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Regarding Docket No. 04-37 Access BPL

The comments which follow are from the perspective of being an Amateur Radio Licensee.

In the following comments, portions of the applicable numbered paragraphs have often excerpted, with comments following the italicized portions of the paragraph.

5. Most Access BPL systems today operate on frequencies up to 50 MHz with very low power signals spread over a broad range of frequencies. ...

Perhaps the BPL proponents should consider using much higher frequencies, for example 2 GHz range, as the chances of harmful interference to incumbent users may well be reduced. It is my understanding that such system are available, which also use the existing Power Lines as a distribution means.

While it may be true that each of the individual signals being transmitted on the Power Lines is a low power signal, there is well justified concern that each of these signals will aggregate and result in raising the Noise Floor of the HF and Low VHF bands being used by the BPL system. ANY such degradation of these bands would cause great harm to Licensed users and listeners on these bands. It is easy to see that once an investment has been made by companies to implement BPL in an area, that they might well refuse to even acknowledge that any problems noted were due to the BPL system, or acknowledge that it WAS harmful, or deactivate any of this equipment.

6. Carrier current devices, including BPL equipment, are subject to the Commission's existing Part 15 rules for low-power, unlicensed equipment that operates on a non-interference basis. ...

It is very important that BPL NOT BE PERMITTED TO INTERFERE WITH EXISTING USERS OF THE HF BANDS. This should apply to licensed users as well as to listeners. Listeners are often the legitimate other end of a Licensed use, for example a citizen listening to Short Wave Foreign Broadcasts. At times these signals are weak (for example, when listening to broadcasts beamed to another continent, but with important content, or in a desired language) and easily harmfully interfered with. Many communication paths for Radio Amateurs deal with very weak signals. It is essential that the judgment of what is harmful interference remain with the recipient of the interference, not the generator of the interference.

6 . ...*In the Inquiry, the Commission encouraged continued deployment of Access BPL systems that comply with the existing rules. ...*

Yes, it is very important to test BPL in the real world, but we need to carefully control the number of sites where BPL is being tested. It would be unfortunate if a large number of Power Companies and their partners invested heavily in this approach early, and then were very reluctant to make required changes should interference prove the be harmful, thus necessitating many changes to many systems.

7. *... The Commission also asked for comments on the probable interference environment and propagation patterns of BPL and the mitigation techniques used by BPL to avoid interference*

There are legitimate questions regarding the propagation of these signals over distances, and their effect upon the Noise Floor in the HF spectrum. A careful, analytical scientific approach to test this new use of our HF spectrum is indeed a very good idea. Phased rollout of this approach is very important, as it is obvious that very little is known about the cumulative effects of these signals on existing Licensed Users. Objective analysis of any interference is important.

Regarding equipment authorization/testing:

The BPL equipment must be tested to some known standards, both as a design certification, as well as production line testing of each unit made to certify compliance with the standards. Each of these devices needs to be permanently marked as to the manufacturer, part number, and standards to which it is certified.

8. Regarding approaches to test the interference potential of BPL:

The test system must closely conform to the existing antenna systems of the current licensed users in these bands. For Radio Amateurs, horizontal antennas at typical heights of 50 to 90 feet or so should be used for the receive antenna.. In the case of directional receive antennas, the antenna should be directed to and parallel with the subject power lines carrying the BPL signals. The power level, and repetition rate of the BPL signals must be the maximum ever possible within the system, and the BPL system under test must represent the absolute maximum density of BPL signal producing devices exchanging the absolute maximum density of data, such that the absolute worst-case loading on the system is being represented. For the 75/80 Meter and 160 Meter bands, the receive antennas should be parallel to the subject Power Lines at a height of 40 to 50 feet. If vertical antennas represent the worst-case signal reception from the BPL system, then measurements using vertical antennas should also be made.

11. *... APT urges that the FCC use its full authority under Section 706 to remove barriers and create incentives for industry's rapid deployment of advanced services, such as BPL*

Many observers demand that the FCC rise to its regulatory mandate, protecting current Licensed and unlicensed users who have made very large investments in facilities, equipment and training to use the HF bands. The FCC must be skeptical of the rosy images painted by the proponents of BPL. These companies have nothing meaningful invested in the current HF and VHF spectrum. The proposal is to use Part 15 of the regulations to avoid the scrutiny of licensing this technology.

First, there needs to be much more testing of this approach, under the scrutiny of the current licensed users. It is alarming to see the FCC in a cheerleading position for BPL. It appears that Part 15 was primarily designed for low bandwidth, low power, low repetition rate (low duty cycle) uses -- for example sending commands via carrier current systems. The proposed BPL systems are a very large network of low power emitters which, especially in aggregate, can produce harmful interference. The FCC needs to proceed very carefully, to avoid harming existing licensed users. The role of the FCC is REGULATION, not PROMOTION of unproven and untested technologies.

