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

In the Matter of	)	
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Amendment of Parts 1, 2, 15, 74, 78, 87, 90, and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07), Other Allocation Issues, and Related Rule Updates	)	ET Docket No. 12-338

COMMENTS OF THE UTILITIES TELECOM COUNCIL

Pursuant to Section 1.405 of the Commission's Rules, the Utilities Telecom Council ("UTC") hereby files its comments in response to the Commission's Notice of Proposed Rulemaking and Order in the above-referenced proceeding.[1] UTC opposes the proposal to allocate the 135.7-137.8 kHz band for amateur radio services on a secondary basis. As the Commission acknowledges, the 135.7-137.8 kHz band is currently used by utilities for power line carrier ("PLC") operations, in accordance with Section 15.113 of the Commission's Rules. These PLC operations are used to protect electric transmission facilities from faults which could result in massive power outages. UTC is concerned that amateur radio services in the band could cause harmful interference to PLC operations and that PLC operations would cause harmful interference to amateur operations in the band. Coexistence with amateur operations in the band does not appear to be practically feasible. UTC appreciates the interest of amateur radio users in using the band for experimentation, but on balance, the relative risk to electric service reliability outweighs the potential benefits of such experimentation for amateur radio in the band.

[1] *Amendment of Parts 1, 2, 15, 74, 78, 87, 90, and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07), Other Allocation Issues, and Related Rule Updates*, Notice of Proposed Rulemaking and Order, ET Docket No. 12-338, 27 FCC Rcd. 14598 (2012)(hereinafter "NPRM").

Moreover, amateur experimentation in the band can be accommodated on a Part 5 experimental or Part 15 unlicensed basis without a secondary allocation. Therefore, the Commission should not adopt a secondary allocation for amateur radio in the 135.7-137.8 kHz band.

I. Introduction

Founded in 1948, UTC is the international association for the telecommunications and information technology interests of electric, gas, and water utilities and other critical infrastructure industries. UTC's members own, manage and operate extensive private internal communications networks that they use to support the safe, reliable and secure delivery of essential services to the public at large. These networks are designed, built and maintained to high standards of performance and resiliency due to the importance of the underlying services that they support. Interference to these systems would affect worker safety and the safety of the public which relies on the essential services that utilities and other CII provide.

As the Commission notes in the NPRM, "electric utilities operate Power Line Carrier (PLC) systems in the 9-490 kHz band for communications important to the reliability and security of electric service to the public."[2] As the Commission also notes, this is not the first time that the Commission has considered a secondary allocation for amateur radio services at 135.7-137.8 kHz.[3] In its 2003 Report and Order, the Commission ultimately declined to adopt such an allocation because of concerns about interference between PLC systems and potential amateur radio services in the band.[4] It concluded the amateur operations would "pose the potential for harmful interference to systems protecting and controlling the national power

[2] NPRM at ¶14.

[3] *Id*. at ¶15.

[4] *Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency Allocation for the Amateur Radio Service*, Report and Order, ET Docket No. 02-98 18 FCC Rcd. 10258 at ¶19 (2003)(hereinafter "2003 Report and Order").

grid."[5] The Commission also reasoned that even without a secondary amateur allocation in the band that "there is potential for some limited operation in these bands under individual experimental licenses."[6] In that context, it explained that "[o]perations at LF under our experimental license program will allow amateur use to be coordinated with utility companies on a case-by-case basis, and allow empirical data to be developed on the sharing possibilities in this band for future consideration."[7]

In the present context, "[b]ecause the 135.7-137.8 kHz band is now allocated internationally to the amateur service on a secondary basis in all ITU Regions," the FCC has decided to "re-examine the potential for shared amateur service-PLC use of the band."[8] Specifically, the Commission invites comment on whether the 135.7-137.8 kHz band should be allocated to the amateur service on a secondary basis and restricted in accordance with RR 5.67A.[9] It also directs commenters to "address, in particular, any recent developments that would prompt a re-evaluation of the Commission's prior decision."[10] Bottom line though, the Commission states that "we would only consider adding an amateur allocation if we were comfortable that amateur radio and utility PLC systems could successfully co-exist in the band."[11]

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[5] Id. at ¶16.

