

**Before the
Federal Communications Commission
Washington DC 20554**

In the Matter of)	
)	
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
)	
)	

To: The Commission

REPLY COMMENTS OF THE CRITICAL INFRASTRUCTURE COALITION

MidAmerican Energy Company, PacifiCorp, NV Energy, Black Hills Corporation, Salt River Project Agricultural Improvement & Power District, Exxon Communications Company, NorthWestern Energy, Enterprise Products Partners L.P., GeoSouthern Energy Corporation, Louisville Gas and Electric Company, Kentucky Utilities Company, Marathon Oil Corporation, and Occidental Petroleum Corporation, (collectively, “the *Critical Infrastructure Coalition*” or “*Coalition*”), by their attorneys and pursuant to Sections 1.415 of the Rules of the Federal Communications Commission (“FCC” or “Commission”),¹ submit these Reply Comments to in response to the issues raised in this proceeding and initiated by the Commission’s October 24, 2018, Notice of Proposed Rulemaking in this proceeding (“NPRM”).²

I. INTRODUCTION

The record in this proceeding contains dozens of comments that oppose the Commission’s proposal to expand the use of the 5.925-6.425 GHz and 6.525-6.875 GHz bands

¹ 47 C.F.R. § 1.415.

² *Unlicensed Use of the 6 GHz Band*, Notice of Proposed Rulemaking, ET Docket No. 18-295 (rel. Oct. 24, 2018) (“NPRM”).

(the “6 GHz Band”) to include unlicensed operations. The crux of this opposition is simple: the nation’s public safety networks and critical infrastructure systems quite literally rely on the 6 GHz Band to support ongoing, daily operations. Unlicensed use of the 6 GHz Band would compromise the integrity of those important operations.

The record is replete with specific examples of how the 6 GHz Band is critical to promoting public safety, supporting the nation’s critical infrastructure, and overall economy. For instance, there are specific examples in the record of how the 6 GHz band supports the transmission of (i) critical public safety voice communications; (ii) important operational and security data from remote locations; and, (iii) sensitive financial information. These networks are transmitting vital information every second of every day. Several commenters rely on these systems and vehemently opposed the Commission’s proposal to permit unlicensed operations in the 6 GHz Band.³ This opposition – at a high level – stems from concerns that unlicensed operations will threaten the integrity of existing fixed operations in this band. The *Coalition* agrees with these concerns.

Several other commenters support unlicensed operations in the 6 GHz Band only if the Commission can incorporate adequate protections to ensure incumbent licensees are not negatively impacted. For instance, commenters urge the Commission to ensure that incumbent, fixed operations are afforded robust interference protection from new unlicensed operations through the adoption of automated frequency coordination (AFC) for both indoor and outdoor operations. Other commenters suggest the agency adopt a sophisticated scheme to identify harmful interference that unlicensed operators cause to fixed service links in the 6 GHz Band.

³ *NPRM* at ¶22 *et seq.*

This scheme could be buttressed by an enhanced enforcement regime to penalize unlicensed operators that cause harmful interference and to ensure such interference will not recur.

The *Critical Infrastructure Coalition* echoes these concerns and, although the *Coalition* believes introducing unlicensed devices into the 6 GHz band would be a mistake, generally supports proposals for increased interference protections if the Commission does move forward. The overarching concern of the *Coalition* is to ensure that the integrity of its fixed, point-to-point operations in the 6 GHz Band is protected from harmful interference. A thorough review of the Commission's record indicates that these concerns are neither isolated nor unfounded. Dozens of other commenters raised similar concerns and urged the Commission to be deliberate in considering how the introduction of unlicensed operations in this band will impact incumbent fixed service users. Nothing in the record has allayed the *Coalition's* concerns. Quite the opposite.

The *Coalition* does not believe the Commission's proposal to introduce unlicensed operations in the 6 GHz band includes adequate protection to licensed, incumbent operations. Several other commenters share these concerns.

If the Commission does not adequately ensure that existing fixed point-to-point 6 GHz networks operated by *Coalition* members receive sufficient interference protection, the resulting impact of new unlicensed users could be severe. If the Commission does not proceed deliberately and cautiously in a way that ensures all incumbent fixed services will continue to reliably operate without interference, it should not proceed at all.

