

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

In the Matter of)	
)	
Amendment of Parts 2 and 97 of the)	
Commission's Rules to Create a Low)	ET Docket No. 02-98
Frequency allocation for the Amateur)	RM-9404
Radio Service)	
)	
Amendment of Parts 2 and 97 of the)	
Commission's Rules Regarding an)	RM-10209
Allocation of a Band near 5 MHz for the)	
Amateur Radio Service)	
)	
Amendment of Parts 2 and 97 of the)	
Commission's Rules Concerning the)	RM-9949
Use of the 2400-2402 MHz Band by the)	
Amateur and Amateur-Satellite Services)	

REPLY COMMENTS OF UTC

The United Telecom Council ("UTC") hereby submits its Reply Comments on the *Notice of Proposed Rulemaking* in the above-captioned proceeding.¹ As the comments reflect, there is opposition among utilities and amateurs alike to the proposal to allocate the 135.7-137.8 kHz band for ham operations on a secondary basis. The few comments in support of the allocation claim that the restrictions proposed by the FCC will negate its use by amateurs, and are insensitive or misinformed about the potential impact on power line carrier (PLC)

¹ 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*, ET Docket No. 02-98, FCC 02-136 (released May 15, 2002) (the "Notice", "NPRM").

operations in the band. UTC respectfully requests that the Commission deny this portion of ARRL's petition and decline to make the allocation, because the risk to PLC systems, and resulting danger to reliable electrical service to consumers, makes this proposed allocation contrary to the public interest.

I. A Secondary Allocation for Amateur Operations in the 135.7-137.8 kHz Band Would Threaten the Operation of PLC Systems.

A large number of commenters in this proceeding stress that the proposed allocation would create an unnecessary risk of interference to PLC operations. The fact that so many utilities commented on the record illustrates the extent to which they continue to rely on PLC systems for protective relaying, and the seriousness of the threat of interference from amateur operations.² As PSE&G explains, "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."³ Even some amateurs disagree with ARRL's assurances that amateurs would not cause interference to PLC systems.⁴

² See Comments of Entergy Corp. ("Entergy") (filed Jul 2, 2002); Comments of Central Iowa Power Cooperative ("CIPCO") (filed Jul. 19, 2002); Comments of Public Service Electric & Gas Co. ("PSE&G") (filed Jul. 25, 2002); Comments of Exelon Corp. ("Exelon") (filed Jul. 26, 2002); Comments of Pinnacle West Corp. ("Pinnacle West") (filed Jul. 29, 2002); Comments of ONCOR Electric Energy Delivery Co. ("ONCOR") (filed Jul. 30, 2002); *and* Reply Comments of Lincoln Electric System (filed Aug. 7, 2002).

³ Comments of PSE&G at 5.

⁴ See Comments of William Cook (filed Jun. 18, 2002) (supporting UTC position regarding false trips by amateurs, and challenging ARRL assertion that PLC systems can be easily retuned or that forward error correction could help PLC systems avoid interference.) See *also* Comments of Shoukat Khan (filed Jun. 10, 2002) (stating that there is a great chance of false transmission line tripping which can cause power outages to many utility customers.)

Moreover, the status of PLC systems as unlicensed operations would prevent utilities from even objecting to such interference. Their only recourse would be to shut down immediately PLC systems that caused interference to amateur operations.⁵ To be sure, the FCC has recognized the importance of PLC systems, but amateur operators would be entitled to cause interference to PLC systems under the proposed rules.⁶ It is for this reason that some utilities that have commented on the record suggest that the Commission consider elevating the status of PLC systems, so that utilities could protect their PLC systems from interference, and thus, their electric service from disruption.⁷

The Commission's reliance on amateurs' listen-before-transmit (LBT) protocol and access to the PLC database is misplaced. PLC systems using FSK and ON/OFF modulation could not be heard by amateurs so that they could avoid causing interference to PLC systems.⁸ That amateurs can hear the guard

⁵ 47 C.F.R. § 15.5.

⁶ *Id.* See also 47 C.F.R. § 2.106, fn US294 (notifying users about the existence of PLC systems in the 9-490 kHz band and urging them to minimize potential interference to the degree practicable.) See also Amendment of Parts, 2, 15, and 90 of the Commission's Rules to Provide Recognition for Power Line Carrier Operations of Electric Utilities in the bands 10-490 kHz. Gen. Docket No. 82-9, *Report and Order*, 48 FR 5922 (1983).

⁷ See 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).

