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

In the Matter of	**)**	
	)	
Inquiry Regarding Broadband	**)**	**FCC Docket No. 03-104**
over Power Lines (BPL)	**)**	
	)	

Comments of Anne H. Prather
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Introduction

This year, between June 28 and 29, my husband—an Amateur Radio Operator—made 112 contacts spanning the entire US, and including 20 states. He accomplished this communications feat using a battery-run 5-watt transmitter and a very simple antenna. These contacts were "easy"—he didn't have to stay up all night or repeat himself. Communications was reliable and informative. My husband was participating in Amateur Radio Field Day—a yearly event designed to test emergency preparedness. This event—in which Amateur Radio stations work from remote locations using emergency power—highlights a wonderful and unique property of the HF spectrum. This spectrum contains the *only* frequencies capable of supporting reliable, infrastructure-independent long-distance communications. When earthquakes, tornadoes, hurricanes, or other disasters render conventional communications impossible, operators using HF equipment can step in to fill the gap. However, if conditions in the HF spectrum become unbearable because of ubiquitous interference, Amateur Radio operators will sell their equipment and leave the service. This wonderful, simple emergency communications network will disappear. And there is *nothing* that can replace it.

Discussion

The power companies see access broadband-over-power-lines (BLP) as an expedient, inexpensive way to provide ubiquitous high-speed Internet service. Their presentations portray a world in which people can plug into the Internet the same way they can plug into the wall. It's a laudable and appealing vision. As a user of high-speed Internet service, I can certainly appreciate the need for straightforward connectivity. However, it is not a good idea to place all our communications eggs in one high-tech basket.

I am not opposed to all BPL applications. The HomePlug system, for which equipment is available now, out-performs both 802.11(a) and 802.11(b), making it an appealing solution for in-home network connectivity. However, these HomePlug systems operate on frequencies between 4.5 and 21 MHz, the same frequency allocation proposed for access BPL. The European Technical Standards Institute

(ETSI), circumvented this problem by assigning access BPL to the lower portion of the HF spectrum and in-house BPL to the higher portion. However, no such assignment has been made in the US. Does the Commission propose to mandate that all current HomePlug devices cease operation on frequencies below 10 MHz, for example?

In the Utopian world portrayed by the power company videos, the laws of physics will be legislated so that the power lines cease to function as antennas for HF signals. I live in the real world, however. The laws of physics I learned in school dictate that, unless stringent measures are taken, the power lines which carry broadband Internet signals will, in fact radiate. According to the joint filing by the UPLC and the PLCA "no interference" was observed in market tests. Notably absent from that filing was any mention of rigorous random real-world market trials. I was unable to determine whether the "no interference" comment referred to interference to HomePlug, a table radio receiving FM, or broadcast television. Moreover, the sanitized tests described in the filing resemble a well-choreographed beauty pageant more than a rigorous attempt to quantify potential interference problems. This brand of ascertainment bias in which sample selection favors a particular experimental outcome would result in summary rejection by any respected, peer-reviewed journal. Ascertainment bias has no place in an NOI whose subject will impact both professional, academic and amateur spectrum users for years to come.

There are multiple methods available for providing ubiquitous broadband Internet connectivity. However, nothing can replace the communications characteristics of the HF radio spectrum. If we insist on proceeding with plans for access BPL, we *must* ensure that the unique communications capabilities of the HF spectrum are preserved.

Recommendations:

1. **Under no circumstances should Part 15 rules be liberalized.** At 60 mV/m (at 3 meters at 10 MHz) our permissible signal strength for unlicensed radiators in 10 dB above that of Germany, the next most liberally-regulated country. All the available literature concerning interference mitigation assumes a much lower signal strength from radiating power lines (as would be the case in Europe). Furthermore, access BPL has been successfully deployed in Germany under much more stringent rules. It would appear that the current rules are more than sufficient to allow deployment of a robust access-BPL system.

2. **The BPL industry should be required to provide the Commission with the results of rigorous, real-world tests conducted in randomly-chosen markets.** The industry should be required to demonstrate that they can, in fact, co-exist with current spectrum users before BPL is deployed on a large-scale basis.

3. **BPL service providers should be required to design networks that minimize unintentional radiation.** These protections include both the minimization of common-mode current and the implementation of appropriate frequency notching. Currently, the proposed frequencies for access BPL are designed to protect the AM and FM broadcast bands. This protection will need to be extended to include the Amateur Radio bands, public safety, aeronautical mobile, and decimeter radio astronomy frequencies.

4. **BPL providers should be required to maintain Interference Mitigation offices whose mission is to assure the protection of all incumbent spectrum users on a case-by-case basis.** The requirement for such offices will ensure an open and robust sharing of information which will allow incumbent users to work with the power companies to mitigate interference. Incumbent users should not be required to sign non-disclosure agreements in order to be able to assess their particular interference problem.

Conclusion

The implementation of all new communications technologies always involves a cost-to-benefit analysis. At a glance, the cost for BPL—the probable loss of the HF spectrum for wireless long-distance communication *and* radio astronomy—seems too high for the purported benefits of access BPL. To say that "the infrastructure for BPL already exists" is a massive oversimplification that ignores the potential harm to current HF spectrum users. Let the buyer beware. BPL seems expedient right now, but there is no guarantee that the performance will meet customer expectations once the system is actually deployed. Moreover, the legacy left by BPL will far outlast its usefulness as a viable communications technology.

Respectfully Submitted,
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