[6] *Id*. at ¶20.

[7] *Id*. The Commission also added that "amateurs may still make use of the 160-190 kHz band under our Part 15 rules, which are much more restrictive, and therefore more protective of PLCs, than the limits proposed in the Notice."

[8] NPRM at ¶16.

[9] *Id*. Note that RR 5.67A restricts the use of this LF allocation to amateur radio stations transmitting with a maximum equivalent isotropically radiated power (EIRP) of 1 watt (W).

[10] *Id*.

[11] *Id*. at ¶17.

II. The Commission Should Continue to Decline to Allocate the 135.7-137.8 kHz band for Amateur Radio Services on a Secondary Basis.

UTC submits that nothing has changed that should prompt the Commission to alter its 2003 decision *not* to allocate the 135.7-137.8 kHz band for amateur radio use on a secondary basis. Utilities continue to use this band for PLC even more than they did in 2003, and these systems still serve an important role in protecting the reliability of the electric grid.[12] In its 2003 Report and Order, the Commission found that "separation distances on the order of 950 meters would be necessary to protect the PLCs from interference," and that "this distance, coupled with the larger-than-expected number of PLCs potentially impacted by this proposed allocation, increases the likelihood that a PLC-equipped powerline will be close enough to an amateur station to receive interference."[13] In that context, the Commission emphasized, "[w]e will not jeopardize the reliability of electrical service to the public."[14]

Conversely, amateur radio operators can continue to use the 135.7-137.8 kHz band on a Part 5 experimental basis, or on a Part 15 unlicensed basis.[15] There is no reason why amateur radio operators need to be licensed on a secondary basis on this band, except to gain priority over unlicensed PLC operations in the band – and that's the point. Without a doubt amateur operators would use priority status to force utilities off the band, as was demonstrated by the comments

[12] Whereas in 2002 there were approximately 2000 PLC transmitters in the 131.7 kHz - 141.8 kHz range that would be affected by an amateur radio allocation, a recent search of the PLC database indicated that there are now almost 2100 PLC transmitters operating in that frequency range.

[13] Id. at ¶18. UTC notes however that the Institute of Electrical and Electronic Engineers ("IEEE") Relay Communications Subcommittee ("the Subcommittee") of the IEEE Power Systems Relay Committee the minimum separation distance would need to be greater than 1.34 km from amateur stations operating with an EIRP of 2 W. *See Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency Allocation for the Amateur Radio Service*, Notice of Proposed Rulemaking, 17 FCC Rcd. 8954 at ¶18 (2002).

[14] NPRM at ¶18.

[15] *See e.g.* Experimental Radio Station Construction Permit and License, WE2XTU, File Number 0270-EX-RR-2012 (issued to Whedbee, James Edwin Sept. 1, 2012).

that were filed by amateur operators in the proceeding that led to the 2003 Report and Order – an issue that was not lost on the Commission at the time.[16] Nor is it an issue that was lost on utilities then or now.[17] As AEP explained in response to the current NPRM, "[i]f the proposed frequency range becomes a registered frequency for Amateur Radio users only, AEP PLC signals could become an unlicensed interference source to licensed Amateur Radio users, [and] [t]he only means at AEP's disposal to quickly remove an interfering source to comply with FCC regulations is to disable it."[18] As the Commission concluded in 2003, it should conclude today that "utility companies have raised a valid concern that an allocation to the amateur service could result in the need for PLCs to modify or cease their operations to avoid causing interference to amateurs."[19] Moreover, the Commission can negate those concerns while still allowing amateur operators to experiment in the band on a Part 5 experimental or Part 15 unlicensed basis.

