

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

Unlicensed Use of the 6 GHz Band

Expanding Flexible Use in Mid-Band
Spectrum Between 3.7 and 24 GHz

ET Docket No. 18-295

GN Docket No. 17-183

Reply Comments of GCI Communication Corp.

GCI Communication Corp. (“GCI”) submits the following reply comments in response to the Federal Communications Commission’s (“FCC’s” or “Commission’s”) Notice of Proposed Rulemaking (“NPRM”) seeking comment on unlicensed use of the 5.925 – 7.125 GHz band (“6 GHz band”).¹ A wide variety of stakeholders filed comments recognizing the need to protect critical and important incumbent operations in the 6 GHz band.² Incumbent uses, such as GCI’s TERRA Network, must be protected against any harmful interference introduced by new entrants through specified exclusion zones. The FCC also must offer additional opportunities to comment on technical rules to facilitate coexistence between incumbents and any new entrants in this band through a robust coordination process, such as an automated frequency coordination (“AFC”) system.

¹ *In the Matter of Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, GN Docket No. 17-183, ET Docket No. 18-295, Notice of Proposed Rulemaking, FCC 18-147 (rel. Oct. 24, 2018) (“NPRM”).

² *See* Comments of GCI Communication Corp., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) (“GCI Initial Comments”).

I. The Record Amplifies the Importance of Uninterrupted Incumbent Access to the 6 GHz Band

GCI's TERRA network relies on a vast backbone of microwave links to deliver terrestrial high-speed Internet access to remote parts of western Alaska using the 6 GHz band.³ Internet connectivity delivered by TERRA allows remote residents to receive important educational and medical services that would otherwise not be accessible due to the remote geography, the lack of roads connecting Alaskan villages, the high cost of travel, and the harsh Alaskan weather. Access to the 6 GHz band is also important to support public safety and to respond to emergency situations in these areas.

Wireless connectivity is especially crucial in rural Alaska as it is often the only reliable way for individuals in remote areas—such as a worker on a fishing boat, or an individual whose snow machine has broken down—to summon help in the event of an emergency. Many rural communities in Alaska do not have their own local public safety officials, and must rely on communication and coordination with officials in neighboring locations. Internet connectivity is crucial for ensuring that these lines of communication remain open, and the TERRA network provides necessary backhaul services for this connectivity.

GCI is not alone in relying on the 6 GHz band for critical and important wireless services. For example, AT&T points to the over 47,000 unique call signs in the band, “over half of [which] support licensees in the public safety, critical infrastructure, or utility industries.”⁴ The record also provides various examples of the integral role that these incumbent services play with respect to the health, safety, and utility of Americans, including through railroad train

³ GCI Initial Comments at 2-4.

⁴ Comments of AT&T, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 6 (“AT&T Comments”).

movement coordination, gas and oil pipeline control, disaster response, water maintenance, electric grid management, and critical backhaul for commercial wireless providers.⁵ Like GCI, stakeholders rely on the 6 GHz band to provide these important services to rural and remote areas that may otherwise not receive such communications.⁶ Commenters urge the FCC to protect these critical services from proposed new unlicensed services in the 6 GHz band.

II. Any Introduction of New Entrants into the 6 GHz Band Must Exclude the TERRA Network and Surrounding Areas

Commenters on the record—both in support of and in opposition to the Commission’s proposals—echo GCI’s concerns that interference introduced to the 6 GHz band by new entrants would be catastrophic to both incumbent and new unlicensed users. These commenters agree that incumbent operations must retain priority use of the band and all necessary measures need to be taken to prevent harmful interference to such services.⁷

⁵ See, e.g., AT&T Comments at 6; Comments of the American Association of Railroads GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 4; Comments of Charter Communications, Inc., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 1; Comments of City of Los Angeles, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 4-8; Comments of City of New York, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 3; Comments of Motorola, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 2.

⁶ See, e.g., Comments of Viaero at 1.

⁷ See, e.g., Comments of Apple, Inc., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 11; AT&T Comments at 18; Comments of Boeing, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 4-5; Comments of Cambium Networks, Ltd., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 7; Comments of Comsearch, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 4 (“Comsearch Comments”); Comments of Critical Infrastructure Coalition GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 7; Comments of Intelsat and SES, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 12; Comments of NCTA, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 3; Comments of Verizon, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 3 (“Verizon Comments”); Comments of Wi-Fi Alliance, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 24 (“Wi-Fi Alliance Comments”).

