

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)
Utilities Telecom Council and Winchester Cator,) RM-11429
LLC)
Petition for Rulemaking to Establish Rules)
Governing Critical Infrastructure Industry Fixed)
Service Operations in the 14.0-14.5 GHz Band)

ORDER

Adopted: May 15, 2013

Released: May 15, 2013

By the Chief, Office of Engineering and Technology, Chief, Wireless Telecommunications Bureau and Chief, International Bureau:

1. On May 6, 2008, the Utilities Telecom Council and Winchester Cator, LLC (UTC-Winchester) filed a petition for rulemaking that proposes a new secondary Fixed Service (FS) allocation in the 14.0-14.5 GHz band. UTC-Winchester also proposes that the Commission adopt accompanying service rules that would make this spectrum available for fixed and temporary fixed point-to-point and point-to-multipoint stations to support, among other things, the communication needs of critical infrastructure industry (CII) users. For the reasons discussed below, we deny the petition.

2. The 14.0-14.5 GHz band is an uplink (Earth-to-space) band for Fixed-Satellite Service (FSS) operations, paired with the 11.7-12.2 GHz band for downlink (space-to-Earth) FSS communications. Geostationary satellite orbit (GSO) FSS systems operate on a primary basis in the 14.0-14.5 GHz band. The band is also allocated on a secondary basis to the Mobile-Satellite Service. The 14.4-14.5 GHz segment is further allocated on a secondary basis to the FS and Mobile Service, limited to Federal users. The 14.0-14.2 GHz segment of the band is used by the Tracking and Data Relay Satellite System on a secondary basis. The 14.47-14.5 GHz segment serves the Radio Astronomy Service on a permissive basis.

1 Utilities Telecom Council and Winchester Cator, LLC, Petition for Rulemaking, RM-11429, filed May 6, 2008 (UTC-Winchester Petition). UTC is a trade organization representing the telecommunications and information technology interests of electric, gas and water utilities, pipeline companies and other critical infrastructure industry users, defined in section 90.7 of the Commission's rules. Winchester, an entity focused on the technology and business of satellite and terrestrial telecommunications, provided technical support for UTC's proposal. See UTC-Winchester Petition at 1.

2 The primary FSS allocation in the 14.0-14.5 GHz band also permits earth stations (both gateway earth stations and user terminals) to communicate with non-geostationary orbit (NGSO) satellite systems, though there are no NGSO systems in these bands at this time.

3 47 C.F.R. § 2.106. In addition, the Commission has proposed to add a secondary allocation in the non-Federal Aeronautical Mobile Service (AMS) for air-ground mobile broadband in the 14.0-14.5 GHz band and to establish service rules for a new terrestrial-based air-ground mobile broadband service with aircraft. Expanding Access to (continued...)

3. The UTC-Winchester Petition states that CII entities would use the 14.0-14.5 GHz band to improve day-to-day reliability of electric utilities by implementing new smart grid applications and providing additional emergency response communications.⁴ UTC-Winchester proposes that this spectrum would be open to various individual CII entities throughout the country and calls for the Commission to issue, outside of an auction process, a single nationwide license for the band.⁵ The licensee, who would be a CII-related entity, would function as a band manager to ensure that the fixed and temporary fixed point-to-point and point-to-multipoint stations operating in the band would not cause harmful interference to incumbent operations.⁶ Additionally, UTC-Winchester proposes that the licensee would also be permitted to authorize spectrum use to provide terrestrial service on a pre-emptible basis for a fee when that spectrum is not needed for CII activities.⁷

4. We received 23 comments and 12 replies during the pleading cycle, and intermittent *ex parte* filings in the time since.⁸ Within these filings, parties raised concerns about the regulatory framework proposed by UTC-Winchester, the technical characteristics of its proposal, and whether allocating the 14.0-14.5 GHz band and adopting the proposed service rules would meet UTC-Winchester's expressed goals.⁹ Section 0.241 of the Commission's rules authorizes the Chief of the Office of Engineering and Technology to "dismiss or deny petitions for rulemaking which ... plainly do not warrant consideration by the Commission."¹⁰ As discussed below, we find that the UTC-Winchester Petition makes assumptions about allocations, licensing and system operation that are not fully explained and that appear to rely on incorrect premises or that are inappropriate for the types of service that UTC-Winchester proposes, and the petition accordingly will be denied.

