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March 10, 2006

Mrs. Jaclyn A. Brilling
Secretary
Public Service Commission
State of New York
Three Empire State Plaza
Albany, New York, 12223-1350

Re: Comments to Order Initiating Proceeding and Inviting Comments – Case 06-M-0043

Dear Mrs. Brilling,

Pursuant to Order Initiating Proceeding and Inviting Comments, issued by Public Service Commission on January 25, 2006 related to Case 06-M-0043:

- Proceeding on Motion of the Commission to Examine Issues Related to the Deployment of Broadband over Power Line Technologies,

Ambient Corporation respectively submitting our Comments (15copies) for further consideration.

Best regards

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BEFORE THE
PUBLIC SERVICE COMMISSION OF THE STATE OF NEW YORK

Order Initiating Proceeding on Motion of the Commission to Examine Issues Related to the Deployment of Broadband over Power Line Technologies	FILED PUBLIC SERVICE COMMISSION March10, 2006 Three Empire State Plaza, Albany, NY 12223-1350 Case 06-M-0043

AMBIENT CORPORATION'S COMMENTS ON THE COMMISSION'S ORDER INITIATING PROCEEDING ON MOTION OF THE COMMISSION TO EXAMINE ISSUES RELATED TO THE DEPLOYMENT OF BROADBAND OVER POWERLINE TECHNOLOGIES

1. Introduction

On January 18, 2006, the Public Service Commission (PSC) of the State of New York initiated this proceeding to create the regulatory framework for the deployment Broadband over Power Line (BPL) services in State of New York.

1.1. As suggested by the Commission, BPL is a new technology that "raises unique issues which we have not previously considered [p.3]." A discussion of how a BPL project might be treated by current rules and recent precedents is helpful to understand if existing rules will simultaneously encourage BPL deployment, avoid harm to ratepayers, promote accessibility to broadband networks and ensure competition in the state's developing broadband market.

1.2. Ambient is extremely interested in providing the Commission with its comments regarding this Order concerning Broadband over Powerline regulatory framework for deployment in State of New York

1.3. Following are Ambient's Opening Comments in response to the New York State PSC's "Order Initiating Proceeding and Inviting Comments" in the above-captioned matter.

2. General

Ambient Corporation (Ambient) is a development stage company engaged in the design, development and marketing of equipment and technologies that utilize existing electrical power medium voltage and low voltage distribution lines as a medium for the delivery of broadband and powerline landlord related applications and

services. Based in Newton, Massachusetts, and Briarcliff Manor, Westchester County, New York, Ambient has worked with a number of utility, technology, and service companies to develop the Ambient BPL system.

Ambient completely agrees with one of the Commission's guiding principles "that competition is the most efficient way of ensuring the provision of quality utility services at reasonable prices [p.3]."

We will not at this time comment on the Commission's long-standing principle that "structural separation of regulated and unregulated operations by electric and gas utilities..." is the most effective way to prevent "self-dealing issues, the exercise of market power, and other potential abuses" by regulated utilities [p.3]. In today's competitive environment for broadband and analogous services, as referred to by the Commission, and the current regulatory structure of electric utilities in New York, it is not automatically obvious that this long-standing principle of the Commission's is salutary with respect to BPL deployment.

What we do feel strongly about is that it is important at this early stage of BPL development to retain a flexible stance regarding the appropriate business models that are allowed to unfold in order to encourage the adoption and deployment of any new technologies that are emerging. We would respectfully submit that a predisposed bias towards "strict separation" and a "landlord model only" approach may not allow for a full appreciation and realization of the potential BPL may have for utilities. Certainly, this is true in the realm of core utility applications that would clearly benefit the rate base in the form of reduced operations and maintenance budgets, as well as, the provision of higher quality core electrical services.

As was stated in the recent National Association of Regulatory Utility Commissioners (NARUC) BPL Task Force report dated February 2006, "It appeared that the technology could be useful as both a competitive option for end user broadband purposes, as well as enhanced utility applications by the electric companies (themselves)." In addition, it was also proposed that a "light handed" approach to regulation be adopted, rather than the imposition of strict separation.

As was recently stated by the Public Utility Commission of the State of California ("PUC") in its Opinion Implementing Policy on Broadband on Broadband Over Powerlines, "it is the policy of the PUC to encourage development and competition in the broadband market by providing regulatory certainty to California companies seeking to provide broadband over powerlines...if BPL does not enter the marketplace, neither the public nor the rate payers will see any benefit, financial or otherwise."

