

**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

Comments of GCI Communication Corp.

GCI Communication Corp. (“GCI”) submits the following 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 Consistent with its previous filings in related proceedings,² GCI is concerned that the NPRM lacks crucial details regarding unlicensed uses into the 6 GHz band. GCI urges the Commission to ensure that any unlicensed use in the 6 GHz band protects the long-standing and important incumbent operations in this band through robust coordination procedures.

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, e.g.*, Comments of GCI Communication Corp., GN Docket No. 18-122 (filed May 31, 2018); Reply Comments of General Communication, Inc., GN Docket No. 17-183 (filed Nov. 15, 2017); Comments of General Communication, Inc., GN Docket No. 17-183 (filed Oct. 2, 2017); Reply of General Communication, Inc., RM-11778 (filed Jan. 24, 2017).

I. GCI Relies on the 6 GHz Band To Deploy Critical Services To Rural and Remote Alaska

GCI operates the largest wireless network in Alaska, utilizing the 6 GHz band to deliver critical and important services throughout the State. For example, GCI's 6 GHz sites play a significant role in providing telehealth and distance learning services to rural Alaskans – through GCI's TERRA Network.³

GCI's TERRA network is an innovative effort to bring modern broadband services to some of the most rural communities in the United States. Inaugurated in 2012, the TERRA network now connects more than 84 communities in western Alaska. TERRA is often the *only* terrestrial, low latency, broadband service available in these remote communities. TERRA has substantially improved broadband connectivity in rural Alaska by providing terrestrial service that supports not only consumer Internet service in rural communities, but also supports bandwidth-hungry, latency-sensitive services like interactive distance learning and telemedicine.⁴

The importance of broadband to telemedicine in Alaska is profound: due to the remote geography, the lack of roads connecting Alaska Native villages, and the dearth of local medical

³ The Commission granted GCI a waiver of certain channelization and other limitations in the Upper 6 GHz bands in order to efficiently use otherwise idle spectrum, operating 60 MHz channels across the sub-bands. This waiver allowed GCI to increase middle-mile broadband capacity in rural Alaska by almost 40% (7.045 Gbps) over what would have otherwise been achievable pursuant to the rules. The waiver has not disrupted any service providers in the market, thereby benefitting the public interest with no cost. *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 (Oct. 21, 2016) (TERRA has expanded since grant, but the waiver does not apply to new sites or to other sites using 6 GHz).

⁴ See *Inquiry Concerning the Deployment of Advanced Telecommunications Capability etc.*, GN Docket No. 14-126, 2015 Broadband Progress Report and Notice of Inquiry of Immediate Action to Accelerate Deployment, 30 FCC Rcd 1567, ¶¶ 30-32, 50 (2015) (“2015 Broadband Progress Report”).

professionals, telemedicine is the only option in many of the communities GCI serves.⁵

ConnectMD is GCI's telehealth service, which brings specialists and medical services to remote areas that could not otherwise receive such assistance. The ConnectMD program offers medical network solutions, telehealth video service and connectivity, allowing over 200 facilities to securely and reliably exchange health-related information throughout the State. Without telemedicine, residents seeking care in many remote villages are forced to either wait for a sporadic visit from a traveling doctor or travel vast distances—usually via an expensive plane trip—to seek necessary medical treatment.⁶ Often for GCI's customers, neither option is accessible at a time of need due to cost and/or weather during the long, harsh Alaskan winter.

Access to broadband is also crucial to teachers and students in these rural and remote areas. GCI's SchoolAccess program provides broadband access, video conference, and state-of-the-art digital tools to provide high-quality content to students and library patrons in rural and underserved regions. Broadband access “provides customized teaching opportunities as teachers can access online interactive content and offer real-time student performance assessments” and connects rural students to educational opportunities that might otherwise have been impossible.⁷ Market dynamics often unfortunately dictate that rural schools, which would most benefit from

⁵ See GCI, ConnectMD, <http://www.connectmd.com/> (last visited Feb. 14, 2019) (The TERRA network supports, for example, teleradiology, telepsychiatry, remote patient monitoring, medical network solutions, and live video-conferencing between healthcare providers and patients in rural Alaska. Such services improve healthcare in areas that traditionally have few physicians and even fewer medical specialists.).

