

Surrey Amateur Radio Club  
12160 Boundary Drive South  
Surrey, BC V3X 2B7  
email: ve7jbb@rac.ca

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Director General,  
Spectrum Engineering Branch  
Industry Canada,  
300 Slater Street,  
Ottawa, ON K1A 0C8

**Subject: Canada Gazette Notice (SMSE-005-05)  
Consultation Paper on  
Broadband over Power Line (BPL) Communication Systems**

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Dear Sir or Madam:

### **Introductory Comments**

**The Surrey Amateur Radio Club (SARC)**, established in 1975 and currently representing 24 licensed radio amateurs in the Fraser Valley area of British Columbia, is concerned that Industry Canada's (IC's) decisions on the matter of broadband-over-powerline (BPL) will deleteriously affect the ability of authorized radio users to communicate on the HF and VHF radio frequencies.

We are dismayed to observe that IC has apparently already made the decision to approve BPL (as stated on page 1 of SMSE-005-05):

“... the Department intends to take steps to facilitate the deployment of BPL technology in Canada while ensuring the protection of authorized radiocommunication services”.

IC's pre-determination is most alarming as the deployment of BPL meeting the proposed standards *will not protect* these services, as demonstrated by numerous tests of BPL installations around the world. BPL is a flawed technology which, as a result of its inherent characteristics, is incompatible with established, licensed radio users.

*The answer to BPL interference is not to legitimize it by making the standards sufficiently lenient, as appears to be the intention of IC.*

The *Radiocommunication Act* says the following ....

"harmful interference" means an adverse effect of electromagnetic energy from any emission, radiation or induction that

(a) endangers the use or functioning of a safety-related radiocommunication system, or

(b) significantly degrades or obstructs, or repeatedly interrupts, the use or functioning of radio apparatus or radio-sensitive equipment;

"interference-causing equipment" means any device, machinery or equipment, other than radio apparatus, that causes or is capable of causing interference to radiocommunication;

Section 4.(3) No person shall manufacture, import, distribute, lease, offer for sale or sell any radio apparatus, interference-causing equipment or radio-sensitive equipment for which technical standards have been established under paragraph 6(1)(a), unless the apparatus or equipment complies with those standards.

Section 5.(1): (1) [The Minister may] make determinations as to the existence of harmful interference and issue orders to persons in possession or control of radio apparatus, interference-causing equipment or radio-sensitive equipment that the Minister determines to be responsible for the harmful interference to cease or modify operation of the apparatus or equipment until such time as it can be operated without causing or being affected by harmful interference;

Section 9.(1)(b) [No person shall] without lawful excuse, interfere with or obstruct any radiocommunication;

The proposed adoption of BPL would appear to be in direct contravention of Section 9.(1)(b).

Since BPL is supposed to be transmitted by wires and not by the medium of radio waves, one could legitimately question why BPL standards are being considered by IC under the *Radiocommunication Act* rather than under the *Telecommunications Act*. The answer to this question is telling: *BPL radiates in the radio spectrum as an unavoidable consequence of its method of transmission.*

Internet accessibility within urban and rural centres is already being provided by as many as three alternative methods: DSL, cable and wireless broadband. Fibre optics systems are also becoming available. None of these methods is disruptive to HF and VHF radio. BPL represents yet another alternative, however, its widespread deployment will make many radio frequencies unusable for a wide variety of legitimate users, including the HF

portion of the radio spectrum which is the *only segment* suitable for world-wide communication.

It is our firm belief that the introduction of BPL compliant with the proposed emission limits will almost certainly create harmful interference to legitimate users of the HF and VHF radio spectrum. This cannot be permitted, in accordance with Section 9.1(b) of the *Radiocommunication Act*.

Our specific comments below in response to **SMSE-005-05** reflect the numbering system used therein:

## **2.0 Background**

Page 1 and 2 of the Consultation Paper states that “there have been a number of BPL trials in Canada where the Department has performed preliminary analyses on BPL emissions”.

What are the results of these tests? Have they met the proposed standards? It would seem the answer would be critical to any future determinations by IC. We are concerned that the data have not been provided within SMSE-005-05 perhaps because they are not favourable to IC’s decision to deploy BPL.

### **3.2.1 Access BPL**

The proposed definition of Access BPL as ...