Although what works for other states may not always be appropriate for the great state of New York, there are certain universal truths or principles that relate to effective market development and adoption. In order to provide incentives for shareholders to invest in BPL, PUC allowed utilities to recover negotiated access fees for BPL in addition to straight pole attachment fees and it further permitted shareholders to split a higher percentage of revenues with rate payers under certain scenarios. This type of flexible market dynamic is efficient and will allow the best model for New York and its constituents to unfold without potentially being stifled by strict policy.

The Commission's Order stated that:

"In general, the interrelated challenges posed in the NY PSC Order Initiating Proceeding and Inviting Comments center on four avenues of inquiry:
1. The current status of BPL technology and the implications of likely technological developments, over the next 2-3 years, on its deployment,
2. The electric and telecommunications safety and reliability issues raised by BPL's use of overhead and underground electric utility facilities (the electric utility system),
3. The most workable business model/arrangements for deploying and providing BPL-based services to the public, and
4. The appropriate regulatory framework to encourage the economic development and deployment of BPL technology.

The PSC seeks comment from all interested parties on the specific elements of these issues that are discussed in greater detail within this Notice, and we encourage parties to raise other issues that they believe are relevant to our overall inquiry" [p.4].

3. Status and Development of BPL Technology

"We seek information, particularly from BPL vendors, on the types of available systems and each system's utilization of the Medium Voltage and Low Voltage networks of the electric system, as well as customer home wiring"[p.4].

3.1. Delivery of data service via BPL may be accomplished by a variety of network topology. For purposes of this discussion, Low Voltage (LV) includes both Access LV and In-House LV. Medium Voltage (MV) refers to the distribution grid, at voltages in the 4 – 35 kV range.

a) LV BPL: Wireline (fiber) or wireless backbone to a BPL node that delivers data to consumer on Low Voltage networks only.
b) MV BPL: Wireline or wireless backbone to a Medium Voltage head-end node, delivery via Medium Voltage networks only.
c) MV-LV BPL: Wired backbone to Medium Voltage head-end node, delivery via Medium Voltage networks to repeater nodes, and delivery of data to consumers via Low Voltage networks.

LV BPL requires a large number of wireline (fiber) or wireless data feeds, one for each distribution transformer. The increased cost may be justified for servicing Multiple Dwelling Units, but may be excessive due to significant backbone cost for neighborhoods where only two to ten homes are supplied by each distribution transformer.

MV-LV BPL, the system format deployed by Ambient, minimizes costs by requiring fiber or coaxial backbone feeds primary at the substation head-end only. All utility devices for telemetry and control reside on both the Low Voltage or Medium Voltage networks, and are thus most accessible from an MV-LV BPL topology. These devices can include consumer electric meters that may be commanded to change rates, and suspend and re-instate service.

"Commenting parties should identify the: capacity, performance, robustness, and security of the particular BPL system being described" [p.4].

3.2. BPL modems may be based on various modulation schemes; Ambient has adopted an OFDM scheme (Orthogonal Frequency Division Multiplexing). A previous generation of modems offered a capacity, or payload bit rate potential of 26 Mbps (megabits per second); on actual power lines the delivery rates vary due to power line characteristics and typically reach 5 - 15 Mbps. A new modem generation increases these figures to a potential of 70 Mbps raw data speed and a typical 10 – 45 Mbps delivered to the end user.

The capacity levels mentioned above usually provide higher performance than the backbone capacity or the data rates available from most Web sites, providing some reserve and enhancing the robustness of the system. Future systems may employ topologies with redundant data paths to repeater nodes, allowing for failure of a path without causing a data service failure. Repeater nodes may employ battery backup, allowing operation during periods of power failure.

Security of data is primarily provided by the same encryption schemes employed in other network technologies. MV voltage lines tend to add a security layer, as they are not easily accessible.

'The technical requirements for electric company facilities utilized by the BPL system should also be identified"[p.5].

3.3. A guiding principle of BPL is utilizing of existing power grids without requiring modifications. Another principle is avoidance of power outages during installation and maintenance.

Lineman and other personnel will need a limited special training to familiarize themselves with data couplers or injectors used by BPL, and safe procedures for installation of these devices. Experience has been that experienced linemen require minimal instruction in the field, and quickly become adept at installing the couplers.