II. REPLY COMMENTS

A. The Commission Should Not Allow Unlicensed Use of the 6 GHz Band

It is undisputed that the 6 GHz Band is vital to thousands of important public and private networks. The underlying services provided by the companies and governmental agencies that operate these 6 GHz networks would be substantially impeded – if not rendered impossible – if these 6 GHz networks are subjected to interference. The record includes comments filed by public safety agencies,⁴ state and local governments,⁵ critical infrastructure companies,⁶ and commercial providers.⁷ The common thread in the comments filed by these disparate organizations is the importance of their individual 6 GHz networks to support ongoing operations.

Permitting unlicensed operations in the 6 GHz Band could unnecessarily create harmful interference to these networks and compromise public safety and mission critical communications. The *Coalition* is concerned that, given the importance of the communications carried over these links, the risk of interference cannot be sufficiently mitigated. Our comments in this proceeding summarized how the *Coalition's* members use approximately 600 licensed 6 GHz links held by our member companies to ensure energy is delivered to consumers in a safe

⁴ See Comments of Sheboygan County Sheriff's Department (Filed Jan. 25, 2019); Comments of the Lucas County Sheriff's Office (Filed Jan. 25, 2019); Comments of the Washington County Sheriff's Office (Filed Dec. 20, 2018); and Comments of the St. Croix County Emergency Support Services (Filed Jan. 22, 2019).

⁵ See Comments of the City of Madison Traffic Engineering Division – Radio Shop (Filed Jan. 4, 2018); Comments of the City of Los Angeles (Filed Feb. 14, 2019); Comments of the City of New York (Filed Feb. 15, 2019); Comments of the City of Austin (Filed Dec. 21, 2018); Comments of the City of Portland (Filed Dec. 21, 2019).

⁶ See Comments of Excel Energy Services Inc. (Filed Feb. 15, 2019); Comments of Tucson Electric Power Company and UNS Electric, Inc. (Filed Feb. 15, 2019); Comments of the Association of American Railroads (Filed Feb. 15, 2019); Comments of Southern Company Service, Inc. (Filed Feb. 15, 2019); Comments of American Electric Power (Filed Feb. 12, 2019).

⁷ See Comments of Verizon (Filed Feb. 15, 2019); Comments of AT&T Services, Inc. (Filed Feb. 15, 2019), Comments of NE Colorado Cellular, Inc. d/b/a/ Viaero Wireless (Filed Feb. 15, 2019).

and efficient manner. Several other critical infrastructure and public safety groups filed comments in this proceeding detailing similar mission-critical operations.⁸

The resulting harm from interference to any individual microwave link operated by one of these companies or agencies could be substantial to the underlying public safety or these critical infrastructure missions. The Commission will undoubtedly review the comments and reply comments and then weigh the costs and benefits of its proposal before finalizing new rules. The *Coalition* believes that, given the critical traffic carried over these licensed 6 GHz links, the costs associated with unlicensed use of the 6 GHz Band far outweigh any potential benefits. We urge the Commission not to permit unlicensed use of the 6 GHz Band.

B. Short-Term and Long-Term Problems with Unlicensed Use of the 6 GHz Band Make Unlicensed Use of the Band Challenging and Rebanding Impracticable

There are significant short-term and long-term problems associated with unlicensed operations in the 6 GHz Band. Either the short- or long-term issues should give the Commission pause to reconsider its proposal for unlicensed use of the 6 GHz Band. Collectively, the combination of problems should lead the Commission to conclude that unlicensed operations cannot coexist in the 6 GHz Band with incumbent, fixed services.

In the short-term, the Commission's record is replete with specific examples of how these fixed links carry critical information. As noted by several commenters, interference that compromises these transmissions could have severe impacts to operational requirements.⁹ In its

⁸ See, e.g., Comments of APCO International (Filed Feb. 15, 2019); See also, Joint Comments of the Utilities Technology Council, National Rural Electric Cooperative Association, Edison Electric Institute, American Petroleum Institute, American Public Power Association, and American Water Works Association (Filed Feb. 15, 2019), and Comments of Portland General Electric (Filed Feb. 15, 2019).

