



**Brett Kilbourne**  
**Vice President, Policy and General Counsel**  
Direct Line: 202.833.6807  
E-mail: brett.kilbourne@utc.org

May 5, 2017

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 - 12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

Ex Parte

Re: Notice of Ex Parte Presentation, IBFS File No.: SES-LIC-20150616-00357, Call Sign: E150095.

Dear Ms. Dortch:

The Utilities Technology Council is providing the following ex parte notification in the above-referenced proceeding in accordance with Section 1.1206 of the Commission's Rules. On May 4, 2017, Martha Duggan from the National Rural Electric Cooperative Association, Jill Canfield from NTCA—The Rural Broadband Association, and Michele Farquhar and Tim Strafford representing the Association of American Railroads, along with Sharla Artz and the undersigned from the Utilities Technology Council met with Rachael Bender, Wireless and International Advisor in the Office of Chairman Pai to discuss matters related to the *Order and Authorization* granting the Application and Waiver of Higher Ground, LLC in the above-referenced proceeding.<sup>1</sup>

During the meeting, the participants distributed the attached presentation and expressed their very serious concerns that Higher Ground's mobile operations pose a significant threat of harmful interference to fixed microwave systems in the 5925-6425 MHz band (i.e. 6 GHz band), which are used to support mission critical communications by a wide variety of licensees, including utilities, railroads, commercial wireless service providers, and business enterprise entities. Any interference to these mission critical communications can have catastrophic consequences.

The participants explained that the 6 GHz band is home to tens of thousands of fixed microwave systems, and that there is a high probability that Higher Ground SatPaq devices will operate in close proximity with these microwave systems. Further, the participants explained that the interference protections required by the *Order* are insufficient to protect microwave systems against the potential for interference from Higher Ground's operations.

Specifically, the interference avoidance methodology that Higher Ground will use to remotely control its SatPaq devices is untested, proprietary and lacks transparency. In addition, the participants described several technical flaws in the basis for Higher Ground's interference avoidance methodology, as described in further detail below, which raise questions about its effectiveness to prevent interference. These flaws include:

- Faulty assumptions about microwave systems, including the assumption that only one microwave antenna will be used at a site instead of two (which is a common practice referred to as "spatial

---

<sup>1</sup> In the Matter of Higher Ground LLC, *Order and Authorization*, IBFS File No.: SES-LIC-20150616-00357, DA 17-80 (rel. Jan. 18, 2017)(hereinafter "*Order*"). See also, Higher Ground Application for a Blanket License to Operate C-band Mobile Earth Terminals, IBFS File No. SES-LIC-20150616-00357 (Application and Waiver).

diversity”) and other assumptions about the off-axis gain of the microwave antennas and their resistance to interference from nearby Higher Ground operations.

- Inaccuracies in data obtained from queries of the ULS database, including the absence of data in ULS database to account for sources of passive reflection, which can dramatically increase the potential interference influence of a signal.
- Miscalculations that significantly underestimate Higher Ground’s power and geographic range, resulting in at least 6 dB difference in its “target interference power”, 37.8 dB difference in antenna gain, and a Receiver Acceptance Cone size of 17,000 miles rather than 50 miles.
- Uncertainty regarding the bandwidth used for analyzing the impact on adjacent channel microwave operations, resulting in the overlap of thousands more fixed microwave licensees by Higher Ground’s signals than the 18 systems that Higher Ground estimated in its Technical Appendix.
- Problems related to using an analysis based on fixed point-to-point design techniques instead of mobile design techniques, which have the practical effect of minimizing or ignoring uncertainty factors that would increase the potential for interference.

Moreover, the lack of any prior coordination of Higher Ground’s operations and the lack of transparency into Higher Ground’s interference avoidance methodology will prevent microwave licensees from mitigating against the potential for interference in advance. Instead, microwave licensees will only be able to complain about interference after the fact, and Higher Ground will not be held responsible or legally liable for the consequences of the interference that it causes.<sup>2</sup>

The participants explained the mobile nature of Higher Ground’s operations and the intermittent interference that Higher Ground will cause will make it difficult for microwave licensees to investigate and resolve interference. Moreover, the participants explained that fixing interference after the fact will be far too late, considering the mission critical communications that are involved and the magnitude of the consequences for the safety of life, health and property. They described how utilities use microwave communication systems to protect the grid and isolate faults from cascading in milliseconds and causing widespread outages, and they described how railroads rely on microwave systems in the 6 GHz band to support positive train control and other systems that monitor and control operations. Interference from Higher Ground threatens the reliability and performance of these mission critical operations.