Communication nodes may be installed outside of the MV space, same as telephone, cable TV and other communications equipment, and require limited special training.

"Finally, we seek comment from BPL operators whether the technology they propose to use is developmental in nature or whether it is currently in full commercial production" [p.5].

3.4. The company is now deploying initial quantities of hundreds of couplers and nodes with manufacturing capacity to produce much higher quantities. Next generation systems ("Gen 2") are coming online and being tested in the field which will support full commercial deployment. In addition, Ambient has developed robust, modular, Network Management System (NMS) software to manage the network elements in a reliable, efficient manner which will lead to enhanced development and integration of core utility applications and services to benefit the rate base.

"Because BPL is a developing technology, a complete set of guidelines or standards for its appropriate use might not exist. We seek comment on the currently applicable guidelines and standards for the use of BPL technology, as well as the development of guidelines and standards by government and standards-setting

organizations. We need to understand whether BPL operators will have sufficient safeguards and guidance for the appropriate use of the available technology"[p.5].

3.5. The Institute of Electrical and Electronic Engineers (IEEE) is a worldwide professional organization, and has been studying BPL for some years. Since 2004, working groups have been established to create new standards covering the issues raised. Meetings are held every few months, with the participation of engineers from utilities, vendors, academics and consultants, and it is reasonable to expect draft standards to be completed this year, 2006. The working groups are:

- P1675 Hardware safety and installation practices
- P1775 Electromagnetic compatibility
- P1901 Interoperability and coexistence

The BPL standardization development process is mainly based on existing technical or utility standards and (or) the creation of additional specific requirements and procedures, required for BPL technology only.

4. Safety and Reliability of Service

"The deployment of BPL technology creates a number of unique challenges related to the safety and reliability of electric service. The most basic issues center on the interface of BPL equipment with the electric system. The parties should address how the deployment of BPL technology affects the safety and reliability of the existing electric system"[p.5].

4.1. The developing IEEE standards seek to ensure safety and reliability. There are many factors to be considered; this document will only provide a small sampling, to indicate directions.

a) In general, BPL couplers have no noticeable effect on power delivery.
b) Inductive couplers attached to medium voltage lines experience similar electrical stresses as the "pin" insulators supporting the lines, and are therefore to be designed and tested at the same stress levels.
c) Should a coupler's insulation fail, the draft standard specifies methods for the prevention of fault current from reaching LV lines.
d) Couplers are either separately supported or else as light as existing powerline devices and pose no significant physical hazard.

"What are the applicability of existing national safety codes to BPL systems and the possibility that such codes may need modification to address BPL interfaces? Finally, should BPL equipment that is attached to the electric system meet some minimum standards to assure public safety? If so, what are those standards, how might they be developed, and how would BPL equipment be tested to assure compliance with such standards?"[p.5].

4.2. From a safety perspective, Low Voltage BPL networking equipment for Access and In-House BPL systems is similar to other communications equipment, and is already covered by standards such as UL 60950 for information technology equipment. Testing for compliance to UL 60950 is routine and available from a majority of testing laboratories in US.

BPL equipment for Medium Voltage lines is tested at existing high voltage laboratories, according to existing standards applicable to other utility equipment, after each utility's safety committee approves the testing program. With the adoption of IEEE standards, the utility may simply specify that vendor equipment comply with such standards, as is the practice with traditional powerline devices.

Low Voltage installation practices are covered by the existing National Safety Code (NSC). The only issue, of which we are aware, that may need code modification, is the requirement for separation of power and data cables. In BPL, the same cable often carries both power and data, and inherently contradicts this requirement.

"There are also logistics considerations concerning BPL deployment related to the qualifications of those workers who will install, maintain, and improve the BPL system, the physical limits of space available on and in existing electric utility facilities, and the potential need for modifications to accommodate BPL. The parties should consider in their comments whether installation and maintenance of BPL systems should be restricted to electric utility certified personnel and/or other qualified personnel.

To the extent parties believe that other qualified personnel should be provided access to the electric utility system, they should describe the criteria and process used to assure such qualifications. Commentors should also describe the minimum physical clearance required between BPL equipment and existing electrical, telephone and cable television (CATV) equipment, the overhead pole space that is actually available for BPL service, the physical underground manhole space allocation for placing BPL equipment, and any other make ready work which may be required before BPL systems can be installed"[p.6].