A carrier current system installed and operated on an electric utility service as an unintentional radiator that sends radio frequency energy on frequencies between 1.705 and 80 MHz over medium-voltage lines or high-voltage lines to provide broadband communications ...”

is inappropriate in our opinion, as it would recognize, and as a consequence, legitimize the *unintentional radiation* inherent to such systems. In our opinion, the phrase “as an unintentional radiator” must be deleted so that it cannot be used as a legal defense against disruptive levels of RF radiation.

The same comment applies to the proposed definition of “In-house BPL”.

## **6.0 Discussion and Proposals**

Regarding IC’s role in the deployment and regulation of BPL systems in general, IC has the obligation to ensure that radio systems are functional during times of local, national and international emergencies. During major disasters, amateur radio using MF, HF and VHF networks operating on emergency power may be the only communication service available. BPL systems, in their present and proposed form, can be expected to interfere with radio operations.

## **6.1 Equipment Standard and Approval Process**

It is essential that the installed system does not create harmful interference to other licensed or authorized users of the spectrum. However, power-lines are not designed for efficient transfer of broad-band signals, and trials throughout the world have proven that the BPL system will create such interference. In addition, BPL systems can be expected to act as receiving antennas and their reception of strong radio signals may disrupt Internet and data services. The public will not accept this disruption even though the fault lies with the fundamental inadequacies of the BPL systems and not the transmitting station. Nor will the public later be sympathetic to shutdown of large portions of the BPL system when that is the only corrective action that will eliminate interference.

## **6.2 Prospective Technical Requirements**

### **6.2 (a) Emission Limits**

IC proposed emission limits for BPL systems of field strength ( $30 \mu\text{V/m}$  at 30 m for HF, and  $90 \mu\text{V/m}$  at 10 m for VHF) are excessive and will create harmful interference to signals that are being received by radio operators adjacent to BPL-carrying power lines. In order to avoid interference, the emission limits should be at least two orders of magnitude lower, or  $0.3 \mu\text{V/m}$  at 30 m.

### **6.2 (b) Interference Mitigation Requirements for Access BPL Systems**

IC is proposing that Access BPL equipment/systems incorporate interference mitigation techniques to minimize the potential for interference to radio communication users including remote controllable shut-down features, remote power reduction and notch filtering and/or frequency avoidance.

The radio spectrum between 3 and 80 MHz contains so many users, that notching would have to be carried out across the entire spectrum in order to avoid these users. In short, the proposed measures are not considered to be realistic solutions to what is a fundamental characteristic of the technology. Furthermore poor connections and leakages within power transmission lines can be expected to generate harmonics of the original signals; therefore, it may not be sufficient to restrict BPL to specific frequency bands.

It is our understanding that some forms of BPL are less disruptive than others. For example, the ARRL has found that the worst offender is distribution of BPL via medium voltage lines, because of the high levels required. Introduction of the BPL signal to the low voltage side of the transformers by way of fibre or wireless has proven to be a superior delivery method. This is a feature that, naturally, must be designed into the system and is not a mitigation technique.

### **6.3 (a) Prohibited Frequency Bands**

IC is proposing to prohibit Access BPL systems from operating in specific frequency bands including bands used for aeronautical services, public safety and national defense in order to ensure the protection of safety-related services.

In times of national or local emergencies, amateur radio is a critical community resource. BPL must particularly avoid the HF spectrum below 30 MHz which is uniquely suitable for world-wide radio communication.

### **6.3 (c) Interference Resolution**

All interference complaints should be investigated as complaints under the *Radiocommunication Act*. We strongly believe that IC (and not the BPL operator) should monitor interference complaints and enforce resolution. This intended enforcement role of the federal government (presumably IC) is clearly enunciated in the *Radiocommunication Act*. There should be a statutory time-limits for both the response to a notification of interference and for defined enforcement action to resolve the interference. These regulatory actions should be recorded on a publicly-accessible web database maintained by IC. Without active IC regulatory involvement and enforcement, there will be little incentive for the BPL operator to resolve the matter in a timely fashion.

Respectfully submitted



On behalf of Surrey Amateur Radio Club  
President: Anton James VE7SSD  
Vice President: Heinz Buhrig VA7AQ  
Secretary: Bob Buckland VE7FWZ  
Treasurer: John Brodie VE7JBB