5. As an initial matter, adopting UTC-Winchester's proposal as set forth in its petition would violate Section 309(j)(2)(A) of the Communications Act.¹¹ Although UTC-Winchester asserts that "CII entities are specifically exempted from having to obtain spectrum at auction,"¹² the Commission has held, to the contrary, that the exemption to its statutory auction authority for public safety radio services applies to particular radio services in which public safety uses comprise the dominant use of the spectrum, rather

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Broadband and Encouraging Innovation through Establishment of an Air-Ground Mobile Broadband Secondary Service for Passengers Aboard Aircraft in the 14.0-14.5 GHz Band, GN Docket No. 13-114, *Notice of Proposed Rulemaking*, adopted May 9, 2013.

⁴ UTC-Winchester Petition at 3-5.

⁵ *Id.* at 20-21.

⁶ *Id.* at 18-19.

⁷ *Id.* at 19-20.

⁸ The formal pleading cycle ran from May 27 through August 11, 2008. See Utilities Telecom Council and Winchester Cator, LLC, Petition for Rulemaking to Establish Rules Governing Critical Infrastructure Industry Fixed Service Operations in the 14.0-14.5 GHz Band, RM-11429, *Order Extending Comment Period*, 23 FCC Rcd 10497 (2008).

⁹ See, e.g., Opposition of Qualcomm Incorporated, filed June 26, 2008 at 1; Opposition of Hughes Network Systems, LLC, filed June 26, 2008, at 6-9 (discussing ways in which the UTC-Winchester proposal to issue a single-user exclusive-use license raises challenging policy considerations).

¹⁰ 47 U.S.C. § 0.241(e).

¹¹ 47 U.S.C. § 309(j)(2)(A).

¹² UTC-Winchester Petition at 9.

than to particular classes or groups of licensees within a service.¹³ As such, the exemption for public safety radio services can apply only to spectrum that the Commission specifically allocates for the particular uses that Congress recognized as a public benefit.¹⁴ The UTC-Winchester proposal anticipates the provision of commercial service via a leasing arrangement between UTC (as the presumptive holder of the nationwide license) and Winchester.¹⁵ This arrangement would allow for broad commercial use of the spectrum, particularly if CII entities have not deployed systems or during times and in places where the spectrum is in low demand for CII applications. While the UTC-Winchester Petition acknowledges that the auction exemption is premised in part upon public safety use being “dominant,” the proposal offers no means for us to determine what facilities would be built under the license, or how spectrum use would be divided between CII and commercial use.¹⁶ For these reasons, the UTC-Winchester proposal here does not provide the basis for the Commission to determine that it should issue a single nationwide license exempted from auction.

6. UTC-Winchester proposes that a single entity would coordinate use of the band in order to address potential interference risks and prevent operations that, individually or in the aggregate, might lead to harmful interference to the primary FSS operations. This entity would have to ensure that the aggregate interference of all users remains at an acceptable level. While the UTC-Winchester Petition discusses certain technical designs that would help individual fixed stations protect incumbent operations,¹⁷ the plan relies heavily on the licensee’s use of a coordination process that “will be internal to CII users and streamlined to allow rapid and efficient use of the 14.0-14.5 GHz band while protecting satellite users from aggregate interference.”¹⁸ UTC-Winchester has not provided a basis for concluding that the nationwide CII licensee using a coordination process “internal to CII users” would be able to successfully resolve interference issues with incumbent services. While much of the record involves disagreement as to the maximum acceptable level of aggregate interference from the nationwide CII

¹³ Implementation of Section 309(j) and 337 of the Communications Act of 1934 as Amended, WT Docket No. 99-87, *Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd 22709, 22740-41 paras. 64-66 (2000).