⁸ See *Comments of Pinnacle West* at 3 (stating that the most vulnerable PLC receivers are those using FSK modulation scheme which can be "captured" by an interfering signal, possibly created by an amateur operator.); Comments of Exelon at 3 (neither the ON/OFF type nor the FSK type of PLC system will normally give a clue to the "listener" that transmission on the PLC system's "receive" frequency will cause interference.); and

signal on an FSK system does not answer utilities' concern that they cannot hear the frequency-shift signal that activates the trip.⁹ No other amateur commenters even attempt to address this issue or offer support for the FCC's conclusion that the LBT protocol would be effective.¹⁰ Therefore, the UTC respectfully requests that the Commission reconsider whether amateurs could use the LBT protocol to avoid interference.¹¹

II. The Commission Should Not Disclose the PLC Database to the Public.

Amateurs would not derive sufficient information from the PLC database to avoid interference.¹² Moreover, disclosure of the PLC database would reveal information that could be used maliciously to disrupt electric service, and in any

Comments of PSE&G at 5-6 (if the amateur signal interferes with "guard" signal, the line will trip; if the amateur signal interferes with reception of the frequency-shifted signal, the line will not trip under fault conditions.)

⁹ See Comments of W. Lee McVey at 4 (filed Jul. 26, 2002) *and* Comments of W. Lee McVey at 3 (filed Jul. 31, 2002) (implying that detection of FSK guard signal would allow amateurs to avoid interference with PLC systems). *But see* Comments of PSE&G at 5-6 (filed Jul. 25, 2002) (explaining the scenarios under which interference from amateur operators could cause PLC malfunctions.)

¹⁰ *NPRM* at ¶ 23.

¹¹ There are also comments by amateurs that indicate that they would not avoid interference to PLC systems, or certainly that they are under no obligation to do so. See *section III, ante*.

¹² See Comments of Pinnacle West at 4 (even if the amateurs knew where the PLC transmitters were located by utilize the database, they would not know the locations of the transmission lines carrying the signals.); *and* Comments of PSE&G at 9 (PLC susceptibility is not restricted to receiver locations; susceptibility exists along the entire length of the metallic conductors. Without transmission line route maps, the PLC licensed user database is of little or no value.)

event would run counter to Section 1016 of the U.S. Patriot Act.¹³ Even some amateurs oppose the proposal to provide public access to the PLC database.¹⁴ UTC's opposition to this proposal is not intended as a slight against amateurs themselves; it merely reflects the reality that "if the information is made available to amateurs, then it basically is available to the public."¹⁵ Therefore, UTC recommends that the FCC decline to allow amateur access to the PLC database altogether, or in the alternative, that UTC maintain control over the PLC database while assisting the coordination of PLC systems with amateur operations.¹⁶

III. Amateurs Disregard Potential Impact to PLC Systems

UTC is disappointed that some amateurs have refused even to acknowledge that a threat to PLC systems exists, or contend that to the extent that interference would occur, it's not their problem. Comments by amateurs claim that "the Western United States electric utility grid does not use PLC for any critical supervisory functions," and that both the impact of the proposed Amateur Band on PLC systems and the importance of PLC to the utility industry have been exaggerated.¹⁷ These claims are patently untrue.

¹³ See Comments of Exelon at 5 *citing* Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA Patriot Act) Act of 2001, Pub. L. No. 107-56, 115 Stat. 272, § 1016 (2001).

¹⁴ See Comments of Richard Young at 1 (filed Jun. 28, 2002); Comments of Michael McDonald at 1 (filed Jun. 27, 2002).

¹⁵ Comments of PSE&G at 10 (filed Jul. 25, 2002). *But see* Reply Comments of W. Lee McVey, P.E. at 2 (taking exception to unintended implication that Amateur operators would intentionally interfere with utility systems).

¹⁶ See Comments of UTC at 9 (filed Jul. 29, 2002).

¹⁷ Reply Comments of W. Lee McVey, P.E. at 6 (filed Jul. 26, 2002); *See also* Comments of the ARRL, the National Association of Amateur Radio at 11 (filed Jul. 29,

UTC could refer to the PLC database to demonstrate that there are indeed many utilities that rely on PLC in the western U.S., but we defer to the California Independent System Operator, which will be filing reply comments in this proceeding to indicate its concerns with allocating the band to amateur operations on a secondary basis.¹⁸ Nor is this allocation proposed only for the western U.S.

Moreover, the importance and the potential impact of interference on PLC systems should not be discounted. As Pulsar Technologies notes, “These [protective relay] systems have relied on the use of power line carrier as the primary mode of high-speed communications for system protection for the past 60 to 70 years,” because PLC is in fact more reliable, as well as more cost-effective, than microwave and fiber systems.¹⁹ Nonetheless, some amateurs have displayed no compunction concerning avoiding interference to PLC

2002) (barely mentioning UTC’s interference concerns and only in regards to the 160-190 kHz band that the Commission properly declined to allocate for amateur operators.); *and* Comments of the Amateur Radio Research and Development Corporation (AMRAD) (pleading with the FCC that it adopt the 135.7-137.8 kHz allocation to salvage a pool of expertise in LF technology that is “declining within the U.S.” without considering whether this same dwindling pool of expertise could itself be capable of coordinating with PLC systems.)

