

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Higher Ground LLC)	
)	
Application for Blanket Earth Station License)	IBFS File No.: SES-LIC-20150616-00357
)	
)	Call Sign: E150095
)	

APPLICATION FOR REVIEW

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SUMMARY

UTC seeks full Commission review of an *Order* by the International and Wireless Bureaus and the Office of Engineering and Technology (collectively, “the Bureaus”), which granted an application and a waiver of the Commission’s rules to permit Higher Ground LLC to operate 50,000 mobile earth terminals in the 5925-6425 MHz band (hereinafter, “the 6 GHz band”).

The *Order* is contrary to the record in the proceeding, which overwhelmingly opposed the application and the waiver. As the record shows, Higher Ground’s mobile operations threaten to cause massive and widespread interference to thousands of fixed service microwave systems that are used by utilities across the country to support mission critical voice and data communications. These systems are used to direct personnel working in the field and for substation SCADA, protective relaying, corporate data network traffic, voice tie trunks, and utility land mobile radio traffic that ensures the safe, reliable and secure delivery of essential electric, gas and water services to millions of Americans, including military installations, federal buildings, bridges, tunnels, railways, traffic control systems, airports, hospitals, police departments, fire departments, emergency medical services and offices of emergency management. Any interference to these communications systems can have catastrophic consequences for safety of life and protection of property. Despite the threat of interference to these mission critical communications systems and objections on the record, the *Order* requires only that Higher Ground correct interference after the fact and declines to require Higher Ground to accept responsibility and liability for any reported interference it causes.

The public interest is not served by granting Higher Ground’s application, nor is there a sufficient basis for waiving the rules. Clearly the broader public interest in protecting these fixed service microwave systems from interference outweighs the narrow interest of Higher Ground. In addition, there are alternative spectrum bands in which Higher Ground could operate on a mobile basis without a waiver. The Bureaus should not have granted a waiver because it would frustrate the underlying purpose of the rules, which prohibit mobile operations in the 6 GHz band and which require prior coordination of all

operations to prevent interference. Finally, Higher Ground failed to show any unique circumstances that would support a waiver of the rules, particularly given the significance of the potential for interference. The Bureaus should have denied both the application and the waiver.

At the very least, the Bureaus should have initiated a rulemaking to provide reasonable notice and an opportunity for parties to comment and fully address the complex issues that were raised in the proceeding. The *Order* fundamentally effects a change in the rules that will affect all fixed microwave systems across the entire 6 GHz band and across the nation for the foreseeable future. It allows mobile operations in a band that prohibits mobile operation, and it exempts Higher Ground from obtaining prior coordination – process that prevents interference. This is far beyond a narrow waiver. As such, the Bureaus should have initiated a rulemaking, rather than grant a waiver of the rules.

Finally, the *Order* is contrary to the intent of Congress, because it was issued in the waning days of the last Administration and it addressed controversial and complex issues. The *Order* is exactly the kind of controversial and complex decision that the leadership of the oversight committees in the U.S. House of Representatives and the Senate told the FCC that it should not make until after the new Congress and new Administration took over. Given the opposition on the record and the Bureaus' refusal to conduct a rulemaking, the *Order* clearly was controversial and was rushed out the door in the eleventh hour of the last Administration. Accordingly, the full Commission should immediately revoke and rescind the *Order*, just as it revoked other midnight regulations that were issued during this period.

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APPLICATION FOR REVIEW

The Utilities Technology Council (“UTC”) pursuant to Section 1.115 of the Commission’s Rules hereby seeks full Commission review of the *Order* by the International and Wireless Telecommunications Bureaus and the Office of Engineering and Technology (collectively, “the Bureaus”) in the above referenced matter.¹ The *Order* is contrary to the FCC Rules, the record in the proceeding, Commission precedent, Congressional directive and public policy and should be reversed.

As more fully described below, the *Order* is contrary to the FCC Rules because it waives key provisions that are fundamental to the protection of fixed service operations in the 6 GHz band (5925-6425 MHz).² UTC and numerous other parties opposed Higher Ground’s application and request for waiver because Higher Ground’s nationwide mobile operations threaten to cause widespread interference to fixed microwave operations in the band, and the potential for interference is compounded by the absence of any prior coordination of the SatPaq devices; the untested and unproven effectiveness of Higher Ground’s database system; and the intermittent nature of the interference that will make interference that much more difficult to trace, mitigate and prevent.³

¹ 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).

² 47 CFR §§ 25.130(b), 25.203(c), and 101.103.

³ *See e.g.* Comments of CenturyLink in Opposition to Application at 4 (filed Sept. 10, 2015)(observing that Higher Ground has only performed testing where there were no operational fixed licensees close enough to create a potential interference situation.”); *and* Comments of the National Spectrum Management Association at 2 (filed Oct.

Contrary to the overwhelming record evidence in opposition, the Bureaus granted Higher Ground's application and waiver without conducting a rulemaking to more thoroughly consider the complex issues and significant interests that were involved in the proceeding. The relief that was granted and the impact that it will have is significant and will affect operations throughout the 6 GHz band. It is contrary to Commission precedent and goes far beyond other waivers that have been granted by the Commission in the past.

Not only is the *Order* unprecedented, but it also was issued at a time when congressional leaders had advised the Commission not to decide controversial matters. The *Order* is the very definition of controversial, not only because it contradicts the record in the proceeding, but also because it risks causing interference to mission critical communications that support the safe, effective, secure, and reliable delivery of essential electric, gas and water services, as well as other essential services to the public at large. As such, the *Order* is patently contrary to the public interest, and it is arbitrary and capricious. For all of these reasons, UTC respectfully requests that the Commission reverse the *Order* and dismiss the application.

I. INTRODUCTION AND BACKGROUND

A. Questions Presented.

This Application for Review presents the following questions to the Commission:

1. Whether the Bureaus erred as a matter of fact or policy in granting the application and waiver by Higher Ground to operate 50,000 Mobile Earth Stations in the 5925-6425 MHz band.
2. Whether the Bureaus erred as a matter of procedure by granting Higher Ground's application and waiver – and not conducting a rulemaking -- to permit it to operate 50,000 mobile earth stations for a nationwide commercial mobile system in the 6 GHz band.
3. Whether the Bureaus erred by contradicting Congress's express direction to refrain from issuing decisions on complex and controversial matters during the transition to the new Congress and the

6, 2015)(stating “HG’s self-designed and self-verified process for unilateral selection of operating parameters and frequencies cannot inspire the same confidence in fixed microwave users.”)

new Administration after the presidential election.