⁶ For example, “the transportation costs, and then all of the other unintended costs that go along with that, traveling through Alaska [are a problem] . . . you're out of your village. You have costs if someone travels with you. You have food and lodging.” Joaqlin Estus, *Study Shows Telepsychiatry Effective for Alaska Elders*, NEW AMERICA MEDIA (Feb. 13, 2014), <http://newamericamedia.org/2014/02/study-shows-telepsychiatry-effective-for-alaska-elders.php> (internal quotations omitted).

⁷ 2015 Broadband Progress Report ¶ 56.

distance learning, are also the least able to access broadband.⁸ GCI through its SchoolAccess program, however, extends these benefits to students beyond wealthy or urban areas.

II. Incumbent Operations Must Remain the Primary Operation in the 6 GHz Band and Be Sufficiently Protected Through Robust Coordination

Unlicensed operations in the 6 GHz band could disrupt GCI's critical, efficient, and effective operations in this band. The Commission aptly recognizes that incumbent operations include "a variety of critical services."⁹ To ensure continued access to 6 GHz-dependent critical services, incumbent operations must remain the primary operations in the band. The FCC must vigorously protect incumbent operations if it permits secondary, unlicensed operations in this band. Interference could render the 6 GHz band useless for incumbents and unlicensed users alike, resulting in disastrous interruptions to critical communications services to schools and hospitals and undermining the FCC's goals.

a. Interference in the 6 GHz Band Would be Catastrophic to Both Incumbent and New Unlicensed Users

In-band interference resulting from an unlicensed device operating in close proximity to licensed receivers or along the path of licensed systems, even on one channel, could affect GCI's operations throughout the entire 6 GHz band, seriously degrading system performance. A licensed receiver communicates with another licensed receiver across a microwave path, and an unlicensed device that enters that path will impact these microwave systems' communications, causing dropped calls and Internet service failures. The operation of any new unlicensed device in the 6 GHz band could also be harmed.

⁸ *Id.* ¶ 138.

⁹ NPRM at ¶ 9.

Interference mitigation can be very difficult due to multiple transmitters operating in the same region, with spectrum re-use. For instance, service-affecting interference often occurs in existing networks as new entrants, like a new unlicensed transmitter, become operational. Under those conditions, identifying the source of the interference, particularly if the operation is intermittent, could take weeks, require expensive, complex triangulation systems and would likely require that the incumbent licensed system be partially or completely disabled during the interference detection/location effort. Such interference situations would effectively cripple the critical services already being provided in the band, resulting in a period of outage for GCI's customers who rely on the various services described herein as their only means of connectivity to emergency services.

To avoid such disruptions to services, GCI relies heavily on the FCC's long-standing service rules and coordination policies to ensure that the licensed 6 GHz microwave radio systems are designed, installed and commissioned in a manner that meets the performance expectations of the services that utilize these systems. Without similarly effective coordination policies for unlicensed uses in this band, introduction of new unlicensed uses may result in disruption of the critical communications services currently provided over the 6 GHz band, contrary to the public interest.

b. Adequate Coordination Processes Must Be Established and Used in the Event the FCC Allows Unlicensed Uses in the 6 GHz Band

Before permitting unlicensed operations in the 6 GHz band, the FCC must establish a coordination process that protects licensed, incumbent uses. Such uses must remain the primary operation in the band. A robust coordination process for unlicensed, secondary operations in the 6 GHz band must incorporate:

(1) A geographic exclusion zone around licensed, primary incumbent uses in the 6 GHz Band. The FCC must establish a geographic exclusion zone around the path of licensed, incumbent uses, where secondary unlicensed uses may not operate.¹⁰ As explained herein,¹¹ permitting unlicensed operations within such a zone of licensed, incumbent operations could incapacitate critical operations that depend upon the 6 GHz band for a connection. Any unlicensed uses must operate on a secondary basis, outside an established geographic exclusion zone and away from any licensed operation.

(2) A coordination process to ensure that secondary, unlicensed uses operate only outside of such geographic exclusion zones. The FCC must implement a coordination process for interference protection of incumbent users. Any unlicensed operations in the 6 GHz band must be vetted through such a process, which would qualify new unlicensed equipment through registration. The automated frequency coordination (“AFC”) database proposed in the NPRM could be the method, but the proposal is vague and refrains from specifically addressing certain critical roles of such a coordinator.¹² GCI supports additional research and, ultimately, testing of the AFC prior to any decision.