¹⁸ Note that the California ISO is a not-for-profit public benefit corporation that is independent from the utility industry, ensuring reasonable wholesale costs of electricity for consumers and equal access for competitive electric utilities. The New York Independent System Operator has also filed comments in the proceeding, further demonstrating that the concern for the reliability of PLC systems is shared by independent public interest corporations, not just utilities. See Comments of New York Independent Systems Operator (“NY ISO”)(filed Jul. 29, 2002). See *also* Comments of Pinnacle West (filed Jul. 29, 2002) at 2 (stating that “we utilize PLC frequencies on 5,000 miles of transmission lines in the Western United States for transfer-trip line protection devices.”)

¹⁹ See Reply Comments of Pulsar Technologies, Inc. at 1 (filed Aug. 12, 2002).

systems, repeatedly citing amateur priority over unlicensed PLC systems as absolving them from any legal, if not social, obligation to do so.²⁰ Some have even gone so far as to suggest that interference to PLC systems is a “bogus argument against a Low Frequency amateur band.”²¹ Such disregard for the integrity of key systems underlines UTC’s concerns about sharing the band with amateurs.²²

Nor is it an answer to tell utilities to simply replace or retune their PLC systems.²³ As UTC and utility commenters have informed the Commission, this is no inexpensive or easy task.²⁴ Nor is it in the public interest to suggest that utilities and their electricity customers should incur this expense and inconvenience in order to accommodate a proposed allocation which even its most ardent advocates concede is only of vague experimental value.²⁵

²⁰ See Reply Comments of Philip E. Galasso at 2 (filed Aug. 12, 2002).

²¹ See Reply to Comments of Donald B. Chester at 3-4 (filed Aug. 12, 2002) (adding that requests by Part 15 interests for consideration in the current proceeding demonstrate a classic “give an inch, take a mile” attitude.)

²² See *also* Comments of IEEE/Power System Relaying Committee at 2 (filed Jul 26, 2002) (stating that IEEE/PSRC believes that the amateur community has the desire and wherewithal to use antennas of higher efficiency than the ARRL claims.)

²³ See Reply Comments of W. Lee McVey at 3-4 (filed Jul. 31, 2002) (stating that PLC is more often than not a back up, second or third level communications method, and that “if not, then it should be”).

²⁴ See Comments of IEEE/Power System Relaying Committee (filed Jul. 26, 2002) at 4 (explaining that “it can take close to 6 months to engineer and acquire equipment to make frequency changes at a cost of up to \$100,000 per line end.”) *and see* Reply Comments of IEEE/Power System Relaying Committee (filed Aug. 12, 2002) at 2 (comparing costs of fiber at \$80,000 per mile and microwave at \$500,000 per site with PLC at \$100,000 per line end).

²⁵ See Comments of AMRAD at 5 (filed Jul. 29, 2002) (generally stating that amateur radio operators do gain knowledge and skills in this important area of communications.)

It 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. The ARRL claims that the technical rules proposed by the FCC are “overly conservative” and the 135 kHz allocation by itself is “not sufficient” for amateurs. These sentiments are echoed by the few individual amateur operators that commented about the 135.7 – 137.8 kHz allocation. Moreover, AMRAD cites a “declining pool of expertise in LF technology.” UTC submits that the Commission consider the relative lack of interest expressed by amateurs in this band when weighing the relative interests in the allocation versus the risk to PLC systems.²⁶

IV. The Commission Should Adopt Stringent Technical Rules That Minimize the Risk of Interference to PLC Systems.

If the Commission decides to allocate the band to amateurs on a secondary basis, UTC echoes commenters that support the adoption of more stringent technical rules that more effectively reduce the probability that amateur operations would cause interference. As ONCOR explains, the proposed technical rules “do not adequately address the potential for interference to PLC systems,” because they do not set antenna size and design restrictions that might help to make amateur operations somewhat predictable.²⁷ In light of the

²⁶ UTC notes that this opinion has been echoed by many of its contacts at member utilities who are themselves amateur radio operators.

²⁷ See Comments of ONCOR at 4. See also 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.) and Comments of IEEE/Power System Relaying Committee at 2 (filed Jul. 26, 2002) (informing the FCC that amateur antennas in parallel to a transmission line will couple more energy, thus interference, into the transmission line and recommending that antenna length be restricted to less than ¼ wavelength, or 1650 feet on any given surface).

overwhelming importance of PLC systems to the general public interest, UTC recommends that the Commission retain the proposed power limits and supplement them with eligibility and antenna height and design limitations, as described in its comments.²⁸

V. CONCLUSION

WHEREFORE, UTC urges the Commission to protect the reliability of PLC systems, and to decline the proposal to adopt a secondary allocation for amateur operations in the 135.7-137.8 kHz band. In the alternative, the Commission should adopt stringent technical rules that minimize the risk of interference to PLC systems.

Respectfully submitted,

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²⁸ See Comments of UTC at 5-6 (filed Jul. 29, 2002). See also Comments of IEEE/Power Systems Relaying Committee at 2-3 (filed Jul. 26, 2002) (recommending that eligibility be restricted to Amateur Extra Class and that even then, there should be exam question related to LF operation to minimize the potential of unqualified amateurs interfering with PLC systems.)