The participants also explained that there were procedural errors as well. Specifically, Higher Ground did not meet the standard for a waiver, because it failed to demonstrate that the underlying purpose of the rules requiring prior coordination and prohibiting mobile operations in the 6 GHz band – namely preventing interference from occurring -- would be frustrated by requiring Higher Ground to comply with them. Further, Higher Ground failed to show unique circumstances or the absence of reasonable alternatives that would make compliance with the rules inequitable or constitute an undue burden. Specifically, Higher Ground failed to show that it could prevent causing interference to microwave systems, and there were other alternative spectrum bands that it could have used besides the 6 GHz band. At the very least, the Commission should have conducted a rulemaking to consider the issues, and it should not have granted the Application and Waiver. A rulemaking would have afforded interested parties more effective notice and opportunity for comment, and it would have built a better record upon which to make a determination. Moreover, the widespread impact and fundamental changes to the 6 GHz band that will result from Higher Ground’s nationwide mobile operations should have required a rulemaking by the full Commission instead of adjudication by the Bureau.

---

<sup>2</sup> Order at ¶30 (“declin[ing] ... to require Higher Ground to accept responsibility or liability for any reported interference.”)

Ms. Marlene Dortch  
May 5, 2017  
Page 3 of 3

Finally, the participants explained that the *Order* was contrary to the comments on the record, which overwhelmingly opposed Higher Ground's request, and it was contrary to Congress, which directed the FCC to avoid making decisions on controversial and complex matters during the transition after the election. Given the widespread opposition to Higher Ground and the highly technical issues involved with introducing mobile operations and spectrum sharing in the 6 GHz band, this was precisely the kind of decision that Congress directed the Commission to avoid making during the transition after the election.

Thank you for your help in this matter. If there are any questions concerning this matter, please let me know.

Respectfully,

A handwritten signature in cursive script that reads "Brett Kilbourne".

Brett Kilbourne

Cc: FCC Participants



# Higher Ground Interference Threat to 6 GHz Band

April 26, 2017



Utilities  
Technology  
Council™

# OVERVIEW

- Substantive arguments
  - The probability and the risk of interference is significant
  - HG's proprietary interference avoidance methodology is untested, and post-hoc remedies for interference are insufficient to protect mission critical communications
- Procedural arguments
  - Waiver standard not met
  - Rulemaking should have been conducted
- Contrary to the record and Congressional intent
  - The record overwhelmingly opposed the waiver
  - HG is controversial and complex

# Probability/Risk of Interference

- Tens of thousands of microwave stations in the 6 GHz band, including public safety and utility operations – all supporting mission critical communications including 911 services.
- High probability that HG operations will be in close proximity to microwave receivers.



# Interference Protections are Insufficient

- HG's interference avoidance methodology is untested and unproven.
  - Several technical flaws have been identified.
    - Faulty assumptions about microwave operations
    - Inaccurate ULS Data; failure to account for passive and non-passive sources of reflection.
    - Underestimated calculations of the power/geographic range of interference.
    - Minimized size of bandwidth of HG's transmissions.
    - Uncertainty surrounding HG's analysis based on fixed point-to-point design techniques rather than mobile design techniques.
- Interference will be difficult to investigate and mitigate without prior coordination.
- Remedying interference after the fact will be too late to prevent impact to protect safety, reliability and security.

# Procedural Issues

- HG failed to meet the FCC test for a waiver.
  - The underlying purpose of the rule is not advanced by granting a waiver here, nor is it in the public interest to do so.
  - No unique circumstances or undue burden here.
- A rulemaking should have been conducted.
  - Adequate notice and opportunity for comment.
  - Better record upon which to render a decision.



# Decision contradicts the record and Congress

- Comments overwhelmingly opposed HG's request for waiver and its application.
- Contradicts the instructions of congressional leaders to avoid deciding controversial or complex matters during the Transition.