⁹ See, e.g. Comments of GCI Communications Corp. at 4 (Filed Feb. 15, 2019) (noting that interference in the 6 GHz band would be catastrophic); See also, Comments of the Fixed Wireless Communications Coalition at 22 (Filed Feb. 15, 2019) (noting the enhanced protection criteria the Commission should implement to protect incumbent operators); Comments of the City of Los Angeles at 11 (requesting that the Commission ensure it should make it possible for incumbents to not only continue operating their system but expand their licensed 6 GHz

comments, AT&T Services, Inc. noted that critical infrastructure entities are justifiably apprehensive about interference and remain unconvinced that mitigation techniques will adequately safeguard operations.¹⁰ This remains the *Coalition's* primary concern.

In the long-term, there is not adequate spectrum to which *Coalition* members and other fixed service operators could relocate. The parties in this proceeding agree that a suitable replacement should be found in advance of any Commission-mandated relocation.¹¹ As discussed in the *Coalition's* Comments, the 6 GHz Band has unique propagation characteristics that support long point-to-point links that in some instances cover more than 50 miles of rural and remote terrain where fiber deployments are non-existent. The other fixed service bands are not suitable alternatives.

For instance, the Commission has closed the 4 GHz band to new applications.¹² Many 6 GHz Band licensees landed in this band in part because it was impossible to find suitable spectrum in the 4 GHz band. It does not appear that the 4 GHz band will be a viable option in the future, as the Commission indicated it plans to phase out licensees in this band.¹³

The 11 GHz and 18 GHz bands are not comparable alternatives because of propagation challenges and their inherent vulnerability to rain fade. Links in these bands cannot traverse the same distance nor perform at the same reliability as many current 6 GHz links. In many

networks); Comments of Southern Company Services, Inc. at 16 (reminding the Commission that unlicensed users are secondary and must accept interference without requiring the licensee community to adopt unproven methodologies to allow new unlicensed users to coexist).

¹⁰ Comments of AT&T Services, Inc. at 14.

¹¹ See, e.g., Comments of Ericsson at 15 (Filed Feb. 15, 2019) (referring to other fixed service bands or fiber as an alternative).

¹² *Temporary Freeze on Applications for New or Modified Fixed Satellite Service Earth Stations and Fixed Microwave Stations in the 3.7-4.2 GHz Band*, GN Docket Nos. 17-183, 18-122, Public Notice, DA 18-398 (released April 19, 2018).

¹³ 4 GHz Order & NPRM at ¶ 48.

instances, migrating to the 11 GHz band would be impossible or, at a minimum, require several links to be re-engineered to include intermediate hops, significantly increasing the cost and undermining the reliability of these networks.

CTIA notes that the 7 GHz band is a viable relocation option for incumbent 6 GHz Band licensees.¹⁴ The *Coalition* doubts, however, that this is the case because of challenges associated with non-federal users joining a band that currently is used by the federal government. The *Coalition* urges the Commission to work in conjunction with NTIA to make federal use of this band more transparent. This would enable incumbent users of the 6 GHz band to determine whether a comparable alternative exists. It also would ensure that adequate spectrum is available to enable non-federal users to coordinate suitable replacement channels. This process is time-consuming, expensive, and far from guaranteed to be successful. However, the Commission should perform this diligence in advance of mandating any relocation of incumbent fixed 6 GHz Band licensees.

C. The Commission Should Adequately Protect Licensed, Fixed Links in the 6 GHz Band if it Introduces Unlicensed Operation in the Band

Given these short-term and long-term problems, the *Coalition* does not believe the Commission should introduce unlicensed use into the 6 GHz Band. However, consistent with several other commenters, the *Coalition* believes the Commission should proceed slowly if it continues to pursue this proposal. In joint Comments, several critical infrastructure associations (UTC, EEI, APPA, API and AWWA) suggested the Commission limit the initial deployment of devices and use an incrementally staged approach to guard against the potential of interference from an unlimited number of devices flooding the marketplace at one time.¹⁵ The joint

¹⁴ See Comments of CTIA at 13-16 (Filed Feb. 15, 2019); See also, Comments of Ericsson at 13-16.

¹⁵ See Comments of UTC, EEI, APPA, API and AWWA at 13; See also, Comments of the National Spectrum Management Association at 7 (Filed Feb. 15, 2019) (urging the Commission to conduct a limited field trial that can

Comments note that the AFC approach is still untested and the technology is still in development.¹⁶

Apple, on the contrary, notes that unnecessary requirements for the AFC system will discourage investment in the 6 GHz Band. It believes the Commission should focus on adopting rules that nurture unproven technologies at the expense of incumbent licensees. The *Coalition* disagrees. Promoting unproven AFC technologies may be appropriate for a nascent service like CBRS, which the Commission has characterized as an experiment.¹⁷ It is not appropriate in the context of an established, mission critical workhorse band such as 6 GHz. The Commission's primary concern should not be to foster investment of new, untested technology in a band that is so vital to public safety, critical infrastructure and the underlying economy. Instead, the burden of unlicensed operations to coexist with incumbent fixed users should rest solely on the shoulders of those new users.