¹⁴ Delineating the scope of the exemption requires the Commission to determine whether the rules for a particular service cause it to fall within the definition of a “public safety radio service,” rather than attempting to predict the uses of spectrum that will develop after licensing occurs. *Id.* at 22741 para. 66. Thus, use of a spectrum band entirely by a CII entity will not, by itself, qualify the band as a public safety radio service that is exempt from auction under Commission precedent. The Commission could adopt service rules for CII use of a band that determine that the service qualifies as a public safety radio service by limiting the permitted CII uses to those that Congress intended for auction-exempt spectrum and prohibiting those CII uses that have more general business-related purposes and are not primarily safety-related.

¹⁵ UTC-Winchester Replies to Oppositions and Reply Comments, filed August 11, 2008, at 12-15.

¹⁶ *See also* Comments of the National Spectrum Management Association, filed June 26, 2008, at 2-3 (stating that there is a lack of clarity in the proposal as to how primary and secondary users would share with CII entities, what CII users and uses would be permitted, and why a single entity should be selected to manage the band).

¹⁷ Fixed stations would employ design features such as off-pointing at least 5 degrees away from the geostationary arc, employing antenna diameters at least 45 cm or greater, using power control on all links, and operating with a set maximum effective isotropic radiated power.

¹⁸ UTC-Winchester Petition at 13.

licensee to primary satellite users,¹⁹ we observe that the identification and resolution of individual cases of harmful interference represents an even more significant challenge, since the level of the “harmful” interference strictly depends on the aggregate interference power and the receiver performance of the FSS satellite in orbit.

7. While it does not give a specific number of stations required to provide service, UTC-Winchester provides calculations, based upon its assumptions regarding the level of aggregate interference the fixed stations would be permitted to create into the FSS service, indicating that each 50 MHz of spectrum could support almost 200,000 FS transmitters.²⁰ UTC-Winchester also states that the proposed fixed stations would have a range of between 2 and 20 miles.²¹ It further indicates that one of the expected applications would involve base stations located at electrical substations, which are widely distributed.²² Collectively, this information suggests the potential for a very large number of CII deployments. In addition, the proposal would intersperse these CII operations with an undetermined number of pre-emptible commercial operations.

8. The potentially large number of deployments that would be likely under the UTC-Winchester Petition increases the likelihood that a particular station could cause harmful interference to satellite uplinks that are operating on a primary basis in the band. The system design described by UTC-Winchester – a potentially unlimited number of CII and non-CII stations deployed across various terrain, operated by different users, and overseen by a central manager – makes the identification of particular stations that could cause harmful interference even more challenging. While we could address this problem by requiring the coordination of individual stations with incumbent users, doing so is not a practical option, as it would create unwarranted burdens on the primary licensees in the band. Other approaches – such as simply relying on incumbents to report harmful interference after suffering degradation in service – would be inappropriate for the same reason.

9. Even if the nationwide CII licensee were to become aware that harmful interference was occurring, we do not see an effective means for the nationwide CII licensee to pinpoint the source of this interference. UTC-Winchester has not identified how the band manager would determine which individual component(s) were responsible for any instances of harmful interference that may occur. While UTC-Winchester suggests that it could employ advanced sharing techniques, such as dynamic spectrum access, to avoid causing harmful interference, it has not provided sufficient information as to how this would work for the spectrum environment in this band. Without a sufficiently detailed technical description of the particular mitigation techniques to be employed in particular use scenarios, incumbent users of the spectrum would have little assurance that these techniques would be effective in preventing harmful interference.