B. Standard of Review.

Section 1.115 of the Commission's rules specify the factors that warrant Commission consideration of the issues presented in an application for review of action taken pursuant to delegated authority.⁴ The Commission considers, among other things, whether the action taken is in conflict with case precedent or established Commission policy; whether it was based upon an erroneous finding as to an important or material question of fact; or whether there was prejudicial procedural error.⁵

As described more fully herein, the *Order* of the Bureaus is contradicted by the record in the proceeding and conflicts with fundamental rules that protect against interference to systems in the 6 GHz band. Finally, the Bureaus should not have granted the application and waiver by Higher Ground, and it should have considered it as part of a rulemaking, if at all.

C. UTC's Statement of Interest in the Proceeding.

Established in 1948, UTC is the trade association for the communications and information technology interests of the nation's electric, gas and water utilities, pipeline companies and other critical infrastructure industries.⁶ Its members include large investor-owned utilities who serve millions of customers in multi-state service territories, and smaller municipal and cooperatively-organized utilities who may serve only a few thousand customers in remote areas and communities across the country. These members all use communications in support of their core electric, gas and water services. These communications systems are extensive and diverse, including wireline and wireless technologies – including microwave communications systems in the 6 GHz band.

Utilities, pipeline companies and other critical infrastructure industries use 6 GHz microwave systems to provide backhaul capacity to support voice and data communications in field area networks in their service territories. Voice applications include nuclear emergency telecommunications systems and trunked radio systems. Data applications include all traffic that is processed on mainframes within utility

⁴ 47 CFR § 1.115. *See also* 47 U.S.C. § 155(c)(4)-(7).

⁵ 47 CFR § 1.115(b)(2).

⁶ *See* www.utc.org.

communications networks, as well as a number of nuclear applications that must be available for the stations to remain in operation. Microwave systems run parallel with private fiber networks to provide a completely redundant path between and among utility facilities for mission critical applications, many of which affect employee and public safety.

These microwave systems are the workhorse of utility communications networks and have been in operation for decades, providing highly reliable point-to-point, high capacity communications over extremely long distances cost effectively and securely.⁷ Utilities and other critical infrastructure industries have invested hundreds of millions of dollars in these systems and the proposal by Higher Ground threatens this investment. There are literally thousands of these systems in the 6 GHz band that are licensed to utilities and these systems are located in rural and urban areas throughout the country.

Moreover, the critical nature of the traffic that is carried over these networks must be underscored. These microwave systems serve as the primary telecommunications backbone for utility networks, and carry numerous applications and services. Some of these applications and services are described below:

Pilot Protection – Pilot protection is used to ensure utilities have dependable and secure protection for faults on the electrical system. Should there be intermittent interruptions there is increased risk that the protective relaying would not operate correctly. This could mean that either service is interrupted for non-faulted equipment or service is not interrupted for faulted equipment. It is critical that this is operated correctly for the safety of the public and stability of the electric system.⁸

Supervisory Control and Data Acquisition (SCADA) – SCADA systems remotely monitor and control operations on multiple devices throughout every aspect of operation. This system is important because it provides utilities with valuable data and capabilities that are key to delivering power in a safe and reliable manner. These SCADA systems have numerous end points being monitored, and each utility may have thousands of devices and hundreds of thousands of SCADA points in service. Quality communications to these devices and SCADA points is essential in day to day operations of all utility assets. As more smart grid applications are implemented by utilities, real time data

⁷ See e.g. Comments of Nebraska Public Power District (NPPD) at 2-3 (filed Sept. 2, 2016) (explaining that “it is common to construct high capacity, high reliability microwave paths that are 30 miles or longer in 6 GHz band,” and adding that “there is no other band available for high capacity, high reliability, long-haul microwave if the 6 GHz band is compromised by interference and congestion.”)

⁸ Substation and switching station transformers can be destroyed if system protection communications fails. These large transformers can cost more than \$1M each and are no longer available domestically. Replacements often take as long as six months to one year to obtain.

provided by SCADA becomes even more significant.

Mobile Radio – The backhaul for utility mobile radio system is carried through microwave systems. The mobile radios are used in line stringing operations, outages, storm restoration, general verbal communications, and day to day operations. These systems provide coverage in rural and remote areas where cellular service is either unreliable or not even available. A fully functioning and operational mobile radio network is extremely important during emergency situations. It is during these times that commercial communications networks can become so saturated that they are unable to function, or go completely offline altogether.

Voice Connections – Voice connections to transmission substations and communication sites are carried by microwave systems. These circuits provide another means for emergency communications at these remote locations. These links are vital at high voltage transmission substations and switching stations.

Load Management –Microwave networks carry backhaul for electric load management programs. This program helps balance the demand for electricity with the ability to generate and economically purchase electricity. This reduces the need for additional generation and reduces the need to purchase expensive power during periods of high demand. The amount of load that is reduced by these programs can be significant, equaling the output of a small power plant. Load management is energy conservation at work.

Public Safety Communications – utilities have excellent relationships with public safety and government agencies. They work cooperatively with public safety agencies and have mutual agreements for tower and building space. In some instances, utilities also provide circuits within their microwave networks for these public safety and government agencies. The importance of public safety communications cannot be overstated.

UTC filed comments in opposition to Higher Ground’s application and waiver, and it has a substantial interest in this proceeding because utilities rely on these private operational fixed service microwave systems in the 6 GHz band to support the safe, reliable and secure delivery of essential services to the public at large.⁹ Any interference to these systems could have catastrophic consequences. These systems must be able to monitor and control substations and automatically respond to faults on the electric grid in milliseconds, otherwise the fault may cascade and cause widespread outages. Likewise, these systems must be able to open and close valves for water and sewer systems and gas pipelines, and any malfunction could threaten the safety of life, health or property. Finally, these systems must be available for mission critical voice communications at all times all across utility service territories to

⁹ See Comments of the Utilities Technology Council (filed Sept. 6, 2016).

protect the safety of life and property, as well as to ensure utilities' operational integrity and security.