Comsearch suggests that any rules introducing new services into the 6 GHz Band must not place the burden on microwave licensees to monitor and track down interference sources.¹⁸ The *Coalition* agrees. The Commission should not require incumbent fixed users to dispatch personnel to the field to investigate and resolve interference cases. Quite the contrary. New users should not only prove they can coexist without harmfully interfering with incumbent fixed users in limited trials. The Commission should make clear that the *ongoing* duty to coexist without causing harm to fixed services should rest solely with these unlicensed operators. The

be monitored by all interested parties and to delay large-scale deployment until the field trials are completed to the satisfaction of all participating parties).

¹⁶ *Id.*

¹⁷ See Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550- 3650 MHz Band, *Report and Order and Second Further Notice of Proposed Rulemaking*, GN Docket No. 12-354, Statement of Commissioner Ajit Pai (2015).

¹⁸ See Comments of Comsearch at 4 (Filed Feb. 15, 2019).

consequences for violating this duty should be swift and fierce. The Commission should also recognize the increased burden on Enforcement Bureau staff to investigate and resolve complaints from itinerant, unlicensed devices.

In that spirit, the *Coalition* agrees with Comsearch that the Commission should have robust AFC requirements that ensure the system relied upon by unlicensed users includes complete and accurate database information, uses a coordination system that avoids interference to incumbent users, and controls transmissions by unlicensed devices that are co-channel or adjacent-channel to any nearby microwave system.¹⁹ Comsearch's Comments underscore other concerns raised in the proceeding, including the fact that the Commission's Universal Licensing Service has missing, incomplete, or inaccurate data.²⁰

The Commission likely believes that inaccurate information in the ULS database is the licensee's problem and, as a result, the licensee should deal with the consequences. The Commission must recognize that it allows for accuracy tolerances in ULS siting information. In addition, licensee may operate with lower power levels than indicated on a license. As discussed above, these fixed links carry some of the nation's most sensitive and important information. If these critical transmissions are interrupted because of harmful interference, the concern will likely be about the safety of the public and human life. The public's concern will not be on data that has been entered into an FCC database on which an AFC relies.

As NCTA noted, strong AFC protection is necessary for outdoor operations to protect incumbent users.²¹ The group cautions that implementing an adequate AFC will create unique

¹⁹ *Id.*

²⁰ See, e.g., Comments of the National Spectrum Management Association at 15 (estimating that ULS data is 62% accurate and suggesting that AFC operators will have to estimate for some missing data).

²¹ See Comments of NCTA at 11.

challenges to product design and the downstream need to develop new network management platforms.²² It may take significantly more time for commercial products to be deployed in this band when compared to other licensed bands, but given the current uses of the 6 GHz Band, it is more important to get it right than to do it quickly.

²² *Id.*

III. CONCLUSION

WHEREFORE, THE PREMISES CONSIDERED, the *Critical Infrastructure Coalition* opposes the Commission's proposal to introduce unlicensed operations into the 6 GHz Band. Should the Commission proceed, the *Coalition* urges the Commission to do so cautiously and deliberately and in a way that places the burden on unlicensed operators to ensure incumbent fixed links are not impacted in any way.

Respectfully submitted,

CRITICAL INFRASTRUCTURE COALITION

**MidAmerican Energy Company
PacifiCorp
NV Energy
Black Hills Corporation
Salt River Project Agricultural Improvement &
Power District
Exxon Communications Company
NorthWestern Energy
Enterprise Products Partners L.P.
GeoSouthern Energy Corporation
Louisville Gas and Electric Company
Kentucky Utilities Company
Marathon Oil Corporation
Occidental Petroleum Corporation**

By: _____



**Wesley K. Wright
Timothy A. Doughty
Keller and Heckman LLP
1001 G Street, NW, Suite 500W
Washington, D.C.
(202) 434-4100**

**Attorneys for the
*Critical Infrastructure Coalition***

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