July 22, 2019

VIA IBFS

International Bureau
Federal Communications Commission
445 12th Street, NW
Washington, DC 20554

Re: GCI Communication Corp., Kotlik Earth Station, License E020088
Supplement to Pending License & STA Applications
IBFS File Nos. SES-LIC-20190509-00583, SES-STA-20190509-00582

To Whom it May Concern:

On May 9, 2019, GCI Communication Corp. ("GCI") filed applications for a 60-day STA and a license to operate a C-Band fixed satellite earth station at Kotlik, AK, Call Sign E020088 (the "License") (*see* IBFS File Nos. SES-STA-20190509-00582; SES-LIC-20190509-00583 (filed May 9, 2019)) (together, the "Applications"). GCI also submitted a waiver request of the current filing freeze in conjunction with the Applications.[1] Pursuant to discussions with FCC International Bureau Staff, GCI submits this letter to supplement the pending Applications.

GCI's Critical C-Band Operations

Grant of the requested Applications is necessary to provide important services to the rural Alaskan village of Kotlik, including:

- Federal Aviation Administration (FAA) – Federal Government Assistance: Satellite data circuit transports images from weather cameras to assist pilots in determining real-time local weather conditions throughout the state in an effort to reduce weather-related aviation incidents and last-minute changes to flight patterns.
- GCI's Rural Wireless system: Satellite data circuit supporting GCI's cellular/rural wireless system, including subscriber authentication, voice trunking, wireless data, etc.
- GCI's WISP system: Satellite data circuit supporting GCI's "wireless ISP" system for rural customer Internet access.

[1] *See 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*, Public Notice, DA 18-398 (rel. Apr. 19, 2018). In addition, GCI's License Application also sought a waiver of the License renewal application filing deadline due to an internal administrative error that resulted in GCI not timely filing the renewal application. GCI seeks reinstatement of the License through the License Application.

- UUI: Satellite data circuit supporting Internet access to UUI for rural customer Internet access.
- Lower Yukon School District (LYSD) – Distance Learning Services: Satellite data circuit primarily supporting Internet access. Secondary access (not hosted by GCI but likely utilized by the school) via this Internet "pipe" include Voice-Over-Internet-Protocol (VoIP) calling, video teleconferencing, internal/private systems/records access, etc.
- Yukon Kuskokwim Health Corporation (YKHC) – Telehealth Services: Satellite data circuit supporting an internal/private point-to-point data network extension from the YKHC Bethel Hospital and Administration network. Uses of this satellite circuit likely include VoIP calling, video teleconferencing, internal/private systems/records access, e-mail and other forms of communication.

There are no Suitable Transmission Alternatives to the C-Band in Kotlik, AK

GCI explored alternative methods of providing service to Kotlik prior to seeking a waiver of the Filing Freeze to file for an STA and license to operate on the C-Band. The result of this assessment is that the C-Band is the exclusive means to provide telecommunications services into the small, remote Kotlik village of about 644 people.

Microwave Services: The village of Kotlik is approximately 35-miles away from the nearest GCI TERRA C-Band microwave radio system location (Emmonak) over relatively flat terrain. Extending the TERRA microwave radio network from Emmonak to Kotlik would require, among other things, the construction and installation of substantial (~400-foot) towers at each end location, which would is generally particularly challenging in Alaska due to the consideration of bird and animal migration and birthing schedules, as well as shorter construction periods resulting from severe weather and lack of light during winter months.

Alternative Satellite Bands: Prior to filing the Applications, GCI assessed whether it could utilize the Ku and Ka-bands, but Alaska's harsh weather prevented this approach from being an effective solution due to the susceptibility of these bands to rain fade and other atmospheric conditions that can impair quality and reliability. Specifically, the currently available Ku- and Ka-bands are not realistic alternative options due to (a) the limited lower link availability resulting from more challenging propagation conditions and higher link margins required for Ku- or Ka-band fading;[2] (b) the prohibitively high cost associated with replacing or upgrading ground segment equipment; and, generally (c) the lack of available Ku- or Ka-band satellites having satisfactory coverage over the state of Alaska - in other words, there is not enough capacity or coverage of Ku-band satellites to move all of the C-Band services and there is minimal, if any, Ka-Band coverage in Kotlik. For these reasons, the available alternative satellite bands are not currently an option for migrating GCI's C-Band operations in Kotlik.

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[2] For instance, weather characteristics such as rain, snow, or fog may cause signal fade on these satellite bands. This is especially concerning in Alaska, where snowfall could occur anytime from September to June, and its natural attributes make it even more difficult to rely on other satellite bands.

Fiber: Utilizing existing or deploying new fiber is also not a suitable alternative for GCI's services in Kotlik. The nearest location to Kotlik that has existing fiber-optic facilities (for connection to the Internet and support of long-haul voice/data circuits) is in Nome, AK, approximately 130-miles to the North/Northeast of Kotlik across the Bering Sea, or, by land, more than 360-miles along the coast. This "shortest distance" (130-miles) to the nearest fiber-optic facilities includes both over-land and subsea components, making the route a difficult one (financially, environmentally, reliably, etc.). GCI also investigated the possibility of laying terrestrial fiber (either across the tundra or buried below the tundra) to connect the nearest TERRA location 35-miles away in Emmonak to Kotlik via fiber, but realized that there are significant challenges associated with such an effort that realistically prohibit it.

- To connect to that existing Nome fiber would require a new subsea fiber. A subsea fiber would be required to run hundreds of miles in the sea and would need to be safeguarded against additional elements, including ice and rough sea floors.[3]
- Any portion of an over-land route between Kotlik and Nome or between Kotlik and Emmonak would require permitting to lay fiber in a national wildlife refuge, which is generally not permitted.[4] Even if possible, such a fiber along the coast would run over the Arctic tundra and would need to be safeguarded against damage caused by the complex and changing structure of permafrost, which can range in thickness from a single meter to many hundreds of meters. Uneven freezing and thawing at or near the surface can result in dramatic changes to landforms, such as ice wedges (i.e., growing cracks in the ground) and pingos (i.e., small hills that arise quickly due to subsurface pressures), which can damage buried fiber optic cable. [5]

In short, if it were feasible to install fiber to serve Kotlik, then GCI would have already done so.

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[3] Submarine fiber, particularly in Alaska's cold and icy waters carries inherent risk. The more ice that accumulates, the higher the probability of cuts to the fiber, resulting in decreased reliability.

[4] Much of the land in rural Alaska is protected by numerous federal and state laws that limit human activity, including the Alaska National Interest Lands Conservation Act, the National Wildlife Refuge System Administration Act, the National Wildlife Refuge System Improvement Act of 1997, the Wilderness Act, the Wild and Scenic Rivers Act, the Marine Mammal Protection Act, and the Arctic Refuge Comprehensive Conservation Plan. *See* GCI Amended Petition at 6.

[5] U.S. Fish & Wildlife Serv., *Ice Wedges, Polygons, and Pingos*, https://www.fws.gov/refuge/arctic/permcycle.html (last visited July 17, 2019) (describing the process by which the permafrost cycles through these changes); Nat'l Snow & Ice Data Ctr., *All About Frozen Ground – How Does Frozen Ground Affect Land?* https://nsidc.org/cryosphere/frozenground/how_fg_affects_land.html (last visited July 17, 2019) (describing how freezing and thawing in the Arctic can change the shape of the land).

Due to the numerous critical services needed in Kotlik and the lack of alternative methods of serving this remote community, GCI urges the Commission to grant its waiver requests and ultimately reinstate the License.

Please direct any questions to the undersigned.

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