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[16] *See 2003 Report and Order*, at ¶17 (stating that "[w]e disagree with ARRL's and the amateur operators' assertions concerning the consideration we should accord incumbent Part 15 use in these bands in deciding whether to provide an allocation for amateur services. Our decision must be based upon the facts at hand and our evaluation of any potential changes to the spectral environment due to our decision. In evaluating whether new operations should be added to a band, licensed or not, we must consider the potential for interference conflicts between the operations. While unlicensed PLC operations have no protection status, they provide a vital public service. Therefore, we disagree with amateur comments that we should not consider the impact on unlicensed operations when making spectrum allocation decisions.") *See also* Id. at ¶10 ("Many of the amateur commenters assert that we should not consider the existence of Part 15 devices, including PLCs, when we make allocation decisions. Galasso, an amateur operator, argues that the Commission should not consider requiring a licensed service to protect unlicensed operations, and that PLC operators have no legal grounds to require protection. Galasso asserts that the "real" reason utilities are opposed to the allocation is because of the financial impact of replacing PLCs.")

[17] *See e.g.* Reply Comments of UTC in ET Docket No. 02-98 at 3, 5-8 (pointing out that utilities would be required to shut down immediately PLC systems that caused interference to Amateur Radio services, and that comments on the record by "Amateurs disregard the impact on PLC systems.") *See also* Comments of Exelon Corp. at 4-5 (explaining that the transmission line would need to be taken out of service until the PLC system could be retuned or replaced, and recommending that the Commission specify that amateur operations would be subordinate to those of utility operations, if the FCC adopts the proposed allocation); and see Comments of Pinnacle West at 5 (requesting that the Commission upgrade PLC users to licensed secondary status if the Commission allocates the band to amateur operators on a secondary basis).

[18] Comments of American Electric Power in ET Docket No. 12-338 at 1-2 (filed Jan. 2, 2013).

[19] 2003 Report and Order at ¶19 (adding that "Amateur operators have expressed concern that there may be interference to their operations from the power lines and from PLC devices, and ARRL's statement that interference to amateur stations from PLC operations at the distances indicated in paragraph 18, will be overwhelming confirms this claim.")

Meanwhile, the relative costs and benefits continue to further underscore the need to refrain from allocating the 135.7-137.8 kHz band for amateur operations on a secondary basis.[20] As the Commission recognized in 2003, "[w]hile it appears that other techniques could be used to control the power grid, we find that the utility companies have come to rely on PLC systems for monitoring and control of the power grid, and that the alternatives suggested by [amateurs] may not be as effective, and would be costly."[21] UTC agrees with the Commission that it makes no sense to threaten the reliability of electric service to the public at large and impose significant costs associated with retuning PLC systems, when the speculative benefit of a secondary allocation for amateur radio would be of extremely limited experimental value and could be easily accommodated through alternative means.[22]

Moreover, there is no practical co-existence mechanism that would enable amateurs and PLC to share the same band.[23] As PSE&G explained in its comments in 2003, "amateur operations are both unpredictable and uncoordinated," such that "even under the best of circumstances, interference from amateur operations would be difficult, if not impossible, to avoid or to locate."[24] In addition, power limits by themselves won't protect PLC systems. As UTC and several utilities commented in 2003, antenna height limits must also be established as

[20] *See* NPRM at ¶18 (inviting comment on "the advantages and disadvantages, and other costs and benefits associated with changing our rules.")

[21] *Id*. *See also Id*. at ¶13 (stating that comments on the record report that PLCs are more reliable than microwave or leased line alternatives, and that PLCs are less expensive than deploying fiber optic cable or constructing microwave towers.)

[22] A generic search of the FCC's Experimental Authorization indicates that there are only a total of 28 experimental licenses that are granted or pending to operate in the 135.7-137.8 kHz band, and a small subset of those appear to be for amateur operations. The relatively low number of experimental licenses by amateurs demonstrates that there is relatively limited interest among amateur operators in using this band. See also Reply comments of UTC in ET Docket No. 02-98 at 8 (filed Aug. 22, 2002)(stating that "[i]t is not at all clear that amateur operators remain interested in the 135.7-137.8 kHz band, particularly without the 160-190 kHz band as well.")

[23] NPRM at ¶17 (seeking comment on technical rules or methods that could be implemented to assure coexistence.)

