Comments submitted to the Federal Communications Commission in the matter of Carrier Current Systems, including Broadband over Power Line Systems, ET Docket No.03-104, and Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems, ET Docket No. 04-37.

The Pikes Peak Radio Amateur Association (PPRAA) is the largest Amateur Radio association in the city of Colorado Springs, Colorado. Its 213 members include engineers, scientists, technicians, active duty and retired military, and many others from a variety of backgrounds. We are united in our concern for the Radio Frequency spectrum however, and the threat posed to it by the introduction of Access Broadband over Power Line (BPL) without adequate guidelines, restrictions and conditions. By a unanimous vote at the April meeting of the PPRAA, the membership authorized the Executive to make our apprehensions known to the FCC.

Chief among our concerns is the perceived bias towards BPL and its proponents as demonstrated by the FCC Chairman and his Commissioners. Their comments have sometimes made us wonder if they are not lobbyists for the BPL industry instead of public servants charged with managing and protecting an invaluable natural resource. The very tone of the Notice of Proposed Rule Making (NPRM) seems to indicate unabashed support for BPL. It claims that there is "significant disagreement among the commenting parties regarding the interference potential of Access BPL". In fact, all licensed users of the affected spectrum – shortwave broadcasters, aeronautical radio users, public service organizations, FEMA, NTIA and Amateur Radio operators to name a few – are unanimous in their concern that BPL has a strong potential to cause interference. Only the BPL equipment manufacturers and service providers deny that interference is possible – hardly an unbiased group! On behalf of all licensed users of the High Frequency (HF) and Very High Frequency (VHF) spectrum, we urge Chairman Powell and the Commissioners to exercise objectivity in their duties with respect to BPL.

Claims by the BPL industry that it does not cause interference are patently untrue. Trials and studies conducted by both governmental and private agencies in the USA, Japan, United Kingdom, Austria and other countries have demonstrated without doubt that BPL does indeed interfere with licensed users of the affected spectrum. In fact, Austria terminated a pilot BPL trial because the Ministry of Traffic determined that interference in the HF spectrum could not be reduced to acceptable levels. Finland has declined to authorize BPL until interference and security problems can be resolved. For the BPL industry to suggest that power lines will not radiate in the HF and VHF spectrum ignores the realities of physics. The NTIA's report on BPL states that "inherently unbalanced systems such as power lines… will not act as true balanced transmission lines". Power lines can and do make efficient antennas in this part of the electromagnetic spectrum.

We are also concerned by assertions by both the BPL industry and the FCC that BPL will bring broadband services to rural parts of the country. Anyone who has examined the economics of the situation will realize that this is a false promise. BPL is not a low-cost option, and will likely not be able to succeed outside heavily populated areas. Claims to the otherwise are misleading and unfair to rural America.

We are encouraged that the FCC has recognized that Access BPL service providers will be responsible to resolve interference, but ask how this will be enforced. Power companies already have a poor record of resolving power line interference caused by electrostatic discharge. Why should we believe that they would be more responsive and effective in solving problems in a field in which they have little expertise and experience? Indeed, the statement that Amateur Radio operators must currently "orient their antennas to minimize the reception of emissions from nearby power lines" is an admission that power companies are already unable to adequately maintain existing systems.

While the NPRM states that "operations must cease if harmful interference to licensed services is caused", who determines what is and is not "harmful" interference? What is the definition of interference – the FCC currently has several. What proof must licensed users provide that they are being interfered with? Will this require them to obtain expensive test equipment, and if so, who will pay for that? Will the FCC have to come to the site to take measurements? What is the time frame for the BPL provider to cease interfering with the licensed service? A process that takes weeks or months will be of little help to the Amateur Radio operator trying to copy a distress call from a sailboat in the South Pacific.

The NPRM states that "Given that there is a significant investment in the deployment of the service… Access BPL providers would have a strong incentive to exercise the utmost caution in installing their systems to avoid harmful interference and ensure uninterrupted service to their customers". While in a perfect world this might be true, in reality, the more a company has invested in BPL, the less likely it will be inclined to correct faults that might interfere with its service. The utility companies have had a "significant investment" in the power grid for years, but it often takes months if not years for action to be taken in power line interference cases, even with the intervention of the FCC.

An example will better illustrate this point. If a BPL company has 10,000 customers, each paying $30.00 a month, then this represents $300,000.00 of revenue per month, or 3.6 million dollars a year. This is a lot of incentive for the company to drag its feet on any issue that might inconvenience its customers. Already, the Progress Energy Corporation in Raleigh has indicated that it believes itself to be in compliance with the rules, and refuses to mitigate interference to Amateur Radio operators. This has included harmful interference to mobile stations located several hundred yards from BPL sources, hardly a promising start.

