

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

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In the Matter of)	
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Inquiry Regarding Carrier Current Systems)	ET Docket No. <u>03-104</u>
Including Broadband over Power Line)	
Systems)	
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In the Matter of Amendment of Part 15)	ET Docket No. <u>04-37</u>
Regarding New Requirements and)	
Measurement Guidelines for Access)	
Broadband Over Powerline Systems)	
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By W. Lee McVey, P.E.)	
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To: The Commission)	
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**REPLY TO THE REPLY COMMENTS OF THE CALIFORNIA PUBLIC
UTILITIES COMMISSION AND THE PEOPLE OF THE STATE OF
CALIFORNIA**

Purpose and Introduction

1. The following are my comments in response to the Reply Comments of the California Public Utilities Commission (CPUC) and the People of the State of California filed June 2, 2004, in the above two Dockets.

2. I would like to thank the CPUC for having responded to these Dockets and would

hope that other state utility commissions will respond as well. State regulation of public electric utilities is an absolute necessity to ensure that the public health and safety are not compromised by the operation of high voltage electric systems.

Specific Comments and Remarks

3. The CPUC was, unfortunately, silent with respect to public health and safety. However, the CPUC expressed overall caution with BPL deployment since the scope of BPL impact has yet to be properly determined: *“Since BPL is very much in its infancy, we also believe that adequate testing and unbiased field trials are necessary in order to determine and identify the scope of the potential interference that BPL may have on other services, including voice, radio, DSL and cable modem broadband services.”*¹

4. Evaluations of interference should also include the effect of noise generated by power electronics-controlled systems such as variable frequency drives and uninterruptible power systems as these systems may not only themselves be affected by BPL, but may be the source of aggravated noise since the inherent lumped inductance of distribution transformers will be bypassed, when BPL transformer bypass couplers are employed. The lumped inductance of transformers tends to block high-order harmonic noise from being passed through them back onto the utility system and then to other customers through other transformers similarly equipped with BPL couplers.

5. Above and beyond interference, there are potential safety concerns with BPL

¹ CPUC Reply Comments at Section I., P.2

system hardware that clearly fall within the jurisdiction of state public utility commissions. Namely, the safe installation, maintenance and operation of such devices so that they will not endanger directly or indirectly the lives and property of customers connected to electric utility systems or the electric utility workers maintaining or operating those systems.

6. Electric utility equipment and construction methods must meet either state-created electrical safety standards (CPUC General Orders 95 and 128 in the case of California) or those of other states or the National Electric Safety Code (ANSI C-2). Any insulated components installed on an electric utility system, including BPL couplers, must meet the Basic Insulation Level (BIL) for the particular system voltage to which they are connected. Typically, for 15kV class systems, 110kV BIL, and for 25kV systems, 125kV BIL. In order to meet this requirement, equipment must be subjected to transient testing at these voltages with no failure or flashover to ground.

7. Since most BPL concepts employ RF couplers that will be installed from the high voltage side of distribution transformers to the low voltage side, this is of prime importance in that a failure of a BPL device may directly apply the high voltage to the customer's low voltage service, possibly resulting in serious property damage, fire, or injury from electrical shock. This damage may occur in spite of surge arrester over voltage protection on customer equipment due to the very high energy levels involved.

8. Also, an important part of BPL device installation will be to not restrict the maintenance space surrounding distribution transformers or equipment; nor the required minimum clearance distances from cross arms, poles, metal cabinet surfaces, and other

hardware. The clearance distances are necessary to meet not only device BIL, but to allow safe maintenance and operation of utility equipment by qualified personnel.

9. The CPUC clearly does not understand how BPL will be applied to electric utility distribution systems, or it would not have made the following suggested claim: *“(BPL) may assist in the location of short circuits and may provide broadband access to rural and isolated areas where broadband services do not exist. We also note that BPL may allow power companies to more effectively manage and control their power distribution systems.”*²

10. BPL, in and of itself, is not a satisfactory means of electric utility system control. While it might be useful for obtaining routine customer information and normal system conditions, it should not be depended upon to manage or control electric utility systems. This is due to the fact that the very paths carrying the BPL signal will be the three or fewer normally-energized high voltage conductors. Operations for control and management must be capable of being made not only when the systems are in normal operation, but during electrical outages as well: When the power is off, due to an unplanned outage like those caused by component failure, weather, or vehicular accidents. Or, similarly, for a planned shut down for maintenance or construction purposes. Either will result in sections of system being disconnected and no BPL signal. In order to assist in fault location, a communication path must be available so that location information can be sent and interpreted. With the BPL path broken by overcurrent protective devices such as fuses or circuit breakers, or by switching, the

² CPUC Reply Comments at Section IV. P5

information cannot be sent to utility control operators and must be obtained by visual observation.

11. In its conclusions, the CPUC offers a laudable recommendation for the Commission to follow: *“(The)...FCC should ensure that adequate testing is performed and industry standards are developed before any deployment takes place. In so doing, the FCC must also not preclude state commissions from protecting the rights and welfare of current telecommunications and electric utility customers.”*³

12. The FCC should include language in its NPRM requiring that BPL equipment, and its construction, maintenance and operation methods comply with the requirements of state regulatory authorities and/or the National Electric Safety Code, where applicable, when such systems are attached to energized electric utility systems.

13. By its seemingly unqualified endorsement and cheerleading for BPL installations, the Commission has invited federal pre-emption claims from state-enforced electrical safety standards by BPL equipment manufacturers, installers and operators. The Commission should, at minimum, recognize the potential for the serious outcomes noted above and include language preserving state regulation of electric utility systems including any and all BPL devices connected to electric utility systems.

Statement of My Experience and Qualifications

14. The data and opinions expressed above are largely based upon over 29 years of my

³ CPUC Reply Comments at Section V., P6

professional experience as an Electrical Engineer in power utility and industrial power systems. Experience that includes distribution system planning and design, system operation and management. It is also based upon my pre-professional experience as a radio technician and broadcast engineer, having held a First Class Radiotelephone license since 1966. I am a Registered Professional Electrical Engineer in the states of California and Florida and am a Senior Member of the Institute of Electrical and Electronic Engineers and have both Bachelors and Masters Degrees in Electrical Engineering.

Respectfully Submitted,

/s/

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