

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

In the Matter of)	
)	
Higher Ground LLC)	File No. SES-LIC-20150616-00357
)	
Application for Blanket License to Operate C-)	Call Sign E150095
Band Mobile Earth Terminals)	

TO: The Commission

**EX PARTE COMMENTS OF PACIFICORP
IN SUPPORT OF APPLICATIONS FOR REVIEW**

PacifiCorp, through its undersigned counsel, submits these comments in support of the Applications for Review of the *Order and Authorization* granting, on delegated authority, the above-referenced application and waiver request of Higher Ground LLC (“Higher Ground”) to operate mobile earth stations (which it calls “SatPaqs”) in the 5925-6425 MHz (“6 GHz”) band.¹ PacifiCorp agrees that this application and waiver should not have been granted, and that this technology should not be authorized or deployed in the 6 GHz band.

I. Background

PacifiCorp is an electric utility that provides electric service to approximately 1.6 million retail customers in service territories covering about 136,000 square miles in portions of six western states: Utah, Oregon, Wyoming, Washington, Idaho and California. The combined service territory’s diverse regional economy ranges from rural agricultural and mining areas to

¹ In the Matter of Higher Ground LLC Application for Blanket Earth Station License, File No. SES-LIC-20150616-00357, *Order and Authorization*, DA 17-80 (IB, WTB & OET, rel. Jan. 18, 2017) (hereinafter “Order”). Applications for Review (“AFRs”) were filed by APCO International (“APCO”), Enterprise Wireless Alliance (“EWA”), the Fixed Wireless Communications Coalition, (“FWCC”) and the Utilities Technology Council (“UTC”).

urbanized manufacturing and government service centers. PacifiCorp has more than 8,300 megawatts of generation capacity from coal, hydro, renewable wind power, gas-fired combustion turbines and geothermal, and delivers electricity through approximately 57,000 miles of distribution lines and 15,000 miles of transmission lines. PacifiCorp operates the largest non-governmental bulk power system west of the Mississippi River. PacifiCorp operates as Pacific Power in Oregon, Washington, and California, and as Rocky Mountain Power in Utah, Idaho and Wyoming. The electricity provided through PacifiCorp's utility infrastructure is vital to all aspects of daily life throughout a significant portion of the Pacific Northwest.

II. PacifiCorp's Microwave System Supports Critical Operations and Public Safety

PacifiCorp operates an extensive private microwave system throughout its service territory. The microwave system, which operates in several point-to-point microwave bands, includes 172 licensed microwave transmitters in the 6 GHz band, representing 86 duplex communications paths. Because of the vast distances between PacifiCorp's facilities and the irregular terrain in this area, typical path lengths are 35-45 miles. PacifiCorp designs its microwave facilities for very high availability (*e.g.*, mere seconds of outage per year) due to the criticality of the communications carried on this network. PacifiCorp deploys microwave facilities in very rural areas where other communications facilities are not available and/or where it would be prohibitively expensive or problematic to install fiber optics.

PacifiCorp's microwave facilities support a variety of utility applications, including protective relaying, voice, corporate data, and supervisory control and data acquisition ("SCADA"). Through protective relaying, PacifiCorp can continuously monitor power flows along its high voltage transmission lines, and the system can automatically interrupt power flows within milliseconds after detecting a change in operating parameters that could signify a fault on

the electric system.² Absent such real-time and instantaneous action, a fault condition could allow the damage to quickly cascade beyond the immediate area of the fault, causing outages and potentially millions of dollars of damage to the power grid and/or threaten other property or persons on or near the transmission system.