In the NPRM, the FCC proposed to introduce unlicensed operations into the 6 GHz band, while protecting incumbents through exclusion zones.⁸ Most commenters generally support establishing exclusion zones and encourage the Commission to ensure that any metrics used to create such zones are informed using accurate data, or alternatively suggest seeking additional comment on specific propagation models to best protect incumbent operations.⁹ The FCC must establish a sufficient geographic exclusion zone around the path of licensed, incumbent uses, where secondary uses may not be permitted to operate.¹⁰ The only way to protect GCI's services is through exclusion zones that effectively exclude the TERRA Network and surrounding areas from any such new entrants in the 6 GHz band.¹¹

CTIA and Ericsson each request that the FCC seek further comment on permitting exclusive licensed access to a portion of the 6 GHz band, in addition to introducing unlicensed uses into the 6 GHz band.¹² CTIA and Ericsson propose that the FCC repurpose and license the upper portion of the 6 GHz band for exclusive use, flexible rights services by relocating incumbents in this portion of the 6 GHz band.¹³ The suggestion in this proposal that relocated

⁸ NPRM at para. 10.

⁹ *See, e.g.*, Comments of 6 GHz RLAN Group, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 58; Comments of APCO, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 14; Comsearch Comments at 19, 22-23; Comments of Southern Company Services, Inc., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 20-21; Comments of the Utilities Technology Council, et al., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 15; Verizon Comments at 5; Wi-Fi Alliance Comments at 24; Comments of WISPA, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 18; Comments of Xcel Energy Services Inc., GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 7.

¹⁰ GCI Initial Comments at 6.

¹¹ NPRM at para. 10.

¹² *See* Comments of CTIA-The Wireless Association, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at Section III ("CTIA Comments"); Comments of Ericsson, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at Sections III-IV ("Ericsson Comments"). These proposals were not specifically contemplated by the NPRM.

¹³ CTIA Comments at 7-10; Ericsson Comments at 13-16.

incumbents can be made “whole” again¹⁴ fails to provide any specific examples on how to do so. The proposals fail to reference or recognize GCI’s and others’ current critical uses, nor the inability to relocate these services or otherwise make incumbents “whole.” The FCC should reject these proposals, or at a minimum, protect critical uses through sufficient exclusion zones.

The Commission granted GCI a waiver to operate using 60 MHz channels, in an efficient, uniform channelization plan, from 6425 to 7125 MHz, in western Alaska, where the larger channels would produce the greatest benefit and where spectrum congestion is simply not an issue.¹⁵ CTIA’s and Ericsson’s proposals would catastrophically impact these operations. For instance, Ericsson suggests that incumbents can easily swap out an antenna and move off of this portion of the 6 GHz band in order to open up the band for new licensed uses.¹⁶ Ericsson completely ignores the realities of the TERRA Network and the issues surrounding relocation of these services.¹⁷ Indeed, the Wireless Telecommunications Bureau (“WTB”), in granting GCI’s waiver request, recognized that

[I]t would be unduly burdensome to lay fiber underground in extremely rural areas of Alaska or to use other spectrum, such as the 11 GHz band, to increase its capacity; and that for the provision of wireless backhaul in the Upper 6 GHz band, GCI has no reasonable alternative to using the 6 GHz band with the requested channelization and other modifications.¹⁸

¹⁴ CTIA Comments at 10 (arguing that the Commission should make incumbents “whole”). Ericsson Comments at 14 (suggesting the FCC require winning bidders for spectrum to relocate incumbents to comparable facilities, be it in different frequencies or transmission media).

¹⁵ *In the Matter of Petition of General Communication, Inc. for Waiver of Certain Channelization and Other Restrictions on Common Carrier Fixed Point-to-Point Operations Between 6425 and 7125 MHz*, WT Docket No. 16-209, Memorandum Opinion and Order, DA 16-1214 (rel. Oct. 21, 2016) (“GCI 6 GHz Waiver Order”).

¹⁶ Ericsson Comments at 14.

¹⁷ Antennas on the TERRA Network face unique engineering challenges that effectively negate the ability to “swap out” antennas and/or find alternative solutions to suit the critical uses that rely on GCI service in the most rural parts of our country.

¹⁸ GCI 6 GHz Waiver Order at ¶ 11.

First, engaging in extensive new tower construction in rural Alaska without the promise of equal capacity or reliability for GCI's customers make swapping antennas to change bands particularly challenging for GCI's TERRA Network. And, because of Alaska's short construction season, GCI's ability to quickly install new antennas throughout the TERRA network is limited. Second, using an alternative transmission means such as fiber is not a suitable substitute for GCI to build out the TERRA backbone network in western Alaska.¹⁹

Capacity Considerations. GCI cannot achieve the amount of microwave capacity it needs by adding additional channels outside of the 6 GHz bands. Some towers in the TERRA backbone are already near their structural limits, and could not accommodate the weight of additional antennas, waveguides, ice shielding, ice accumulation, and wind loading. Thus, replacing existing capacity with channels in entirely new bands would require GCI to rebuild from the ground up many of the towers of the TERRA backbone. Such a massive undertaking would be effectively impossible on the TERRA Network given that it took nearly eight years to complete the original build. And, transitioning the *entire* microwave backbone to a new band could result in undue delay, loss of service, and ultimately reduce the achievable system capacity.²⁰ This approach would not only require GCI to change the equipment on every existing tower in the network, replacing all antennas and waveguides, but could also require the construction of many *new* towers to compensate for the different propagation characteristics of other frequency bands and to minimize rain fade outages.