Owing to the criticality of the communications and the importance of the underlying electric, gas and water services that they help to provide, these microwave systems must meet extremely high specifications for reliability and latency; and interference may prevent these systems from operating within these specifications.¹⁰ That is why the Commission established strict frequency coordination criteria to prevent interference from occurring to these microwave communications systems at the outset.¹¹ That is also why the FCC's rules prohibit mobile operations in the band, because mobile operations can cause widespread interference to these fixed microwave systems.

The Bureaus' *Order* authorizing Higher Ground to operate 50,000 mobile earth stations nationwide will result in widespread interference to utility microwave systems in the 6 GHz band. It also waives rules that protect against interference (by requiring prior coordination of operations) and that prohibit mobile operations in the band. Interference from Higher Ground's operations represent an unreasonable risk to these systems, which cannot be remedied effectively after the fact and which will be widespread and difficult to mitigate, owing to the mobile nature of its proposed operations.¹² Instead of requiring Higher Ground to obtain prior coordination like all of the other operations in the 6 GHz band, the Bureaus permit Higher Ground to coordinate its operations itself, without any oversight, using a database system that is untested and unproven to protect incumbent microwave systems against

¹⁰ See Comments of Southern Company Services, Inc. at 3 (stating that "low latency is vital for many command and control applications, such as load management, protective relaying, and SCADA," and that "Southern's electric operating companies generally require latency levels of less than 100 milliseconds for command and control applications, with any increase in latency above 250 milliseconds to be unacceptable"). See also Comments of Nebraska Public Power District (NPPD) at 1 (filed Sept. 2, 2016)(stating that "NPPD has invested considerable dollars in these 6 GHz links and engineered them to a 99.999% minimum reliability.")

¹¹ 47 C.F.R. §101.103.

¹² See Comments of Southern Company Services, Inc. at 4 (stating that "[i]t will be almost impossible for fixed microwave licensees to timely identify the specific source(s) of interference from Higher Ground's SatPaq devices," and adding that "[i]f licensees fail to report all interference cases to Higher Ground it will not necessarily mean that SatPaq devices are not to blame or that the interference is "tolerable;" rather, it will represent the sad truth that such after-the-fact notifications will not resolve the disruption caused by prior interference nor will it prevent future cases of interference.") See also Comments of CenturyLink in Opposition to Application at 5 (filed Sept. 15, 2015)(stating that "Low-risk of harmful interference is not an acceptable standard here. To adequately protect these facilities the standard should be no-risk of harmful interference.")

interference.¹³

The probability and the magnitude of the risk of interference to utility mission critical communications are high. The 6 GHz band is heavily used by utilities and pipeline companies. According to the FCC's Universal Licensing System (ULS) database, there are 5,745 microwave systems in the 6 GHz band that are licensed to utilities and pipeline companies and many of these systems are located in the same rural geographic areas where Higher Ground intends to operate.¹⁴ It is very likely that Higher Ground devices will be operated in close proximity to utility microwave systems, and the SatPaq devices will be unable to detect these systems and adjust operations to avoid causing interference to them.

As described above, the consequences of interference could be catastrophic and would affect many mission critical applications and services that are carried over these systems. Utilities have invested hundreds of millions of dollars in these systems, many of which are relatively new and some of which are in the process of being upgraded to higher capacity. Rather than risk interference from Higher Ground, many utilities and pipeline companies would be forced to find alternative spectrum for their microwave systems. Therefore, Higher Ground poses an unacceptable risk of interference that would jeopardize the safety and reliability of mission critical communications and essential electric, gas and water services to millions of people; strand hundreds of millions of dollars of investment in relatively new utility microwave systems; and unfairly displace utilities and pipeline companies who would be effectively forced to relocate out of the 6 GHz band.¹⁵

Higher Ground has not demonstrated it is necessary for it to operate in the 6 GHz band, nor has it

¹³ See CenturyLink Reply in Opposition to Application (filed Sept. 28, 2015)(stating that "Permitting Higher Ground to launch these SatPaq devices nationwide without a tested, well-defined approach for avoiding and remedying interference with fixed microwave facilities that are providing critical communication links throughout the country is not in the public interest.")

¹⁴ See e.g. Comments of Southern Company Services at 5 (filed Sept. 30, 2016)(predicting a "higher concentration of interference with Higher Ground in rural areas, where the need for C-band fixed microwave is greatest and where there will likely be a higher concentration of SatPaq users (and interference issues) in the same areas where fixed service licensees have deployed fixed systems operating in the C-band.")

¹⁵ See e.g. Comments of Nebraska Public Power District (NPPD) at 1 (filed Sept. 2, 2016)(explaining that NPPD was forced to relocate out of the 1.9 GHz and 2.1 GHz bands when the FCC reallocated those bands for Broadband PCS, Mobile Satellite Services, and Advanced Wireless Services, and that "NPPD invested in the 6 GHz band, as have many others, to replace the 1.9 GHz and 2.1 GHz fixed bands we were removed from to meet our needs for long-haul microwave communications to carry our critical infrastructure communications network.")

sufficiently demonstrated that the risk of interference to mission critical communications of utilities and pipeline companies would be in any way outweighed by any public interest benefit from the services that Higher Ground's systems might provide. Higher Ground could operate in the 4 GHz band, which would provide more favorable propagation for operations in rural areas, where it intends to provide service. Moreover, the public interest would be better served by avoiding the disruption of electric, gas and water services to millions of people, and utilities have commented on the record that the 6 GHz band is uniquely suited to support their communications in rural areas.¹⁶ As such, Higher Ground has not demonstrated unique circumstances or a lack of reasonable alternatives, let alone sufficient public interest benefits that would support a waiver for its operations in the 6 GHz band.

Higher Ground also has failed to demonstrate that a waiver would not frustrate the underlying purpose of the rules. While it claims that it can operate without causing interference, the record shows that the basis for some of its fundamental assumptions about microwave systems in the band is flawed.¹⁷ Moreover, it has not demonstrated through abstract modelling or actual tests that it would, in fact, not cause interference to microwave systems in the band. Instead, the Bureaus seem to accept its claims at face value and believe that any interference that does occur can be remedied after the fact. As UTC and others showed on the record, the potential interference from Higher Ground's operations cannot be effectively remedied after the fact, nor should the Commission adopt that approach where, as here, there are utility mission critical communications at risk.

