Comments Regarding Broadband through Power Lines
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Editors Note: Broadband transmission through electrical power lines (BPL) could become a critical issue, the increase of background noise could become detrimental to radio observations. In the 'News' section of this issue, an article outlines the specifics of BPL.

As a radio astronomer and an amateur radio operator I would like to express my concerns regarding the proposed widespread implementation of BPL technology.

1. I believe that the FCC has failed to meet its obligation to protect licensed services in the HF bands by allowing power companies to operate BPL technology on an experimental basis without defined and approved interference testing procedures. To rely on the power companies to apply their own testing standards appears to me a high risk approach to ensuring that they will not interfere with licensed services during this experimental development period.

2. Experiments involving BPL technology have shown an increase in the noise floor of 30 dB according to some published reports. If these reports are correct then this level of impact is absolutely unacceptable. The HF bands provide the only natural conduit on this planet for long-range global communications. A significant rise in the noise floor will render many HF communications services useless.

3. The spectrum from 2 to 80 MHz (the proposed BPL bandwidth)represents over 5 octaves of the electromagnetic spectrum. It is an important window on our universe for the radio astronomer, allowing the study of many emission phenomena that are unobservable at other frequencies. Any increase in the noise floor will be detrimental to these studies.

4. Communications over thousands of miles with low power transmitters, and small antennas, is routinely achieved by amateur radio operators. I can see no reason to believe that the digital racket produced by BPL will not propagate as efficiently over similar distances. Such detrimental effects cannot be assessed by measuring the emission 30 meters away from the power lines as has been suggested.

5. Power distribution systems in many parts of the country are notorious for the interference they currently generate due to arcing insulators and other poorly maintained fixtures. Diode junctions can develop at loose metallic joints and this diode action can produce harmonics of those RF signals present on the line. The 2-80 MHz spectrum of BPL could spread upward due to harmonic radiation - causing interference to such vital services as air to ground communications.

6. Amateur radio has proven to be a valuable communications resource during both natural and manmade disasters. In Hawaii, communications between the island of Kauai and the outside world was only possible for a time following hurricane Iniki, via amateur radio. Emergency communications services provided by amateurs and others using this portion of the spectrum may be severely degraded by BPL.

7. While I appreciate the importance of providing wideband Internet service to all interested users, I believe that the FCC must exercise extreme caution in what appears to be its rush to acceptance of BPL technology. Currently, telephone and cable companies are reaching more and more remote customers as they meet customer demand for enhanced Internet services. Using shielded transmission media they do so without interfering with licensed users of the electromagnetic spectrum. BPL has the potential to cause irreparable harm by transmitting wideband digital data over power distribution systems that will act like huge radiating antennas.

8. Comprehensive testing techniques must be developed before BPL deployment proceeds. The potential impacts of BPL on licensed services is not currently understood. I believe it is irresponsible to proceed with even experimental deployment of BPL technology prior to development of appropriate testing procedures.

9. If power companies are allowed to deploy BPL services then I believe that those companies must be held to rigid standards regarding emission and interference. This means the development of emission standards and enforcement by the FCC. Given current federal funding levels I have deep concerns that FCC involvement will end once the giant electric utilities have been given the green light to proceed with BPL. Enforcement will then mean only self policing by power companies that have no expertise in HF propagation, or in the areas of tracking down and fixing wideband HF interference sources. In summary, I am dismayed at what appears to be the FCC stance of technology cheerleader rather than acting first and foremost to protect the current users of the HF spectrum. I realize that technologies change with the times - and that financial considerations may dominate decision making -but this portion of the spectrum is unique and irreplaceable. BPL deployment must not proceed until the potential for interference is clearly understood and adequate methods to control and regulate its detrimental effects are in place.