GCI cannot support the AFC system as proposed in the NPRM without more information.¹³ The NPRM states that “[w]e envision the AFC system to be a simple database that is easy to implement.”¹⁴ To protect incumbent operations, that simply cannot be the case. As proposed, the AFC would apply to certain sub-bands and does not draw from existing coordination procedures in the 6 GHz band. Critical uses operate throughout the entire 6 GHz

¹⁰ NPRM at ¶ 23.

¹¹ *See supra* at II.a.

¹² *See* NPRM at ¶ 17, 22, 24, 24 40-4, 541.

¹³ NPRM at ¶ 58.

¹⁴ NPRM at ¶ 25.

band, not just in certain sub-bands, and therefore, such a coordination process must apply to the entire band.¹⁵ Existing coordination procedures require calculation of radiating energy based on power level and propagation characteristics of the new user to determine if the new uses being considered will cause interference with existing users. This aspect of the current coordination process in the 6 GHz band is effective in preventing interference with existing uses and, thus, should apply to new, unlicensed operations. The AFC must employ similar calculations, which requires industry coordination and is not an “easy” process.

(3) A method of locating and tracking secondary, unlicensed users

automatically. To maintain the stability of the existing, incumbent operations in the 6 GHz band, the FCC must ensure that the AFC can prevent interference and resolve it expeditiously. The AFC needs the ability to independently locate unlicensed users. Specifically, the AFC needs a method to locate and track licensed and unlicensed uses using accurate geolocation information for the unlicensed equipment to determine proximity to the licensed systems or equipment and use the concept of exclusion zones discussed earlier to determine if operation anywhere in the 6 GHz band should be permitted. Such a process should not be based on the unlicensed user’s location as entered into the database *by that unlicensed user*.¹⁶ The ability to locate automatically will prevent the AFC from faltering due to fraudulent or inaccurate entries during the registration process. And, any interference will require the incumbent user to shut down their system to resolve it, disrupting critical licensed uses.¹⁷ Once shutdown, the AFC must be able to

¹⁵ See *supra* Footnote 3. GCI operates the TERRA Network pursuant to waiver, allowing it to operate across sub-bands in 60 MHz channels. Coordination with unlicensed uses must apply to the entire band to account for GCI’s operations.

¹⁶ NPRM at ¶ 27.

¹⁷ See *supra* II.a.

locate unlicensed users in the location of an incumbent user's complaint of interference in order to resolve it.¹⁸

(4) A method for licensed and unlicensed users to query the AFC database at all times. All users of the 6 GHz band need to be able to communicate with the AFC. To prevent interference, the equipment in the field needs to be able to query the AFC database to look for nearby users. To resolve interference, the users need to be able to contact an interfering user. And, incumbent users need to be able to work with the AFC operator at any time to shut down suspect unlicensed equipment (*i.e.*, disable transmission of these devices in some (or all) of the 6 GHz band) for troubleshooting purposes.

* * *

GCI, through its subsidiaries, covers more of Alaska's population through its telecommunications network than any other provider in the State. GCI's wide breadth of coverage across the entire state, particularly in under-or otherwise entirely un-served remote rural areas, depends on unfettered, primary access to the 6 GHz band. GCI supports exploring the introduction of unlicensed uses into the 6 GHz band, but is concerned that the NPRM lacks appropriate detail about the protection of incumbent operations and coordination among licensed, incumbent operations and new, unlicensed uses in the band. The FCC must establish a coordination method to vet unlicensed uses prior to deployment and a method to promptly resolve interference that arises. The coordination mechanism must also include a suitable exclusion zone around licensed, incumbent uses, and the ability to automatically locate

¹⁸ Any unknown energy that causes interference in such case will be unlicensed, because it will not have been part of the traditional coordination process for licensed uses.

unlicensed uses to ensure such uses operate exclusively outside of the exclusion zone, thus preventing interference with incumbents' licensed operations in the band. Without a geographic exclusion zone and robust coordination mechanism, the 6 GHz band will be unusable for incumbents and new unlicensed uses alike, in direct contrast to the FCC's goals in this proceeding.

A handwritten signature in black ink, appearing to read "Kara Leibin Azocar". The signature is fluid and cursive, with a long horizontal stroke at the end.

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