4.3. Each utility already has its manual of procedures, electric pole space allocations and minimum physical clearances, for Medium Voltage lines, Low Voltage lines and communications equipment. Ambient standard operating practice shows that BPL installation procedures does not require modification of these manuals. Ambient sees existing linemen, with added training, as quite capable of installing and maintaining BPL MV equipment, for both overhead and underground BPL.
Installation and maintenance of communications equipment may be performed either by linemen or by communications specialists, in much the same way that telephone lines and cable TV repeaters are maintained today subject, however, to any state or local requirements regarding the appropriate licensing of electricians or other specialists or technicians.

"BPL may create interference for or be affected by interference from electrical equipment, including vacuum cleaner motors, light dimmers, electric heater thermostats or power line communications systems such as baby monitors, intercoms or private computer networks located inside or outside of a customer's premises.

Commentors should address the extent of such interference and its effects, including the creation of harmonics that could impair electric utility power quality. The parties should address the extent to which a BPL provider, the utility, and the electrical equipment user should be required to mitigate such interference. Similarly, what is the obligation, if any, of any party who operates a conducted power line communications system within their premises to remedy interference with BPL services being provided to another customer on the same general electric utility circuit (e.g., within an apartment complex or an adjacent home)? Who should be ultimately responsible for any unknown problems or issues that arise on an electric utility customer's premises due the new BPL system (e.g., interference with existing customer owned systems such security or fire alarms)? What is the appropriate forum for resolution of disputes concerning interference or power quality issues arising from operation of BPL systems?"[p.6]

4.4. Interference Issues

4.4.1. Interference from BPL

BPL operates under FCC Part 15, and therefore is limited to the very low radio frequency emissions levels allowed for unintentional radiators. As such, BPL should not be expected to cause any more problems than desktop or laptop computers, or any of a wide range of electrical and electronic devices typically found in the customer's premises.

Harmonics: The low total power of a BPL transmitter is a small fraction of a watt, and such transmitters operate at frequencies at least 25,000 times higher than power frequency. Power frequency harmonics are at low multiples of 60 Hz, and in a much lower frequency range, so no interaction is likely.

To the extent that BPL equipment incorporates switching power supplies, some harmonics may be generated. However, BPL equipment tends to consume less power than many other loads, and its harmonic generation is of no special concern.

Conducted emissions onto the power line of a BPL device are specified by FCC Part 15 Rules. This would be expected to protect security or fire alarms, designed to operate properly and coexist in an environment with unintentional radiators (e.g. powerline carrier intercom and baby monitors).

Considering that the strongest emissions would be generated from a local BPL device, such as a [CPE[1]] In-House modem, the suspected interferer can easily be disconnected, to clarify its responsibility. For devices such as alarms that do not use the powerline for communications, an added powerline noise filter in the alarm powerline may solve the issue. (In the case of an alarm that was affected by BPL, one would conclude that the alarm was not compliant with immunity standards, and that the added filter provided additional immunity.)

However, if other communications devices are sharing the same LV lines, and are using the same frequencies, then one may interfere with the other. In general, unintentional radiators are unlicensed and the FCC Rules have not seen fit to protect unlicensed devices from such interference.

To the extent that the interference occurs over a narrow band only, the operator of BPL equipment can employ the frequency "notching" approach that the FCC Rules mandates for BPL equipment.

FCC Rules require that BPL operators shall "consult and notify" and bring possible interference potential to the attention of the operators of public safety communications systems (e.g. gas company, fire, etc.), 30 days in advance of beginning operation. While most of these services have moved to much higher frequencies, those operating legacy systems may operate on licensed frequencies that fall within a BPL band. In this case, frequency "notching" will prevent interference.

4.4.2. Interference to BPL

As BPL uses a wide band of frequencies, narrowband interferers, such as radio stations, have little effect. Only noise generated in the radio frequency band between a few megahertz (MHz) and few tens of MHz has the

[1] CPE: Customer Premises Equipment

potential of interfering with BPL. Wireless phones, microwave ovens, Wi-Fi and other systems operating at hundreds of MHz and higher do not interfere with the BPL signal.

Some devices, such as dimmers, may generate strong wideband interference inside premises, especially if they are non-compliant with FCC limits. A powerline noise filter can be placed in series with the dimmer's line cord to eliminate the interference.