¹⁹ See, e.g. Ericsson comments at 15 (suggesting that Fiber be explored as an alternative means of transmission).

²⁰ The WTB has recognized that "transitioning GCI's entire microwave backbone to a new band . . . would be unduly burdensome" due to "differences in propagation characteristics between [the two bands], and the attendant cost of rebuilding and re-equipping many of the towers of the TERRA backbone." GCI 6 GHz Waiver Order at ¶ 14.

Fiber Is Not An Option. While GCI does currently use fiber for limited portions of the network, this limited use cannot be expanded in a way that would decrease reliance on the 6 GHz band for TERRA capacity. As the WTB recognized, “building fiber to all, or even most, Alaskan locations currently is logistically, technologically, operationally, and economically infeasible.”²¹ Much of the remaining non-fiber areas covered by the TERRA backbone are federal and state lands which are subject to numerous government restrictions on human activity. GCI could almost certainly not obtain the necessary government authorization to lay fiber through these areas. And even if GCI could obtain the necessary permits, Alaska’s unique physical conditions would make a fiber build impractical and uneconomic. Much of western Alaska is covered by a thick layer of permafrost. This would not only make the initial trenching process difficult and costly, but permafrost also undergoes structural changes over time which can damage fiber and other buried communications equipment.²² GCI uses fiber where it can, but it cannot do so in place of the relevant TERRA facilities any time in the foreseeable future.

GCI urges the FCC to reject proposals to introduce licensed services into a repurposed section of the 6 GHz band, or at a minimum, protect GCI’s operations through the creation of exclusion zones that effectively exclude the TERRA Network and surrounding areas from any such new entrants in the 6 GHz band.

III. The Record Reflects a Need for a More Detailed Coordination Proposal and Additional Opportunities to Comment

A broad range of stakeholders, both in support of and critical of the FCC’s proposal, recognized the need for additional details surrounding the proposed coordination among

²¹ GCI 6 GHz Waiver Order at ¶ 12.

²² See Petition of General Communication, Inc. for Waiver of Certain Channelization and Other Restrictions on Common Carrier Fixed Point-to-Point Operations between 6425 and 7125 MHz at 6, WT Docket No. 16-209 (filed Apr. 15, 2016) (“GCI Petition”).

incumbent and new uses; specifically, those concerning the creation of the AFC that first needs to be vetted through additional public comment.²³ For example, Ericsson, a supporter of introducing new uses into the 6 GHz band, proposed that the AFC serve as a positive controller with regard to unlicensed operations in the band.²⁴ APCO, a critic of the NPRM, proposed a “single AFC operator” so as to effectively and quickly deal with any interference cases that arise, and enabling a thorough vetting process for such AFC operator.²⁵ Comsearch urged the Commission to release a public notice requesting separate comment on specific aspects of the operation of an AFC.²⁶ GCI supports the opportunity to submit additional comments on these important issues as a method of vetting critical details. Such public notice or FNPRM should occur in tandem with, or prior to, the consideration of rules governing potential new unlicensed or licensed operations in the 6 GHz band.

* * *

²³ See, e.g., Comments of Microsoft, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 20 (recognizing that the industry should not be required to develop the details of the AFC and the Commission should require certain certification and power requesting on AFC systems); Comments of Hewlett Packard, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 24 (calling for flexibility in the design of the AFC); Comments of Boeing, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 2, 6-7 (arguing that certain devices should be permitted indoors without AFC); Comments of Starry, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 4 (proposing elevation dimension in criteria assessed by the AFC); Comments of UWB Alliance, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 4 (making various technical proposals to demonstrate how the AFC will operate).

²⁴ Ericsson Comments at 3 (discussing “positive control” with respect to the AFC).

²⁵ Comments of APCO, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 9.

²⁶ Comments of Comsearch, GN Docket No. 17-183, ET Docket No. 18-295 (filed Feb. 15, 2019) at 24 (urging the Commission to seek separate comment via public notice regarding the AFC and noting that when interference occurs, licensed operators must be able to contact AFC operators and expect immediate, near real-time resolution and suggesting that many of the technical parameters necessary to effectuate an AFC system can be developed collaboratively in a multi-stakeholder group.).

The record in this proceeding reflects a need to protect critical incumbent uses from interference by new entrants in the 6 GHz band. GCI submits that its TERRA Network, for the reasons detailed herein, must be protected, through exclusion zones, from any new uses introduced into the 6 GHz band. GCI also agrees with many commenters that the FCC seek additional and separate comment on a more detailed coordination proposal.

A handwritten signature in cursive script, appearing to read "Kara Leibin Azocar".

Chris Nierman
Kara Leibin Azocar
GCI COMMUNICATION CORP.
1900 L St., NW, Suite 700
Washington, DC 20036

March 18, 2019