It is striking that the Bureaus expressly declined to require Higher Ground to accept responsibility and liability for any reported interference that it causes.¹⁸ Not only is it completely beyond the authority of the Bureaus and the Commission to limit liability under the law, it recklessly disregards the

¹⁶ Comments of Southern Company Services, Inc. at 2 (filed Sept. 30, 2016)(explaining that “because of Southern’s extensive service area, and the need to communicate with facilities in very rural areas, the 6 GHz band is the only band that can accommodate Southern’s bandwidth and performance objectives over very long paths.”).

¹⁷ See e.g. Letter from Michelle Farquhar, Counsel for the Association for American Railroads at 2 (filed Dec. 22, 2016)(stating that “Higher Ground assumes unrealistically that mobile devices will average only five messages per month and are spread evenly over the country (rather than concentrated in particular areas, which is more likely) and that messages will occur evenly over time (rather than more realistically during certain parts of the day).”)

¹⁸ *Id.* at ¶30.

consequences of the interference that would be caused by Higher Ground's operations. It is not enough for the Bureaus to simply require that Higher Ground "comply with requests from the Commission or FS operators for information to investigate or resolve reported interference, and to otherwise cooperate in good faith with such investigations and remedial efforts."¹⁹ Nor is it sufficient for the Bureaus to allow Higher Ground to coordinate its own operations without any oversight from the Bureaus and/or from FS operators or certified frequency coordinators. Utilities will not know what interfered with their microwave systems and they will not have any view into Higher Ground's operations to mitigate the potential for interference until it is far too late and the damage has occurred.

In addition to its potential for interference by Higher Ground, the precedent set by the *Order* has far reaching implications for the use of the 6 GHz band. No doubt, other interested parties will seek to provide their own mobile operations in the band, claiming that they too can avoid causing interference to microwave operations without having to comply with the FCC rules requiring prior coordination of their operations. This will fundamentally change the use of the 6 GHz band, and result in *ad hoc* decision making that is neither efficient nor adequate under the Administrative Procedures Act. This is not something that can be or should be considered in the context of a waiver by the Bureaus. If it is considered at all, it must be carefully considered by the Commission as a whole in the context of a rulemaking.

The comments on the record were almost unanimously opposed to Higher Ground's application and waiver. Only one party other than Higher Ground supported it, and that was the satellite company that is providing the capacity for Higher Ground's operations.²⁰ As such, the record contradicts the conclusions in the *Order*. This is the essence of arbitrary and capricious decision making, which is made worse because it also contradicts the express direction of Congress to avoid making any controversial decisions during the transition to the new Congress and the new Administration after the November 2016 elections. The application and the waiver by Higher Ground were clearly controversial and sought relief

¹⁹ *Id.*

²⁰ See Comments of Intelsat (filed Aug. 27, 2015).

that required a rulemaking. Yet, inexplicably the Bureau granted the application and the waiver in the waning days and hours of the transition after the election, despite overwhelming opposition by numerous comments on the record and the interference that it would cause to mission critical fixed microwave communications. Therefore, UTC respectfully recommends that the Commission should rescind the *Order* by the Bureaus because it contradicts the record in the proceeding and the express direction of Congress to avoid making controversial decisions during the transition after the presidential election.

For all of these reasons, UTC seeks full Commission review and reversal of the *Order* by the Bureaus. This decision represents an unreasonable risk to the safety, reliability and security of the underlying electric, gas and water services that microwave communications systems in the 6 GHz band help to provide. UTC submits that the public interest would not be served by the disruption of utility microwave systems and the impact that this would have on the safety of life, health and property. It also submits that Higher Ground has failed to show unique circumstances and/or a lack of reasonable alternatives to justify a waiver of the FCC's rules. Nor has it shown that a waiver of the rules would not frustrate the underlying purpose of the FCC's rules. Given the widespread interference that Higher Ground's mobile operations will likely have on microwave systems in the 6 GHz band, it was inappropriate as a matter of procedure for the Bureaus to have granted relief in the form of an application and waiver. If the application was to be considered at all it should have been considered in the context of a rulemaking, which would have provided interested parties with sufficient notice and an opportunity for comment on the proposal. Finally, the *Order* contradicts the numerous comments on the record that overwhelmingly opposed the application and the waiver, and it contradicts the express direction of Congress to avoid making controversial decisions during the transition after the election. As such, the Commission should reverse the *Order* by the Bureaus, as described more fully below.

II. THE BUREAUS ERRED AS A MATTER OF FACT AND POLICY BY GRANTING HIGHER GROUND'S APPLICATION AND WAIVER TO OPERATE A NATIONWIDE MOBILE SYSTEM WITHOUT OBTAINING PRIOR COORDINATION OF ITS OPERATIONS.

Under Section 309(a) of the Communications Act, the Commission must determine whether the

public interest is served by the grant of an application. In pertinent part, Section 309(a) states: “[t]he Commission shall determine . . . whether the public interest, convenience, and necessity will be served by the granting of such application, and if the Commission, upon examination of such application and upon consideration of other matters as the Commission may officially notice, shall find that the public interest, convenience, and necessity would be served by the granting thereof, it shall grant such application.”²¹

The Commission’s rules also provide that a waiver of the rules may be granted by the Commission if it is shown that: 1) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest; or 2) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.²²

UTC urges the Commission to reverse the *Order* because the public interest would not be served by the unreasonable risk of interference to utility microwave communications systems that would be created by allowing Higher Ground to operate a nationwide mobile network of 50,000 SatPaq devices in the 6 GHz band without any prior coordination and without sufficient interference avoidance techniques to protect point-to-point microwave systems in the band. Moreover a waiver would frustrate the underlying purpose of the rules that prohibit mobile operations in the 6 GHz band and that require applicants to obtain prior coordination of their proposed operations. Nor are there unique or unusual factual circumstances justifying a waiver here because the application of these rules to Higher Ground’s proposed operations would not be inequitable, unduly burdensome or contrary to the public interest. Finally, Higher Ground does not lack reasonable alternatives to operating its mobile systems in the 6 GHz band, as described more fully below.