10. Furthermore, we are not convinced that the nationwide licensee would be able to address harmful interference in a way that would be appropriate for the proposed CII users of the spectrum. If a specific interferer could not be pinpointed, other options, such as automatically modifying or shutting

¹⁹ In its petition, UTC-Winchester advocated that the aggregate interference from all fixed stations be limited to a 6 percent increase relative to the current noise level experienced by the satellite space stations, while satellite interests argue for a 1 percent limit. In a recent *ex parte* filing, UTC-Winchester has indicated that it would be willing to meet a 1 percent threshold, although it does not describe how it would do so. *See* UTC-Winchester April 26, 2013 *ex parte* at 2.

²⁰ UTC-Winchester Petition at 11-14.

²¹ *See* UTC-Winchester November 23, 2010 *ex parte* at slides 2-4.

²² *See id.* at slide 12.

down the entire system to reduce the aggregate interference to acceptable levels, would be inconsistent with the CII interests that are fundamental to the proposed use of the band. We also observe that the introduction of new FSS earth stations could result in interference to the CII fixed stations, which could potentially interrupt or terminate critical operations. There are no apparent means of predicting such events without imposing new obligations or constraints on the primary users of the band. We recognize that UTC-Winchester, in response to commenters that questioned the feasibility of providing critical communications via a secondary service, has stated that it is prepared to accept interference from primary sources.²³ However, its proposal offers no limitation on the types of CII uses that the nationwide licensee may authorize, and UTC-Winchester broadly talks about “use of the band for crucial operations”²⁴ and to support links “that will be needed as part of a nationwide electronic smart-grid.”²⁵ Given the broad scope of potential uses UTC-Winchester proposes, the challenges of preventing harmful interference to incumbent services, and the potential for unpredictable interference to CII services, we are not persuaded that UTC-Winchester’s proposal is viable in this band. Further, utility companies generally have been and will continue to be eligible to bid at auction for access to spectrum suitable to their needs.

11. We also observe that there are other ways to meet the CII-related needs that UTC-Winchester has identified. While there are no “utility-specific” frequency bands – and the Commission’s focus on flexible use licensing makes such designations unlikely in the future – there is a wide range of bands and services that have been actively used by utilities or that we expect could be useful to meet the utility industry’s varied needs, whether on a licensed or leased basis. Moreover, many of these bands are allocated on a primary basis, incorporate frequency coordination procedures, or have other characteristics qualities that allow for high quality of service more appropriate for CII needs. These options would appear to provide greater certainty for CII operators than use of the 14.0-14.5 GHz band on a secondary basis.²⁶ The wide range of bands that can meet utilities’ critical and routine communications needs include, but are not limited to, 700-960 MHz licensed frequencies (used by some smart meter vendors); the 4.9 GHz band (a notice of proposed rulemaking asks about allowing non-public safety entities the ability to access the band);²⁷ 5925-6425 MHz (available for terrestrial point-to-point operations); fixed microwave bands (*e.g.*, 23 GHz, 27 GHz, 31 GHz, 38 GHz – used for backhaul, remote control and monitoring);²⁸ the 70/80/90 GHz bands (suitable for high-speed point-to-point wireless local area

²³ UTC-Winchester Reply Comments at 8. *See also* Opposition of ARINC, filed April 26, 2008, at 5; and Opposition of Row 44, Inc., filed June 26, 2008, at 5-6 (raising questions about the appropriateness of secondary status).

²⁴ UTC-Winchester Reply Comments at 2.

²⁵ *Id.* at 10.

²⁶ UTC acknowledges the high priority it places on identifying primary spectrum with more favorable transmission characteristics. *See, e.g.*, UTC-Winchester Jan. 30, 2009 *ex parte* at 17 (stating that “a secondary allocation at such a high frequency cannot meet fully the demands of tomorrow’s utilities,” and that “America’s providers of most-critical services deserve reliable spectrum allocated on a primary basis, with propagation characteristics appropriate to the many applications they must deploy”). *See also* Connecting America: The National Broadband Plan at 251 (identifying the lack of a *mission-critical wide-area broadband network* capable of meeting the requirements of the Smart Grid as a barrier to its implementation (emphasis added)).

