networks from interference extremely difficult, if not impossible. Therefore, it is also important that the Commission adopt minimum standards for updating AFC systems and clarify that unlicensed operators or AFC system operators are legally liable for the consequences of interference to licensed microwave systems in the band.

This approach is necessary because CII have few, if any, options for relocating these systems should the Commission proceed as planned with this proposal. There is no currently available spectrum for relocation out of the 6 GHz band that provides the same capabilities, and while some of the entities we represent may consider using fiber, for many of our signatories below, deploying fiber across vast geographic territories is not economically or physically feasible. There are, on the other hand, numerous reasonable alternatives for unlicensed operations to use other bands.

For the reasons stated above, we urge you to proceed carefully and address the potential risk to public safety and CII by supporting real-world testing of the proposed AFC system to ensure it effectively mitigates potential harmful interference before allowing unlicensed devices to operate in the 6 GHz band. As the FCC pursues creative programs to ensure our nation's spectrum policies accommodates advances in technology and consumer growth, the critical public safety and CII services our nation relies upon must be protected.

Respectfully,

Associations:

- American Gas Association
- American Petroleum Institute
- American Water Works Association
- Association of American Railroads
- American Public Power Association
- Edison Electric Institute
- International Association of Fire Chiefs
- Government Wireless Technology & Communications Association
- National Rural Electric Cooperative Association
- Nuclear Energy Institute
- Utilities Technology Council

Companies/Entities:

- ALLETE
- Alliant Energy
- Ameren
- American Electric Power
- Avangrid
- Basin Electric Power Cooperative
- Berkshire Hathaway Energy
- Black Hills Energy
- Bluebonnet Electric Cooperative
- CenterPoint Energy
- Central Electric Power Cooperative
- Central Iowa Power Cooperative
- Consolidated Edison Company of New York
- Corn Belt Power Cooperative
- Dairyland Power Cooperative
- Dominion Energy
- DTE Energy
- Duke Energy
- East River Electric Power Cooperative
- Edison International
- El Paso Electric Company
- Entergy Services, LLC
- Exelon
- Evergy

- FirstEnergy
- Hawaiian Electric
- Holy Cross Energy
- Idaho Power
- Imperial Irrigation District
- Kiamichi Electric Cooperative
- LG&E and KU
- Los Angeles Department of Water and Power
- MidAmerican Energy Company
- Modesto Irrigation District
- National Grid
- NextEra Energy
- Nebraska Public Power District
- Northern Indiana Public Service Co.
- NorthWestern Energy
- NV Energy
- OGE Energy Corp.
- Orange & Rockland Utilities
- Pacific Gas & Electric
- PacifiCorp
- Portland General Electric
- Puget Sound Energy
- RigNet
- Salt River Project
- Sempra Energy
- Southern California Public Power Authority
- Southern Company
- TECO Energy
- Tri-State Generation & Transmission Association
- Turlock Irrigation District
- Tucson Electric Power Company
- UNS Electric, Inc.
- Xcel Energy
- WEC Energy Group

**Cc:**

The Honorable Brendan Carr  
The Honorable Michael O’Rielly  
The Honorable Jessica Rosenworcel  
The Honorable Geoffrey Starks