A. Factual Issues

In its *Order*, the Bureau incorrectly concluded that Higher Ground had demonstrated that its

²¹ 47 U.S.C. § 309.

²² 47 C.F.R. § 1.925.

proposed system would prevent or minimize the risk of harmful interference to FS operators in the 5925-6425 MHz frequency band.²³ The Bureaus reasoned that Higher Ground had incorporated interference avoidance techniques, including a detailed analysis of potential interference to FS stations, taking into account the characteristics of the SatPaq transmitting station, the FS receiving stations, and the propagation environment between the stations, frequency agility, and satellite diversity.²⁴ The Bureaus went on to impose conditions on Higher Ground's operations. Specifically, Higher Ground's system must accept interference from and avoid causing interference to all current and future users of the band operating under an existing allocation. In addition, the SatPaq Network Controller must maintain supervisory control of all operations at all times, and be able to maintain the ability to override the frequency selection of the software on the SatPaq application and assign a different frequency or satellite for a SatPaq terminal transmission, shut off the entire SatPaq terminal operation by muting the forward path from a satellite necessary for the communications "handshake," or direct a specific SatPaq terminal to suspend or delay its transmission.²⁵

UTC submits that the interference avoidance techniques upon which the Bureaus based the *Order* are insufficient to protect utility mission critical communications from harmful interference by Higher Ground's mobile systems. Numerous comments on the record identified several shortcomings with the interference avoidance technology that Higher Ground proposes to use.²⁶ These include inaccuracies with the data in the ULS database which may result in the inability of the SatPaq Network Controller to determine where microwave receivers are located and the height of the towers involved.²⁷ There are also

²³ *Id.* at ¶19.

²⁴ *Id.*

²⁵ *Id.* at ¶20.

²⁶ *See e.g.* Letter from Cheng-yi Liu, Counsel for the Fixed Wireless Communication Coalition to Marlene H. Dortch, Secretary, Federal Communications Commission, attachment (filed July 5, 2016)(stating that "Higher Ground Proposal Falls Short," and pointing out that "Higher Ground seeks to bypass existing frequency coordination.")

²⁷ UTC also observes that there are discrepancies between the reported bandwidth of the Hailing channel and the data channels for Higher Ground's operations, both in the Technical Appendix and with regard to Higher Ground's experimental license. In the Technical Appendix, the emissions bandwidth of SatPaq devices is declared to be both 8 MHz and 4.9 MHz. In the experimental license the bandwidth is declared to be 10 MHz. UTC is concerned that Higher Ground failed to estimate accurately the potential for interference by looking only at microwave paths where the microwave center frequency was within a 4.9 MHz uncentered emission surrounding its proposed 5927.5 MHz

faulty assumptions about microwave operations upon which Higher Ground bases its interference avoidance algorithms. Specifically, Higher Ground's assumptions about the performance level of off-axis gain of the FS antennas that would be subject to interference are incorrect, and the 9 dBW (39 dBm) e.i.r.p. level at which the SatPaq terminals would transmit in the C-band may cause interference in some scenarios.²⁸ One of the biggest issues that could make microwave systems vulnerable to interference is differential fading, when the FS receive signal is weakened by certain atmospheric conditions, such as atmospheric ducting. That may reduce fade margin of the point-to-point fixed service (FS) receiver to the point where a strong signal from a SatPaq device would cause interference to the FS receiver, as well.²⁹ Higher Ground failed to provide specific answers to address these issues, but the Bureaus granted its application and waiver anyway.³⁰

Hailing frequency. Higher Ground should have included microwave channels within 8 MHz or even 10 MHz of the Hailing frequency. The number of microwave paths that potentially will be interfered with by Higher Ground's Hailing frequency is 3590, not 18, as stated in its Technical Appendix. *See* Technical Appendix at 14 (stating that "According to the ULS database, there are 18 PtP links active today in the entire United States between 5925.1 and 5930 MHz."). In addition, Higher Ground's effective power level calculations are based on power density levels used in the satellite industry, which may not be correct for the digital microwave receivers used today in most terrestrial point-to-point systems. As a result, the effective "interference power" being generated by the SatPaq mobile units in Higher Ground's calculations is too low.

²⁸ Higher Ground's "Receiver Acceptance Cone" (RAC) is 20 degrees, but the angular size of the RAC should be much larger if the actual microwave antenna beamwidth is more than 2 degrees. Moreover, Higher Ground may not have accounted for microwave diversity receive systems in which the receive site has two receive antennas – one of which is typically much smaller than the other. It is not clear that Higher Ground accounts for the antenna radiation pattern of the smaller antenna, which will have the practical effect of increasing the size of the Close Proximity Circle and widening the RAC. *See also* Fixed Wireless Communications Council Petition to Deny at 10 (filed Sept. 11, 2015)(stating that "While HG describes its Figure A-8 pattern as typical, FWCC believes that in fact only about 40% of 6 GHz antennas suppress the off-axis gain to this ultra-high performance level. Most antennas are at lower performance levels, including about 40% that are either standard performance (only meeting Category B1) or improved-performance (just meeting Category A).")

²⁹ In addition, there are many objects in the environment, both man-made and natural, which reflect microwave signals. The reflections are sometimes intentional and sometimes not. To avoid any possible interference to incumbent microwave systems, Higher Ground's design analysis must account for all possible types of passive radio signal reflections, whether or not the reflecting objects appear on any FCC license. Because of the potential for reflections, all point-to-point receive sites need to have a Close Proximity Circle blocking operation of SatPaq operation. Passives also inject gain into a microwave signal whenever the received wavefronts are additive. That is, the transmitted signal after it has bounced off the Passive is "stronger" than the receive signal that was directed by the Passive. Thus, the reflected signal can actually be transmitted much farther than a signal that has not been reflected. This undercuts the basis for Higher Ground's assessment of the Receiver Acceptance Zone.