²⁷ *See* Amendment of Part 90 of the Commission’s Rules, WP Docket No. 07-100, *Fourth Report and Order and Fifth Further Notice of Proposed Rulemaking*, 27 FCC Rcd 6577 (2012), at 6592-6593. We note that UTC has filed comments in this proceeding supporting expanding eligibility to include CII entities operating on a primary basis. *See* Comments filed April 22, 2011; Reply Comments filed November 30, 2012; and November 9, 2012 *ex parte* filing.

²⁸ We note that the Commission has recently adopted numerous rule changes affecting the use of microwave frequencies to perform wireless backhaul functions. Many of these changes would encourage more efficient use of the spectrum, including increased bandwidth, which would provide for the increased data necessary to perform (continued...)

networks); and leased commercial satellite services (*e.g.* Very Small Aperture Terminals – VSATs – used for SCADA).

12. We are not persuaded by UTC-Winchester’s dismissal of the suitability of bands outside of 14.0-14.5 GHz. For example, some parties in this proceeding suggested higher frequency bands as suitable spectrum for accommodating UTC-Winchester’s interests. In response, while UTC-Winchester claims that higher frequencies suggested by others²⁹ are not suitable because they would require more expensive systems (due to their susceptibility to propagation losses and higher power requirements), it has not otherwise shown that these bands could not be used.³⁰ Similarly, while UTC-Winchester rejects use of the 5925-6425 MHz band because the “rigorous coordination scheme” in place does not appear to be compatible with the design of its system, such a factor would seem to be more a matter of choice for UTC-Winchester than a bar to use.³¹

13. Finally, we note that utilities have access to an extensive physical network that can make it easier to deploy wired infrastructure (*e.g.*, fiber along rights-of-way, access to pole attachments, etc.) to support the communication needs of CII users. Such options are not readily available to many other types of users.

14. For the reasons discussed above, we find that the UTC-Winchester Petition plainly does not warrant further consideration, and we deny it accordingly. The existing record does not support the creation of a secondary fixed service in the 14.0-14.5 GHz band as proposed by UTC-Winchester.

15. Accordingly, IT IS ORDERED that pursuant to the authority contained in Sections 4(i), 5(c), 301, 302, 303(c), 303(e), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 155(c), 301, 302a, 303(c), 303(e), 303(f), and 303(r), and Sections 0.51(a), 0.51(c), 0.131, 0.241(e), 0.261(a)(1), 0.331 and 1.401(e) of the Commission’s Rules, 47 C.F.R. §§ 0.51(a), 0.51(c), 0.131, 0.241(e), 0.261(a)(1), 0.331 and 1.401(e), that the petition for rulemaking filed by the Utilities Telecom Council and Winchester Cator, LLC on May 6, 2008 IS DENIED and RM-11429 IS TERMINATED, effective upon issuance of this Order.

FEDERAL COMMUNICATIONS COMMISSION

Julius Knapp, Chief
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many of the smart grid functions envisioned by UTC-Winchester. *See, e.g.*, Amendment of Part 101 of the Commission’s Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees, WT Docket No. 10-153, *Second Report and Order, Second Further Notice of Proposed Rulemaking, Second Notice of Inquiry, Order on Reconsideration, and Memorandum Opinion and Order*, 27 FCC Rcd 9735 (2012).

²⁹ *See, e.g.*, Opposition of Artel, Inc., filed June 26, 2008, at 4; Opposition of Seamobile Inc., filed June 26, 2008, at 3-4; Reply of the Satellite Industry Association, filed August 11, 2008, at 9-10; and Reply of Intelsat Corporation, filed August 11, 2008, at 9-10 (identifying fixed microwave bands (27 and 38 GHz) as well as spectrum in the 70/80/90 GHz range).

³⁰ Equipment and systems that can operate in these bands are currently available.

³¹ UTC-Winchester Reply Comments, Appendix A at 5-6.

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