Mutual interference between BPL systems inside apartment buildings is possible. If the systems are installed by a single vendor, the communications will be coordinated such that only one CPE is talking or being talked to at a given moment, so interference is eliminated.
In the case of multiple uncoordinated systems, each modem generates increased background noise to the others, and lowers the data rate. Depending on the location of the BPL system data rate bottleneck (e.g. backbone, Web site, or In-House rate), this rate reduction may or may not be noticed by the customer. The IEEE P1901 Standard Working Group is currently developing a standard, which aims to secure coexistence and interoperability between In-House to In-House and/or Access systems.

4.4.3. Exploitation of Interference as Diagnostic Tool

BPL equipment is sensitive to broadband noise, which may degrade or even prevent powerline communications. During the installation phase, it is likely that such noise would be detected, and the offending devices replaced. With ongoing operation of a BPL system, especially with a Network Management System (NMS) providing real-time monitoring, the onset of significant interference can be noticed, and the offending device located and replaced well before it causes an outage. Thus BPL contributes to lowering the rate of unplanned outages, and improves the quality of electrical service.

Underground cables: After 10-30 years' service, underground cables deteriorate and eventually fail. High costs are associated with the processes of pre-emptive cable replacement or replacing a failed cable under emergency conditions. The discharge that often heralds a later failure can be used as a real-time monitor and advanced warning system. This capability is not yet fully developed, but shows considerable promise.

"BPL's unique interface with the electric system can allow the creation of various applications beneficial to electric utilities and their customers. Some potential benefits include improved transmission and distribution service quality/reliability, improved power quality, enhanced system monitoring, and better demand side management opportunities as a result of instantaneous access to customers' metering telemetry. The parties should identify potential applications of BPL technology that could benefit electric utilities and their customers and whether the communications capacity needed to provide such services might impact the provision of BPL-based communications service to customers"[p.6].

4.5. A partial list of utility applications would include:

a) Real-time reporting of the location of outages, with information on whether they are localized (e.g. a blown fuse on a single distribution transformer) or extensive (e.g. actuation of protective equipment that disconnects a section of a feeder.

b) Real-time reporting of feeder current at different locations, in addition to existing monitoring of feeder current at the substation level, with the potential of shifting some of the load from one substation to another, to prevent overloads.
c) Monitoring of low voltage outputs of distribution transformers, and use of power factor correction capacitors or tap changers to improve regulation, preventing damage to customer equipment.
d) Real-time adjustment of electric rates, to encourage customers to shift electricity use to off-peak hours, thus postponing the need to build additional generation, power transmission lines and substations to meet increasing peak demand.
e) Remote disconnection of customer service and re-connection, to implement voluntary load shedding agreements during peak load periods, for both industrial and residential customers
f) Remote disconnection of customer service and re-connection, to reduce the cost of dealing with non-paying customers.
g) Dense telemetry to improve detection of electricity theft

Commentors should consider how BPL technology would be used to provide benefits to the electric utility system and electric utility customers. Commentors should also describe the equipment needed, the actions necessary to install and operate such equipment and the economics of such arrangements for electric utilities and their customers[p.7].

4.6. Equipment required to implement the above applications includes:

a) Medium voltage current transformers and current-to-data converters, either external to BPL nodes or integral to BPL couplers and nodes; Installation is performed during BPL network installation or later upgrade, by linemen.
b) Smart electric meters that include a BPL transceiver chip; Old electric meters need to be retrofitted by licensed electricians.
c) Contactor relays controlled by scaled-down BPL transceivers; Electricians install this equipment in existing or add-on low voltage panels.

'The reliance of BPL on the electric system raises communications reliability issues. Parties are asked to consider whether the BPL system is only as reliable as the electric grid or whether there are ways that BPL systems can be operated with battery backup in the event that electric utility power is disrupted. Similarly, to what extent will BPL systems be designed to assure a degree of communications reliability through commonly used telecommunications techniques such as: route diversity, alternative carrier interconnection arrangements and back-up power systems?[p.7].

4.7. The propagation of BPL signals does not depend on whether the power lines are energized. Further, unless the lines suffer a massive physical disruption of all phases, signal transmission may continue, despite many types of faults. Open switches will disconnect power but not completely block BPL signals. So utilities that select battery-backed BPL nodes may enjoy continued communications, for some percentage of power disruptions. Redundancy by the means suggested by the Committee will indeed improve BPL system reliability.