³⁰ Reply Comments of the Fixed Wireless Communications Coalition regarding Higher Ground LLC Application for Blanket Earth Station License (SES-LIC-20150616-00357) at 5-6 (stating that the lack of specificity and inconsistencies in [Higher Ground's] proposals are troubling" and adding that Higher Ground's proposal "does not inspire confidence.") *See also* Comments of the National Spectrum Management Association at 2 (filed Oct. 6, 2015)(stating that HG's self-designed and self-verified process for unilateral selection of operating parameters and frequencies cannot inspire the same confidence in fixed microwave users," as the PCN process.)

In the *Order*, the Bureaus did not adequately address the interference concerns that were raised on the record by utilities and other microwave operators. Instead, the Bureaus accepted at face value the unsupported and conclusory assertions by Higher Ground that it will not cause interference to FS operations. While the Bureaus acknowledged that “Higher Ground’s interference analysis is a unilateral coordination process that is different,” from the prior coordination process,³¹ the Bureaus brushed aside concerns by comments on the record about the lack of transparency in Higher Ground’s process – describing it as a “new, innovative and increasingly efficient way[] of achieving spectrum sharing without harmful interference to other users.”³² Similarly, the Bureaus also acknowledged that the details of Higher Ground’s algorithms are proprietary, but they somehow concluded that Higher Ground “has provided sufficient technical and operational parameters for its automated coordinated system to support its application.”³³ Further, the Bureaus downplayed the errors in the ULS data, stating that “Higher Ground’s reliance on the ULS to identify FS stations is reasonable, and Higher Ground states that it has endeavored to correct any errors that it has identified with conservative assumptions designed to avoid any harmful interference.”³⁴

Most disturbingly, the Bureaus’ decision disregarded the concerns of utilities about the potential impact that interference from Higher Ground’s operations would have on utility mission critical microwave communications systems. Despite recognizing the criticality of these communications and the impact that interference would have on the safety of life and property,³⁵ the Bureaus decided to allow Higher Ground to operate a nationwide mobile system subject only to its own interference avoidance technology that is proprietary, untested, unproven, and lacking in any transparency in its processes.³⁶

³¹ See Section 25.203(c) of the Commission’s rules requiring prior coordination of systems to be licensed in the 6 GHz band.

³² *Id.* at ¶25.

³³ *Id.*

³⁴ *Id.*

³⁵ To be sure, the FCC recognized that “the 6 GHz band is crucially important to FS operations,” and that the band “routinely carries applications critical to safety of life and property such as pipeline control, operations of the electric grid, synchronizing the movement of railroad trains, real-time financial and market data, and public safety communications, among others.” *Order* at ¶13. The Bureaus also recognized that the reliability standard for these communications systems is 99.999 percent, owing to the importance of the communications that they carry. *Id.*

³⁶ *Id.* at ¶¶19-20 (finding that Higher Ground has demonstrated to the Bureau that its proposed system would prevent

The waiver that was granted to Higher Ground and the impact that it will likely have on the 6 GHz band is unprecedented and clearly conflicts with the Commission’s policies regarding certification of frequency coordinators and the FCC’s authorization of other databases that are used to control certain communications systems in other spectrum bands. In those cases, the Commission has required that frequency coordinators undergo certification by the Commission and similarly it has required that spectrum access database operators be authorized and that their databases meet certain basic requirements to ensure interference protection of licensed operations in certain spectrum bands.³⁷ Here, the Bureaus have allowed Higher Ground to operate in the band without any prior coordination, relying solely on Higher Ground to control its own operations and avoid causing interference to point-to-point microwave and satellite services in the 6 GHz band.

The *Order* expressly declines to require Higher Ground to accept responsibility and liability for any reported interference; and moreover it only requires Higher Ground to correct interference after it occurs, rather than preventing it at the outset – too late to protect utility mission critical communications systems.³⁸ This disclaimer of liability and responsibility for preventing interference makes the *Order* even more remarkable and contrary to Commission precedent and fundamental policies designed to protect the safety of life and property. As such, the Commission must reverse the *Order* because it is based on assertions by Higher Ground that are unsupported and have been shown to be factually incorrect, and moreover it is contrary to established Commission precedent and policies that protect

or minimize the risk of harmful interference to FS operators in the 5925-6425 MHz frequency band. *But see* Comments of Nebraska Public Power District at 2 (filed Sept. 2, 2016)(stating that Higher Ground LLC has proposed to use a method of self-coordination to dynamically assign frequencies that lacks specifics about what checks and balances would be in place to prevent interference to fixed microwave,” and adding that “we would not entrust the entire coordination process to the potential interferer who has no understanding or concern for the electrical systems they may be affecting.”)

³⁷ *See e.g.* Wireless Telecommunications Bureau Seeks Comment on Informal Request of American Automobile Association for Certification to Provide Frequency Coordination for 800/900 MHz Business/Industrial/Land Transportation Pool Frequencies, Public Notice, WT Docket No. 10-3, 25 FCC Rcd 526 (WTB MD 2010). *See also* United Telecom Council, *Order*, 16 FCC Rcd 8436, 8443 ¶ 13 (WTB PSPWD 2001). The Bureau has granted five previous requests for certification to coordinate the 800/900 MHz B/ILT Pool. *See* http://wireless.fcc.gov/services/index.htm?job=licensing_3&id=industrial_business#800/900%20MHz%20Coordina [tors](#). *See also* Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Report and Order and Second Further Notice of Proposed Rulemaking*, 30 FCC Rcd 3959 at ¶ 320 (2015).

³⁸ *Id.* at ¶30.

against interference to mission critical communications systems that are operated by utilities in the 6 GHz band.

B. Public Policy Issues.

In the *Order*, the Bureaus focus on the public interest benefits of Higher Ground's mobile operations -- to the exclusion of any significant consideration of the numerous and significant public interest benefits that are provided by utility fixed microwave systems in the band. While UTC agrees that there are public interest benefits associated with Higher Ground's proposed operations, the Bureaus must also reasonably balance the public interest in protecting utility mission critical microwave communications systems from interference in the 6 GHz band. In weighing the public interest benefits, the *Order* barely mentions the threat of interference to these microwave systems, and it focuses instead on the public interest benefits that would be gained by sharing the 6 GHz band with Higher Ground and making more efficient use of spectrum. It effectively disregards the potential for interference to utility microwave systems from Higher Ground's operations, which is significant and widespread. As such, the Bureaus erred in concluding that granting Higher Ground's application would serve the public interest by sharing the 6 GHz spectrum while protecting fixed microwave systems from interference.