12. *... BPL proponents also state that Access BPL technology will offer benefits to improve the provision of electric power service and advance homeland security ...*

Many things are touted as being an improvement in Homeland Security. Sometimes it appears that this label is simply an attempt to justify a bad idea. It is a bad idea to allow control of Utility functions via the Power Lines. This can easily make these control functions open to hackers or others with unlawful motives. Time and time again we have seen that most systems that are exposed to the internet fall victim to security flaws. Our power grid is far too important to allow vital control functions via BPL signals. As a matter of Homeland Security, BPL, or any other control of the power grid should NOT be permitted over any power lines.

Furthermore, it has been reported numerous times that these BPL systems are susceptible to the impacts of Licensed users using the HF spectrum for their legitimate purpose. Such a situation could cause Power Grid malfunction if control signals were sent over the Grid. This very argument was used when Power Utilities blocked the use of VLF frequencies by Radio Amateurs for communication.

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21. ...A number of BPL proponents argue that the technical assumptions used by opponents of Access BPL to predict interference are incorrect.

Careful and objective testing among with a careful phased rollout, if warranted, is the correct approach. The impatience in implementing this unproven approach is a concern to current users. Initial tests by the ARRL have shown very harmful interference indeed. Objective testing and analysis of the data is required before implementation of BPL in more than several locations.

22. Current Technologies submits that its data indicate that BPL emissions drop off very rapidly away ...

Again, careful, objective testing is the way to determine if this is true or not. What is the reason for proposed haste. Important current uses of the spectrum are at stake. Hasty decisions are most often wrong.

23. Current Technologies states that aggregation of BPL signals is unlikely since in its system only two BPL devices in the same area can operate simultaneously ...

This may be true. It may be untrue. However when viewed over a large area, signals received by an Amateur Radio antenna could easily include one hundred such emitters, or 1000 or more than that. What will be the strength of the accumulated signals ? Why would any reasonable regulatory agency, like the FCC, take the information of those promoting a new and unproven technology as opposed to careful and objective testing ? There seems to be a difference of opinion. The ARRL performed field tests in several BPL sites and found profound HARMFUL interference. BPL proponents say that there is no interference potential or interference complaints. Perhaps there is no mechanism for a harmed party to file a meaningful complaint. Are the proponents even listening for any complaints, or are they too busy promoting BPL ??

30. We recognize the significant concerns of existing radio users regarding the potential for harmful interference from Access BPL operations. ...

The crucial word has long been "harmful" It is important that what is harmful remain with the party being interfered with and not with the party generating the interference. If the BPL proponents are so certain that the interference potential is quite low, then defining any interference which limits, abridges or compromises communication of licensed users or even casual listeners should be no problem at all, as there will be no complaint if there is no

interference. Currently, part 15 devices do cause harmful interference. Of ten these devices are impossible to locate. There needs to be a straightforward way of identifying BPL emission down to the exact problem causing component. Perhaps some unique ID code could be sent by each component. A data base of equipment type and exact location must be maintained by the utility company operating the BPL system in an area. This data must be freely available to spectrum users in an area. If the utilities are unwilling to make this information available, then the system cannot be installed or used. There must me a Performance standard for updating and maintaining the current BPL equipment information. Data must be current within a few days, not longer than one week. This current and freely available information would make it much easier to resolve complaints of interference. Further, there must be Performance Standards on defining the exact (very simple) system of filing BPL interference complaints, and Standards on the rapid resolution of each complaint.

… , we note that hundreds of kinds of unlicensed devices are successfully operating under the current Part 15 limits without causing harmful interference to licensed operations. Furthermore, all unlicensed devices operating under Part 15 are subject to the condition that they not cause harmful interference and that they cease operation if they do cause such interference.

Many Radio Amateurs experience daily, profoundly harmful interference from part 15 devices. Power Line noise, touch lamp dimmers and switching power supplies appear to be the most common causes of this interference. The sources are difficult to locate, and once located the operator of the device is often reluctant to work to eliminate the problem. My personal experience with the very Power Utility which may bring BPL to our area had refused to do anything meaningful for a period of 18 months regarding very harmful Power Line Noise. Their representatives said that the noise that was harming my communication was not there, and if it was there it was not from their equipment. This was a lie.

If BPL is permitted to proceed, it is essential that there be a method of identifying the source of the interference and quickly stopping any and all harmful emissions.

Regarding the statement that the BPL equipment uses low power signals and most Licensed users use much higher power misses the point. Most licensed users who broadcast to unlicensed users or in the case of Radio Amateurs, the power levels at the receive end of the path are often infinitesimally low. This is what many Radio Amateurs have been saying all along. If the proponents believe that this power level difference argument is meaningful, then they misunderstand the entire point of why these many low power BPL emitters might combine to harm communications.