5. Business Model: Structural Considerations

"Many potential business arrangements could be used to provide BPL-based services to the public...This range of potential business models creates a diverse spectrum of potential regulatory responses. For example, the level of regulatory oversight and resources required to assure that ratepayers are unharmed by BPL initiatives appears much greater when the utility or an affiliate provides BPL service than it would under an approach in which the utility is paid a fee by an independent BPL provider"[p.7].

5.1. As noted earlier, we do not agree that it is self-evident in today's environment that, with respect to BPL, the amount of regulatory oversight required of the Commission may be less if utilities and/or their affiliates are not involved in BPL except as simple landlords. We are not at this stage prepared to provide a full analysis of this issue but we do note that this presumption focuses only on possible risks faced by rate-payers while neglecting to address the advantages to competition and to ratepayers that a more flexible approach to this new industry could have. Some of these advantages include possible cost reductions and improved service quality to rate payers if BPL is made available most efficiently. Beyond the potential value created by utilities implementing BPL-enabled core utility applications and services, there are many well-known studies and surveys that indicate people's high satisfaction levels with their utility service (compared to cable or phone service) because the PSC is involved from a regulatory perspective and safeguards the consumer. In fact, these same surveys indicate that many people would prefer to purchase broadband service from their utility (or an affiliate) than from the cable company because of the intrinsic quality of service associated with state PSC regulated utility operations. These and other factors strongly suggest that, if BPL can enable higher quality services for the rate payers (core utility or broadband), even the possibility of incremental regulatory oversight and resources would be a fair price to pay.

"We believe that the most appropriate business model to deploy BPL-based services is one in which the incumbent electric utility is not the BPL provider, but rather leases or sells access rights for its system to business entities with the expertise, experience and resources to bring BPL service to the public. Given this belief, we establish a tentative conclusion that a business structure which includes the least level of direct electric utility involvement is best suited to facilitate the timely and economic deployment of BPL technology"[p.8].

5.2. A number of regulated utility companies have concluded that the landlord model is the preferred approach to BPL deployment. For some, the primary reason given is that the provision of broadband services is not the utility's core business. That said, we believe that the Commission should not impose a single business model on this new industry simply based upon a reflexive application of prior assumptions. Indeed, the separation approach has not been universally adopted as the optimum solution. We respectfully urge that the Commission not preclude the possibility that a utility or a utility affiliate may be very well positioned to be the most effective and efficient wholesale carrier's carrier of BPL (not necessarily a retail ISP). A utility affiliate may be the best situated entity to work with the core utility landlord effectively and have the native expertise to not only deliver wholesale services but also manage the infrastructure which, of course, rides electrical powerlines. We submit that a level of flexibility, at least at this early stage of deployment and of understanding the potential of BPL, allowing time for study and contemplation of future value to be best determined by market forces, is the most prudent stance given the emerging status of BPL technology.

"We reach this tentative conclusion about business structure based on a variety of considerations. First, we have consistently preferred the structural separation and/or divestiture of unregulated utility operations from the core utility business as the most effective means of avoiding cross subsidization issues that may not only result in overcharges to ratepayers, but also foster anticompetitive practices. Second, the level of regulatory oversight and resources required under an approach where the utility or its affiliate provides BPL service is

significant. The amount of time, resources and costs incurred when addressing such regulatory issues could act as impediment for the timely deployment of the technology. Such a result is not in the best interests of New York State utility consumers. Finally, while many energy utilities have made investments in competitive affiliates, it is our impression that the majority of such investments have been marginally successful at best. Therefore, it is not clear that regulated electric utilities are best suited to address the challenges associated with rolling out a new communications technology. Combined, these considerations indicate that the public interest may be best served when incumbent electric utilities are not actively involved in the provision of BPL services to existing electric utility customers. The passive approach identified in our tentative conclusion is a more realistic business approach for electric utilities given our concerns noted above.

Commentors should address the specific regulatory ramifications of its preferred business model in response to our regulatory framework inquiries, which are discussed later in this Notice. We also request that commentors identify any regulatory, legal, or practical impediments to the degree of structural separation reflected in our tentative conclusion"[p.8].