UTC agrees with the comments on the record that the public interest in reliable microwave systems in the 6 GHz band outweighs the more limited public interest in Higher Ground's proposed operations.³⁹ The 6 GHz band is used for a wide variety of communications purposes, including many applications that are critical to safety of life and property.⁴⁰ Interference from Higher Ground's operations would compromise the reliability of these microwave systems and the underlying services that they help to provide.⁴¹ As CenturyLink pointed out in its comments, the interference would be

³⁹ See e.g. CenturyLink Reply in Opposition to Application (filed Sept. 28, 2015)(stating that "the convenience of communication that the SatPaq devices would afford to some individuals does not outweigh the potential for harmful interference that could bring down communication links impacting hundreds of individuals, and thus is not in the public interest.")

⁴⁰ See *Order* at ¶13, citing CenturyLink Opposition Comments at 5.

⁴¹ See City of Mesa Petition to Deny at 1 (filed Sept. 28, 2016)(stating that "[a]ny interference from the proposed mobile earth stations would be very difficult to detect and correct, and could potentially jeopardize the safety of our First Responders and citizens."); and see Comments of the Regional Wireless Cooperative in Opposition to Application at 2 (filed Sept. 27, 2016)(explaining that it operates 20 fixed microwave paths in the C-Band, "all of

widespread and significant and would be difficult to mitigate due to the mobile nature of Higher Grounds' operations.⁴² Given the significance of the interference that would be caused by Higher Ground's operations to microwave systems in the 6 GHz band across the country, and the importance of these microwave systems to a variety of applications, including many safety of life and property applications, UTC submits that the public interest in protecting these microwave systems outweighs the limited public interest in the mobile services that Higher Ground proposes to provide.

III. THE BUREAUS ERRED AS A MATTER OF PROCEDURE BY AUTHORIZING HIGHER GROUND'S NATIONWIDE COMMERCIAL MOBILE OPERATIONS IN THE 6 GHZ BAND THROUGH A WAIVER INSTEAD OF CONSIDERING THE PROPOSAL IN A RULEMAKING PROCEEDING.

In the *Order*, the Bureaus declined to consider Higher Ground's proposal in a rulemaking proceeding, and they decided instead to grant a waiver for it to operate its mobile system nationwide in the 6 GHz band. The Bureaus reasoned that a waiver proceeding "generally functions as a more effective vehicle for addressing more individualized circumstances," and they asserted that "Higher Ground proposes a specific, unique application of the C-band that does not warrant a rulemaking proceeding of general applicability."⁴³ The Bureaus added that "Higher Ground has adequately demonstrated an alternative methodology to protect other users of this spectrum, and we condition this grant to minimize further the potential for harmful interference."⁴⁴

A. The Bureau Should Have Conducted a Rulemaking Proceeding.

UTC respectfully disagrees with the Bureaus' waiver versus rulemaking analysis.⁴⁵ Although the Commission has wide latitude to choose whether it will proceed by adjudication (*e.g.*, waiver proceedings) or by rulemaking, the courts have held that issues of general applicability are more suited to

which carry mission critical public safety communications.")

⁴² See *e.g.* Comments of CenturyLink in Opposition to Application at 2 (stating, "[t]his is not just potential interference to a call or two, or a data transmission here or there. This is potential interference to links in a communications network where each link carries hundreds of communications. And, it is not just potential interference to one or two specific links in a particular location, but it is potential interference to each and every such link of the network throughout the country.")

⁴³ See *Order* at ¶34.

⁴⁴ *Id.*

⁴⁵ *Id.* at ¶33.

rulemaking than to adjudication.⁴⁶ In addition, in matters where granting a waiver request would have a significant effect on the nature of the spectrum band, the Commission has stated that it is reluctant to grant waiver requests that effectively circumvent the Commission's rulemaking function.⁴⁷

The *Order* is far from a minor waiver of the rules based upon unique circumstances or an undue burden. This decision fundamentally effects a change in the rules that will prospectively affect all fixed microwave systems across the entire 6 GHz band and across the nation for the foreseeable future. These are rule changes that require a rulemaking to provide an opportunity for notice and comment, as required under the Administrative Procedure Act.⁴⁸

The Bureau has effectively reallocated the 6 GHz band for mobile services and it has established a new licensing framework in the band based upon spectrum sharing. In other bands, the Commission has conducted rulemaking proceedings when it has reallocated spectrum or instituted spectrum sharing.⁴⁹ Conversely, there is no case precedent where the Commission has reallocated a band or instituted spectrum sharing without conducting a rulemaking.⁵⁰ As such, the *Order* is clearly in conflict with Commission policy and precedent, and this is another reason that the *Order* should be rescinded by the Commission upon review.⁵¹

⁴⁶ See *SEC v. Chenery Corp.*, 332 U.S. 194, 203 (1947) ("the choice made between proceeding by general rule or by individual, ad hoc litigation is one that lies primarily in the informed discretion of the administrative agency."). See also *Telocator Network of America v. FCC*, 691 F.2d 525, 551 (D.C. Cir. 1982) ("It is well-settled that the Commission may elect to utilize its rulemaking power in lieu of adjudication when the pertinent issues involve legislative rather than adjudicative facts, and have prospective effect and classwide applicability.")

⁴⁷ See, e.g., Applications for License and Authority to Operate in the 2155-2175 MHz Band, WT Docket No. 07-16, *Order*, 22 FCC Rcd 16563 (2007); see also, Spectrum Networks Group, LLC, WT Docket No. 14-100, *Order*, 30 FCC Rcd 3509 (2015).

⁴⁸ 5 U.S.C. §553 (providing that a rulemaking shall provide notice and opportunity for interested parties to comment).

⁴⁹ See e.g. Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, *Notice of Proposed Rule Making and Order*, 16 FCC Rcd 596 (2001); and see Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354, *Report and Order and Second Further Notice of Proposed Rulemaking*, 30 FCC Rcd 3959 (2015).

⁵⁰ See Comments of the Enterprise Wireless Alliance at 2 (filed Nov. 22, 2016)(stating that "The record in this proceeding does not support grant of the Waiver Request. There is ample FCC precedent confirming that Higher Ground should petition for a rule change if it wishes to pursue this course.")