An unplanned disruption to or outage of the protective relaying system itself could also result in activation of a remedial action scheme (“RAS”) to isolate system components, and/or force changes in demand, generation, or system configuration to maintain system stability, acceptable voltage or power flows.³ Because electric current flows at nearly the speed of light in a vacuum, it is absolutely critical that protective relaying systems are always ready to take decisive action within milliseconds of detecting a fault and, conversely, that they are not tripped by conditions that are perceived as faults.⁴ With the high voltages and inherent speed of

² PacifiCorp’s protective relaying system is designed to detect faults and respond much faster than Higher Ground would be able to respond to or control one of its SatPac devices. PacifiCorp understands that satellite latency is about 500 milliseconds for a single hop. The National Institute of Standards and Technology (“NIST”) has recommended latency of less than 4 milliseconds for protective relaying systems to ensure safety and reliability of the electric transmission grid. “Guidelines for Smart Grid Cybersecurity,” Volume 1: Smart Grid Cybersecurity Strategy, Architecture, and High-Level Requirements, NISTIR 7628 (September 2014), U.S. Department of Commerce, at 155. Available at: <http://nvlpubs.nist.gov/nistpubs/ir/2014/NIST.IR.7628r1.pdf> (last accessed March 24, 2017).

³ On June 23, 2016, the Federal Energy Regulatory Commission (“FERC”) approved a revision to the definition of “Remedial Action Scheme” to define it as “[a] scheme designed to detect predetermined System conditions and automatically take corrective actions that may include, but are not limited to, adjusting or tripping generation (MW and Mvar), tripping load, or reconfiguring a System(s).” FERC notes that this definition is intended to help meet industry standards for reliability of the interconnected power grid, and maintain stability of the bulk electric system in the United States. See also “Remedial Action Schemes Reliability Standard,” *Notice of Proposed Rulemaking*, FERC Docket No. RM16-20-000, 82 Fed.Reg. 9702, 9703 (February 8, 2017).

⁴ The Northeast Blackout of 2003, during which 55 million people in eight states and portions of Canada lost power for up to several days, illustrates the catastrophic consequences of a cascading power outage that can be triggered by a single fault; in this case, a sagging electric transmission line in Ohio that touched overgrown trees. “13 Years After: The Northeast Blackout of 2003 Changed Grid Industry, Still Causes Fear for Future,” *Electric Light & Power*, August 23, 2016; available at <http://www.elp.com/Electric-Light-Power-Newsletter/articles/2016/08/13-years->

electricity in the bulk power supply system, disruptions to a microwave system used for protective relaying could have devastating consequences to the grid and to consumers throughout a very broad region of the country.

III. The Bureaus' Order Should be Reviewed and Rescinded

PacifiCorp did not become fully aware of the interference and operational threat of Higher Ground's 6 GHz mobile satellite system until after release of the Bureaus' *Order* and the recent filing of Applications for Review. PacifiCorp relies on its microwave frequency coordinator, as PacifiCorp's agent, to monitor and respond to Prior Coordination Notices (PCNs) under Section 101.103 of the FCC's Rules, and to negotiate engineering solutions that will eliminate the potential for interference among systems. It therefore came as a surprise that the FCC would authorize one company to evade this long-standing, and highly successful, coordination process, and allow it to conduct mobile operations in the 6 GHz band with no prior notice to, or opportunity for review and comment, by PacifiCorp, its frequency coordinator, or any other parties. In a sense, the unusual processing and grant of Higher Ground's application and waiver request are representative of the problems that are likely to arise if one licensee is given *carte blanche* to self-coordinate and commence operations without specific prior notice to, and consultation with, other potentially-affected licensees and applicants.

PacifiCorp has serious concerns about the propriety of the Bureaus' decision to grant the Higher Ground application and waiver request. The *Order* states that Higher Ground's operations would provide public interest benefits "by making available to consumers a unique service in areas that may lack coverage,"⁵ but it fails to acknowledge the overwhelming public

[after-the-northeast-black-out-of-2003-changed-grid-industry-still-causes-fear-for-future.html](#) (last visited March 24, 2017).

⁵ *Order*, para. 11.

interest – and public safety – benefits of the terrestrial microwave systems used by utilities, public safety agencies, and others.