*34. … In considering this interference potential, we note that ARRL acknowledges that noise from power lines, absent any Access BPL signals, already presents a significant problem for amateur communications.*1*[1] We therefore would expect that, in practice, many amateurs already orient their antennas to minimize the reception of emissions from nearby electric power lines.*

YES ! Power Line Noise is a terrible problem. And, the very Power Companies that have been ignoring my Power Line noise problems (They have fixed 3 of the 47 intermittently-noisy poles in my area in the past 3 years) This Line Noise IS VERY HARMFUL, but for the first 18 months they said that there was no noise, and if there was any noise it was not from them. This is

the common approach that Power Companies use to resolve complaints of very HARMFUL interference. Delay and ignore and delay some more.

To expect any different behavior regarding harmful BPL interference by the power companies that implement it is to lie to oneself. This is why many of the current users of the HF spectrum are so skeptical regarding the possible future interference mitigation actions taken by these same Power Companies. We simply have decades of real experience with these companies. By experience, they seem to try to delay any mitigation, or completely ignore it or claim that it does not exist.

Regarding Amateurs reorienting their antennas: Usually this reorientation is not possible, as communication is along a path which supports the propagation. This is not under the control of the Amateurs at either end. Here, frequently the noise is at such a high level that radio communication along the path that supports propagation is not possible, as the noise exceeds the signal levels by far. Here, Line Noise propagates from many power poles. Each imparts unacceptable noise levels from so many different directions that there is not any direction at all that allows working any but the exceedingly strong stations.

The local power utility has been astonishingly dismissive and uncooperative in resolving valid complaints of very harmful interference. Over the past three years the utility has fixed 3 poles, but 44 new sources have arisen. Any one pole may well be intermittent, but the sum of the noise renders radio communication impossible for many hours of many days per month. Very quickly we are getting behind on fixing these. I expect NO better performance at mitigating BPL noise. Please do not listen to what they say about capabilities. Watch what they do. Action speaks.

The FCC must require Performance Standards in quickly mitigating BPL noise complaints

35. Regarding the disagreement with the ARRL weather the BPL accessories are point sources and weather the power lines are antennas:

Well, testing will resolve this if the analysis is objective.

Here, it is obvious that the line noise generators propagate by some means. Many propagate appreciable distances.

Further, while in the wilderness backpacking, it is quite possible to hear street light starters on 40 and 80 meters, using a dipole receive antenna, at a distance of 30 or more miles. These starters generate signals that exceed the levels of 80-90% of the other signals on these bands. These starters might generate power levels in excess of the proposed BPL transmitters/emitters, but it does demonstrate propagation over many miles by using power lines as the transmitting antenna occurs every day.

38. Notwithstanding compliance with the Part 15 emission limits, we wish to emphasize that Access BPL would also operate under our Part 15 non-interference conditions. ...

Again, it is exceedingly important that the judgment of what is harmful remain with the party being interfered with, not the generator of the interference. In numerous other countries, BPL has been banned because it DOES CAUSE HARMFUL INTERFERENCE. The proposed BPL system may be a bit different here, especially with the ability to disable transmission on discrete

frequency bands, but there must be a willingness on the part of the Utility to do any and all things necessary to stop all harmful interference, quickly. Performance Standards must be demanded by the FCC.

45. In addition, we specifically solicit comments on the height of receive antennas used for radiated emissions measurements for Access BPL systems operating on overhead power lines and on the possible use of correction factors to account for antenna height.

Recommend that the receiving antenna mimic the antennas used by the respective licensed services. For example, for Radio Amateurs, a typical outdoor horizontal antenna at typical height as used by many Amateurs. Perhaps the ARRL should be the advisory group chartered regarding this height and type of antenna question. Other current licensed users of the HF spectrum should be those dictating the parameters of the receive antennas for their situations.

Many Radio Amateurs have made very large investments in station structures and equipment. Amateurs perform vital Homeland Security communication functions, often via mobile stations. It would be obscene to pollute the existing HF and low VHF environment with some poorly controlled scheme of questionable merit for some short term (possible) profit motive. The marketplace will determine the best approach for broadband communication. The primary responsibility of the FCC is objective regulation. It appears perilous for the Commission to promote several company's approach to any technology.

The current power levels described in Part 15 regulations may be too high, but certainly NOT too low.

Great care must be taken in the roll out of this technology. A phased rollout is recommended with objective, and reviewed testing along the way. These things are very difficult to roll back.

Performance Standards must be required by the FCC of the Utility companies defining rapid mitigation of interference complaints.

As a Licensed Amateur Radio operator, I look to the ARRL to represent my best interests, particularly regarding the measurement approaches for radiated and conducted emissions from BPL devices.

Thank you for asking for input on this important issue.

Vic Bull