⁵¹ See 47 CFR § 1.115(b)(2) (providing that Commission review of an action taken pursuant to delegated authority is warranted when it is in conflict with statute, regulation, case precedent, or established Commission policy.)

B. The Bureau Should Not Have Granted a Waiver.

In addition to failing to conduct a rulemaking proceeding, the Bureaus also erred by granting the waiver. The Commission's rules provide that a request for waiver may be granted if it is shown that (i) The underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest; or (ii) In view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.⁵²

Higher Ground's waiver request fails to meet these requirements. There were no unique circumstances involved here that would make application of the rules inequitable, unduly burdensome or contrary to the public interest. Nor was there a lack of reasonable alternatives. There were alternative spectrum bands that Higher Ground could have chosen to use, and it is important to add that those bands do not restrict mobile operations.⁵³ This is not a question of undue burden; it is purely a matter of convenience for Higher Ground. Most importantly, a waiver of the rules would not only frustrate the underlying purpose of the rule, it would negate it.

As a result of granting the waiver, fixed microwave licensees must live with the constant threat of interference from Higher Ground's operations anywhere anytime. They won't have any advance notice that Higher Ground devices are operating nearby, and the potential for interference will be difficult to mitigate, because it will be intermittent and unpredictable from Higher Ground's mobile operations.⁵⁴ Finally, fixed microwave licensees will have no recourse against Higher Ground for the consequences of

⁵² 47 C.F.R. §1.925.

⁵³ See 47 C.F.R. §101.147(a), Note 6. See also Comments of CenturyLink in Opposition to Application at 3-4 (observing that "of the forty-six bands set out in Commission Rule 101.147(a) as frequencies available for assignment for fixed microwave services, it is only one band, specifically 5925 – 6425 MHz, that the rule expressly notes is not available for assignment to mobile earth stations.")

⁵⁴ See Comments of Nebraska Public Power District at 2 (filed Sept. 2, 2016)(explaining that "[i]ntermittent interference caused by the Higher Ground devices would be very difficult to pinpoint and eliminate," and adding that "[t]his interference could be caused by malfunctioning consumer devices or by improper frequencies being assigned by the Higher Ground LLC System.")

the interference that it causes.⁵⁵ Higher Ground is only required to correct the interference that it causes after the fact. It is not liable for the consequences of its interference.⁵⁶ For all of these reasons, the waiver should not have been granted by the Bureau.

IV. THE BUREAUS ERRED BY CONTRADICTING CONGRESS'S EXPRESS DIRECTION TO REFRAIN FROM ISSUING DECISIONS ON COMPLEX AND CONTROVERSIAL MATTERS DURING THE TRANSITION TO THE NEW CONGRESS AND THE NEW ADMINISTRATION AFTER THE ELECTION.

The *Order* by the Bureaus also conflicts with the express direction of Congress not to engage in controversial or complex decisions during the transition to the new Congress and the new Administration after the election. Congressional leadership from the oversight committees in the U.S. House of Representatives and the U.S. Senate wrote to Chairman Wheeler expressing their concern about FCC decisions during the presidential transition, and they advised the Chairman that it would be counterproductive for the FCC to consider complex and controversial items that the new Congress and new Administration will have an interest in reviewing.⁵⁷ The *Order* by the Bureaus is the essence of controversy and complexity. It is controversial in that it flies in the face of the record that opposed granting the application and the waiver. It is complex in that it introduces mobile operations in a band that is exclusively reserved for fixed services, and it allows Higher Ground to coordinate its operations using a novel, untested and proprietary interference avoidance technology.

The Bureaus adopted the *Order* in the waning days of the last Administration, and should be revoked, just as the Commission revoked other midnight regulations that ran contrary to the policy directive of the leadership of the FCC's congressional oversight committees. As a substantive matter, the

⁵⁵ See Comments of the Association of American Railroads at 4 (filed Dec. 22, 2016)(observing that under Higher Ground's proposal "There would be no review by third parties, no method for potential victims to preempt interference, and no recourse for victims if interference occurs. In the event of interference, the victims could not detect, identify or force the source of interference to discontinue because of the transient nature of the METs. Such a departure from the current, stable operating environment could jeopardize the mission critical communications by railroads in the 6 GHz Band.")

⁵⁶ *Order* at ¶30 ("declin[ing] ... to require Higher Ground to accept responsibility or liability for any reported interference.")

⁵⁷ See Letter from Senator John Thune, Chairman of the U.S. Senate, Commerce, Science and Transportation Committee (Nov. 15, 2016); and Letter from Letter from Fred Upton, Chairman, U.S. House of Representatives Committee on Energy and Commerce, et al. to the Honorable Thomas E. Wheeler, Chairman, FCC (Nov. 15, 2016)

Order should be immediately rescinded because of the irreparable harm that it would cause to fixed microwave services in the band. Also, the *Order* is contrary to the record in the proceeding, which overwhelmingly opposed the application and the waiver request. The *Order* threatens the public interest by jeopardizing the reliability of mission critical microwave communication systems and the underlying essential electric, gas and water services that these microwave systems support. Finally, the *Order* is procedurally improper because it was rushed out the door without conducting a necessary rulemaking; and in any event, the waiver should not have been granted because Higher Ground did not demonstrate unique circumstances or lack of reasonable alternatives that would make compliance with the rule an undue burden, inequitable or contrary to the public interest. Nor did Higher Ground prove that granting the waiver would not frustrate the underlying purpose of the rules to protect 6 GHz fixed microwave systems from interference.

V. CONCLUSION AND REQUEST FOR RELIEF

The Commission should rule that the Bureaus granted the Higher Ground waiver in error, revoke the waiver, and rescind the authorization. Alternatively, the Commission should set aside the waiver grant, return Higher Ground's application to pending status, and open a rulemaking to better evaluate the protections that Higher Ground's system should offer to incumbents.



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February 17, 2017

CERTIFICATE OF SERVICE

I, Eric Wagner, certify that on Friday, February 17, 2017, the foregoing Application for Review was served via first class U.S. Postal mail, postage prepaid, or via electronic mail on the following parties to this proceeding:

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