The *Order* accepts Higher Ground's assertion that its proprietary, and unproven, Channel Master system will dynamically handle near real-time frequency analysis for tens of thousands, or more, of mobile SatPaqs, and the *Order* imposes a condition on Higher Ground to investigate and resolve interference cases, provided the Fixed Service licensee supplies Higher Ground with information about the interference problem. That is, Higher Ground will learn if its proprietary Channel Master system is successful only if Fixed Service licensees nationwide become actively involved in monitoring, investigating, and reporting interference to Higher Ground, *and* if Higher Ground truly makes whatever adjustments are necessary to render its operations interference-free. Just as Fixed Service licensees have no visibility into the analyses performed by the Channel Master system, Higher Ground has no obligation to report to other licensees on any actions it has taken, or has declined to take, with respect to an interference report. As has been noted by numerous parties, such after-the-fact investigation of interference is pointless, especially when a mobile service is at issue.⁶

Until now, resolution of interference cases in the 6 GHz band has been largely limited to identifying other fixed transmitters that could be operating at variance from authorization or due to miscoordination. Identifying the source of such interference can be very difficult due to the vast expanses between transmitter sites, the number of potential transmitting locations, irregular terrain, atmospheric ducting, and other factors. Based on PacifiCorp's experience, it can take several days to investigate and resolve a suspected case of interference, even when the interference source is stationary. Once interference is detected, equipment must be mobilized to

⁶ See AFRs of FWCC at 10-11; UTC at 6; and EWA at 3.

sweep the area until peak signal levels are detected, and the process must be repeated at several locations until it is possible to triangulate and isolate the likely source of interference. This is a very time-consuming and costly process, and would be virtually impossible if the transmitting device is mobile, such as a SatPaq. Moreover, Higher Ground has explained that one of the primary purposes of this service is to enable persons in remote areas without cell phone coverage can keep in touch, so many of Higher Ground's subscribers could be in the same remote areas where many of PacifiCorp's microwave facilities are located.

The *Order* requires Higher Ground to maintain an automated log of the date, time, location, frequency, and satellite point of communication of each SatPaq transmission, and this log must be made available to any Fixed Service operator, Fixed Satellite Service operator or the Commission upon request.⁷ Higher Ground is also required to maintain a log of all "incidents of alleged harmful radio interference" that documents the nature of each incident, the parties involved, and the outcome. This log will not be available to other licensees, and must only be made available to the FCC upon its request.⁸ Unlike the very transparent and well-documented process for coordinating and licensing Fixed Service operations, neither the frequency coordinators nor Fixed Service licensees will have a complete understanding of whether or how Higher Ground has adjusted its operations to prevent future cases of interference.

PacifiCorp fails to see how the logging requirements outlined in the *Order* will allow Higher Ground or a Fixed Service licensee to properly investigate or resolve interference cases. By the very nature of the highly portable SatPaqs, interference could be sporadic and transitory. With no practical way of knowing whether a SatPaq is a likely source of interference, the *Order*

⁷ *Order*, at para. 40.

⁸ *Id.*

assumes that all Fixed Service licensees will notify Higher Ground of every system event or alarm and engage in dialog as to whether a SatPaq could have been the source of the interference at the precise time the event was logged.

Given the vagaries inherent in identifying interference from mobile devices and the uncertainty as to the solutions that Higher Ground can or will put in place to prevent recurrence, PacifiCorp has no confidence that these post-incident dialogs will produce a meaningful solution to prevent further interference. For example, if a SatPaq transmission from a specific location and on a specific frequency is suspected of causing interference to a fixed microwave system, would it be sufficient if Higher Ground simply prevents future SatPaq operations on that specific frequency and at that specific set of geographic coordinates, or would Higher Ground be expected to proactively modify the Channel Master to prevent SatPaq operations under similar parameters nationwide? How will PacifiCorp and other licensees have confidence that Higher Ground will take affirmative action – even to the point of limiting service to its subscribers – to prevent interference from occurring under similar circumstances?