The NPRM does not address the issue of interference to BPL systems at all. While Part 15 requires that unlicensed users must accept interference caused by licensed users, we are not convinced that this is adequate protection. Given that the general population is unaware of the provisions of Part 15, and the unfortunate reality that the justice system is technically uninformed, we are deeply concerned that unlicensed users will sue licensed users of the affected spectrum. Even if the licensed user eventually prevails – and that is by no means a foregone conclusion in view of the sometimes-incomprehensible decisions rendered daily by courts in America – who will compensate him/her for legal fees, stress,

inconvenience, and any losses caused by having to shut down temporarily? This is a very serious omission in the NPRM, and must be addressed.

While public service, aeronautical and maritime communication services are supposed to be designed such that mobile and portable units receive signal levels significantly above the noise floor, this is often not the case. Reception in built up areas, for example, is often degraded by signal blockage by buildings. Interference by BPL systems, much more likely in congested areas, will only exacerbate the problem. The NTIA report on BPL reported "significant increases in the noise floor due to interference", and "a ten-fold increase in total receiver noise power" due to BPL. The effect of BPL on portable and mobile stations involved in emergency situations must therefore be evaluated. The Austrian Red Cross reported that during an exercise in May 2003, communications were "massively disturbed" by BPL, with interference levels "exceeding the limit by a factor of 10,000". In light of this, the impact of BPL interference to emergency services such as ARES (Amateur Radio Emergency Services), RACES (Radio Amateur Civil Emergency Service) and MARS (Military Affiliate Radio System) must be fully investigated.

We welcome the Commission's approach to "proceed cautiously" with respect to emission levels, but must point out that current emission levels may already be too high. The FCC limits on electric field strength of unintentional radiators are significantly above those of European nations – almost 80 dB higher than those of the United Kingdom and NATO. As well, the methods used by the FCC to measure field intensity are deficient. The NTIA has determined that "current ad hoc measurement techniques used in Part 15 compliance tests may significantly underestimate the peak field strength generated by BPL systems". The current measurement guidelines must therefore serve as a starting point only. More accurate methods of measuring field intensity must be found, and we caution the Commission not to resist any tightening of emission limits that might become necessary.

The NPRM does not consider the possibility of sky wave propagation of BPL signals, and of the overall impact of many BPL sources. Amateur Radio operators routinely communicate over thousands of miles using power levels specified in Part 15. A British Broadcasting Corporation (BBC) study concluded that the cumulative effect of sky wave propagation of BPL systems on aircraft and distant ground-based receivers "may not be negligible", and recommends further study. The NTIA has observed that "aggregate emissions from a composite system are expected to be above those generated by a single device". Even without ionospheric propagation, aircraft receivers may face serious interference. The NTIA report indicates that aircraft at an altitude of 6 to 12 km may experience interference at a range of more than 50 km from the source.

We recommend that the BPL database be centralized to permit easy access and searching by the general public. An organization independent of the BPL industry but funded by it must be set up to maintain this database. It would be subject to FCC control.

The NPRM contains no detailed conditions for the "adaptive interference mitigation techniques". The vague language in the NPRM provides huge opportunities for abuse by

the BPL providers. If the BPL industry is so confident that it will not cause interference, then it should have no objections to specific requirements to mitigate interference. As licensed users in the affected spectrum, we insist that the process be available 24/7, and performed immediately upon receipt of a complaint of interference. Even then, mobile and aeronautical stations will not be able to take advantage of these techniques, so further testing of interference to these systems must be performed and emission levels strictly controlled as necessitated by the tests.

Currently deployed BPL systems should be brought into compliance with the regulations in the shortest time possible.

We insist that small entities be required to meet the same standards and requirements as larger BPL interests. As pointed out in Appendix A to the NPRM, in 1992 there were 275,801 small entities in the USA. This must encompass a large percentage of the nation's population. Easing the standards for small entities would adversely affect a great number of licensed users of the affected spectrum.

We insist that BPL systems must be tested for compliance with the rules by an independent laboratory prior to initiation of service. This testing must include not just the individual components, but also the overall system as it would be deployed in service.

To ensure that BPL subscribers are aware of the possibility of interference to the system by licensed users, we insist that BPL marketers must be required to give clear notice to consumers that licensed radio services have priority, and that the delivery of BPL services therefore cannot be guaranteed. Receipt of this notice must be acknowledged in writing prior to the signing of any contract for BPL service.

Finally, we insist that there be severe penalties for non-compliance with these rules.

While we would have preferred that the FCC had banned BPL altogether as an unacceptable threat to a precious natural resource, we recognize the requirement for widespread broadband access throughout the nation. We do not believe that BPL will fill that requirement in the rural areas, but realize that the FCC is reluctant to pick winners and losers. The proposed conditions as outlined in the NPRM are a mildly positive first step, but only a first step – much "fleshing out" remains to be done. Be advised that the members of the Pikes Peak Radio Amateur Association remain resolute in their determination to prevent pollution of the HF and low VHF spectrum by BPL systems.

Alphonse Penney
VO1NO / W0
President

Dennis Major
N0ABC
Vice-President

Joanie VerDuft
KC0GMI
Secretary

John Hasling
K0AAI
Treasurer