[24] Comments of Public Service Electric & Gas in ET Docket No. 02-98 at 5 (filed June 25, 2002).

well as other technical restrictions to mitigate against interference.[25] The Commission's suggestion in the NPRM to limit antenna height to 60.96 meters (i.e. 200 feet) would help to provide some basis upon which to further develop a coexistence mechanism for fixed amateur radio operations, but not for mobile. Nor would restricting the class of amateur operators necessarily protect against interference to or from PLC operations.[26] Thus, there does not appear to be a workable coexistence mechanism for PLC and amateur operators to share the same band.

Although the 135.7-137.8 kHz band is allocated for amateur operations on a secondary basis in Europe, the Commission should be informed that PLC systems in Europe use the 135.7-137.8 kHz band only for in-home applications and on the low voltage distribution grid, where the probability, and the magnitude of the risk, of interference to these PLC systems is far less than the risk to PLC systems used in the U.S. for substation control.[27] Similarly, even though there may be other bands in the 9-490 kHz range that would be a "better fit from a spectrum sharing viewpoint,"[28] the Commission should refrain from making any alternative allocations for amateur operations in these bands at this time because it is likely that those bands will be used

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[25] Comments of UTC in ET Docket No. 02-98 at 5 (filed June 29, 2002). *See also* Comments of ONCOR Electric Energy Delivery Co. in ET Docket No. 02-98 at 4 (filed Jul. 30, 2002); Comments of Pinnacle West at 3-4 (filed Jul. 29, 2002)(power limits must be coupled with antenna size and design limits); and Comments of Exelon at 3 (proposed rules are by no means any insurance that interference will not occur.)

[26] See also NPRM at ¶19 (inviting comment on "other steps, such as limiting operating privileges in this frequency band (e.g., to Amateur Extra Class licensees), that would better facilitate amateur use of the band.") UTC believes that limiting operating privileges by amateurs in this band will not reduce the potential threat. As a technical matter, Amateur Extra Class licensees are just as much a threat as any other class of amateur operator.

[27] *See* CENELEC Standard No. EN50065 (allocating the 95-148.5 kHz band for PLC systems for in-home applications and for the low voltage distribution grid.) *Compare* 47 C.F.R.§ 15.113 (specifying that PLC operations are permitted only for general supervision of the power system and are not permitted on electric lines which connect the substation to the customer or house wiring.) *See also* NPRM at ¶17 (inviting comment on "differences in PLC systems deployment that might make those models more or less useful in the United States.")

[28] *See* NPRM at ¶17 (inviting comment on "other segments within the 9-490 kHz band where use by amateur stations would be a better fit from a spectrum sharing viewpoint.") UTC understands that the ARRL has filed a separate petition to use the 472-479 kHz band instead and that the WRC12 has made a secondary allocation for this band, See WRC-12 Final Acts, Article 5 (titled "Frequency allocations"), at 6-7 (table entry for the 472-479 kHz band, RR 5.80A, and RR 5.80B).

for PLC to an increasing extent.[29]

CONCLUSION

Therefore, the Commission should not allocate the 135.7-137.8 kHz band for amateur radio services on a secondary basis, because it would pose an interference threat both to and from PLC systems that use the band and which are vital to electric reliability. The public interest in PLC systems outweighs the interest in amateur radio experimentation in the band, and such experimentation can be easily accommodated on a Part 5 experimental basis or a Part 15 unlicensed basis. Finally, coexistence mechanisms do not appear to be workable, and the Commission should not follow the international allocation because PLC operations in the U.S. in the 135.7-137.8 kHz band are used to protect transmission facilities – interference to which poses a much greater risk to electric reliability than interference to the PLC systems in Europe that use this band solely for in-home and distribution grid applications.

Respectfully,

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[29] *See e.g.* Special Consideration in Applying Power Line Carrier for Protective Relaying at 8-9, visited at http://www.pes-psrc.org/Reports/SpecialConsiderationsPLC.pdf (stating that "[t]he vast majority of power line carrier systems in use today operate at frequencies below 250 kHz," but that "[a]s the frequency spectrum becomes more congested, use of frequencies above 250 kHz has increased.") See also *Id.* at 7-8 (explaining how higher frequencies (i.e. above 250 kHz) would be one solution for deploying PLC on short transmission lines.) The use of PLC on such short transmission lines represents a cost effective solution to other technology solutions for those lines.