It will place an unreasonable burden on PacifiCorp and all other terrestrial licensees if they are expected to notify Higher Ground of every event or system alarm that might signify interference from a SatPaq. Conversely, if Fixed Service licensees do not notify Higher Ground of every such event, Higher Ground could believe, and could later claim, that its system does not cause interference, which could then be used in arguing for expanded operating rights and the increased potential for interference.⁹ The *Order* therefore places fixed system licensees in the

⁹ Although the *Order* limits Higher Ground to activating 50,000 SatPaqs, the *Order* also contemplates that Higher Ground may seek to expand operations beyond 50,000 terminals. *Order*, para. 36. Higher Ground has also described its intent to use this system for Internet of Things (IoT) operations, which raises the potential for a multitude of such devices. See “Consolidated Opposition to Applications for Review,” filed by Higher Ground on March 6, 2017, at 14, n.50.

untenable position of being forced to spend time and resources reporting all 6 GHz interference cases to Higher Ground, except for those where it is immediately clear that the interference is from a distinct source.

In an earlier proceeding, these same Bureaus concluded that it would be an unwarranted and inappropriate burden to compel incumbent licensees to report harmful interference after suffering degradation in service from a potentially large number of devices, operating on a secondary basis, that are deployed across various terrain and operated by different users, and even if overseen by a central manager.¹⁰ PacifiCorp does not understand how the burden on Fixed Service incumbents is any less just because Higher Ground claims it will operate a unique and proprietary Channel Master to control SatPac operations: the need to investigate and report interference is exactly the same.

Similarly, it is unreasonable to impose a condition on Fixed Service licensees that they monitor and report to Higher Ground all instances of interference just so that Higher Ground can obtain unprecedented rights to operate a nationwide wireless network in this band. The authority granted to Higher Ground is plainly beyond established Commission policy.¹¹ It is also detrimental to Fixed Service licensees who have collectively invested billions of dollars in these

¹⁰ In the Matter of Utilities Telecom Council and Winchester Cator, LLC, *Order*, 28 FCC Rcd 7051, 7054 (OET, WTB and IB 2013).

¹¹ 47 C.F.R. §1.115(b)(2)(i). The Bureaus' *Order* granting Higher Ground this unprecedented authority was released late in the day on January 18, 2017, less than 48 hours before the change in Administration, and even later than other significant Bureau and Office actions that were subsequently revoked. See "Chairman Pai Statement on Revoking Midnight Regulations," released February 3, 2017. Approval of Higher Ground's unconventional coordination methods also brings to mind Commissioner O'Rielly's concerns with significant matters of public policy being decided on delegated authority and not by the full Commission. "A Modified Delegated Authority Proposal," FCC Blog, released February 22, 2017; available at <https://www.fcc.gov/news-events/blog/2017/02/22/modified-delegated-authority-proposal> (last visited March 23, 2017).

communications facilities, and only after a rigorous bilateral frequency coordination process designed to guarantee system reliability.

IV. Conclusion

PacifiCorp urges the Commission to review the Bureaus' *Order* and revoke the authorization and waivers granted to Higher Ground. It seems incredible to PacifiCorp that the Bureaus would authorize an unproven, and opaque, self-coordination process for the benefit of a new entity just so that it can provide another competitive mobile service in a band that PacifiCorp and many other Fixed Service licenses rely on to support the nation's critical infrastructure. This scheme not only creates an interference threat to Fixed Service systems, but forces PacifiCorp and all other 6 GHz licensees to stand watch and report interference cases to Higher Ground for its internal review, and without any meaningful opportunity for Fixed Service licensees to understand the cause of the interference or Higher Ground's ability or actions to resolve future instances of interference.

WHEREFORE, THE PREMISES CONSIDERED, PacifiCorp respectfully requests that the Commission take these views into consideration and grant the Applications for Review.

PACIFICORP

/s/ Jeffrey L. Sheldon
Jeffrey L. Sheldon
LEVINE, BLASZAK, BLOCK & BOOTHBY, LLP
2001 L Street, N.W., Suite 900
Washington, DC 20036
202-857-2574
jsheldon@LB3Law.com

Its Attorney

April 6, 2017

CERTIFICATE OF SERVICE

I, Michaelleen Terrana, hereby certify that on this 6th day of April, 2017, I caused a copy of the foregoing "Ex Parte Comments of PacifiCorp in Support of Applications for Review," to be sent via first class mail, postage prepaid, to the following:

Adam D. Krinsky
J. Wade Lindsay
Phuong N. Pham
Wilkinson Barker Knauer, LLP
1800 M Street N.W.
Suite 800N
Washington, DC 20036
- Counsel to Higher Ground

Susan H. Crandall
Associate General Counsel
Intelsat
7900 Tysons One Place
McLean, VA 22101

Tiffany West Smink
Associate General Counsel
CenturyLink
1801 California Street - 10th Floor
Denver, CO 80202

David E. Meyer
President
National Spectrum Management
Association
P.O. Box 528
Englewood, NJ 07631

Randy Thompson
Communications Administrator
City of Mesa
PO Box 1466
Mesa, AZ 85211-1466

Brett Kilbourne
Utilities Technology Council
1129 20th Street NW, Suite 350
Washington, DC 20036

Robert S. Reis
President
Higher Ground, LLC
2225 E. Bayshore Rd, Suite 200
Palo Alto, CA 94303

Melissa E. Newman
CenturyLink
1099 New York Avenue, N.W Suite 250
Washington, DC 20001

Mitchell Lazarus
Cheng-yi Liu
Fletcher, Heald & Hildreth, PLC
1300 N. 17th Street, Suite 1100
Arlington, VA 22209

Vince Krog
State Radio Engineer
Office of Enterprise Technology Services
State of Hawaii
1177 Alakea St., Room 201
Honolulu, HI 96813

Nebraska Public Power District
PO Box 608
York, NE 68467

AJ Burton
Director, Federal Regulatory Affairs
Frontier
1800 M Street, NW, Suite 800N
Washington, DC 20036

C. Douglas Jarrett
Wesley K. Wright
Keller & Heckman LLP
1001 G Street, NW, Suite 500 West
Washington, DC 20001
- Counsel to NRECA

Ralph A. Haller
Chairman
National Public Safety Telecommunications
Council
8191 Southpark Lane, Suite 205
Littleton, CO 80120

David A. Felix
Executive Director
City of Phoenix
Regional Wireless Cooperative
200 West Washington Street
Phoenix, AZ 85003-1611

Pamela Gist
Lukas, Nace, Gutierrez & Sachs, LLP
8300 Greensboro Drive, Suite 1200
McLean, VA 22102
- Counsel to Cellular Network Partnership
d/b/a Pioneer Cellular

Michele C. Farquhar
Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004
- Counsel to Association of American
Railroads

Jonathan Morgan
GMRS - Radio System Manager
City of Garland
1639 Commerce Street
Garland TX, 75040

Jeffrey S. Cohen, Chief Counsel
Mark S. Reddish, Senior Counsel
APCO INTERNATIONAL
1426 Prince Street
Alexandria, VA 22314

Robert S. Koppel
Lukas, Nace, Gutierrez & Sachs, LLP
8300 Greensboro Drive
Suite 1200
McLean, VA 22102
- Counsel to Mimosa Networks, Inc.

Elizabeth R. Sachs
Lukas, Nace, Gutierrez & Sachs, LLP
8300 Greensboro Drive Suite 1200
McLean, VA 22102
- Counsel to Enterprise Wireless
Alliance

Dale Shaw
Executive Director
Topaz Regional Wireless Cooperative
(TRWC)
c/o City of Mesa Communications Dept.
PO Box 1466
Mesa, AZ 85211-1466

Darren Brummett
Telecommunications Engineering Manager
Tri-State Generation and Transmission
Association, Inc.
PO Box 33695
Denver, CO 80233-0695

Scott Gentry
Manager of Technical Services
Kenergy
6402 Old Corydon Road
POB 18
Henderson, KY 42419-0018



Michaeleen Terrana