5.3. Ambient is not prepared at this stage of the proceeding to comment on the regulatory issues that might be involved in either structural separation and divestiture of unregulated utility operations from the core utility business or a model that permits utilities or their affiliates from participating directly in the BPL industry. As noted previously, however, we do not agree that it is axiomatic that cross-subsidization issues and anticompetitive practices are potential problems that are not outweighed by advantages that may be inherent in permitting utilities or their affiliates from participating in the BPL industry. Further, we understand that the legal structure of statutes, case law, regulation and precedent in the domain of affiliate transactions serves as a substantial mitigation of the Commission's concerns. We believe that substantial legal and regulatory infrastructure and support/monitoring mechanisms already exist, in which case not much incremental regulatory oversight investment would be required so long as potential BPL affiliate activities fall within the existing rules. Nor do we believe that concern about the timeliness of deployment should drive a decision on the proper business model. In part, we believe that one purpose of establishing guidelines is to set timetables. In addition, a decision of this importance and impact should not rest on whether an appropriate business model can be approved a few months sooner or later. Once all the players know the affiliate transaction rules and play within them, deployments could be streamlined and unfold quite efficiently; we believe more efficiently than if an outside third party needed to learn the utility "rules of engagement" from scratch.

Regarding the Commission's observation that many historical investments in competitive affiliates have had marginal success, we assume that for the most part the Commission is referring to the investments made by many into fiber communications and would only point out that any entity that made significant investments in huge fiber capital expenditures in the mid to late 1990's – early 2000 timeframe also had marginal success. This is not necessarily a reflection on, or a function of, a utility affiliate's ability to compete but rather bad timing, economy wide irrational exuberance and a market bubble that affected the entire communications industry. Further, if a utility does not have the "DNA" today to run a network, could it not acquire an affiliate that's core business is running networks? The key is that past performance is not necessarily an indicator of future success.

Ambient position at this juncture of the Commission's proceeding is to urge a conclusion that one size does not fit all and that natural market forces are the most efficient means to determine what works best. We have customers who work within the "landlord model" mindset and we have customers who are affiliates of the core

utility. We have also seen effective examples of a hybrid approach (the "developer model") whereby a utility will work with an outside third party operator when it makes sense to do so, but reserves the right (not the obligation) to roll out a BPL network for its own utility applications purposes in areas where a third party operator may not be compelled to invest if there is not a good broadband opportunity as determined by poor demographics, existence of competition, etc. BPL is still an emerging industry and to pre-determine the one and only "right" model at this stage would effectively limit this disruptive technology's potential to improve the way that electricity gets delivered and the vision of what a 21st Century Smart Grid could be.

6. Business Model: Roles and Relationships

"The effective deployment of BPL technology also requires the identification and definition of the financial and operational roles and relationships between the BPL provider, the incumbent electric utility, and any other relevant market participants. These roles and relationships include:

1. The responsibility for installing, maintaining and improving the BPL system,
2. The responsibility for resolving customer service and collateral service issues/complaints,
3. The development and installation of technology to provide enhanced energy management services to the electric utility and its customers via the BPL system, and
4. The responsibility for billing and collection services.
Our tentative conclusion concerning structural separation implies no involvement by the incumbent electric utility in any of these roles and relationships. However, the new and unique nature of BPL technology and its potential challenges may require some utility involvement, at least the short run. Commentors should explain the nature and extent of expected utility involvement in this area" [p.9].

6.1.1. The responsibility for installing, maintaining and improving the BPL system should fall on the BPL Network Operator (NO) / Network Service Provider (NSP) whether that operator is a utility, a utility affiliate or an outside third party. The actual execution of installation will likely always be a utility line crew or a certified third party line crew that is acceptable to the utility. The potential exists to place Nodes in the communications space (not the power space) on a pole so that it does not always have to be a utility line crew that installs and maintains equipment. That said, BPL represents an opportunity for utilities to enhance the utilization and skill-sets of their crews.

6.1.2. The responsibility for resolving BPL service related customer service issues would again fall on the network operator whether that operator is a utility, utility affiliate or third party. Ideally, collateral service issues would also be covered by the operator. Some level of cost associated with being an infrastructure landlord will be unavoidable. It might then follow that vertical integration with an affiliate network operator makes economic sense for some utilities and for rate payers.

6.1.3. Ideally, the development and installation of energy management technology for the core utility may be done by the utility in cooperation with the BPL operator whether or not the operator is a utility affiliate or a third party or the utility may negotiate an agreement with the operator to provide such services ("Application Service Provider – ASP") as a part of the Commercial / Right of Way Agreement.

6.1.4. The responsibility for billing and collection for BPL related services should fall on the BPL service provider (network operator) whether or not the BPL service provider is a utility, a utility affiliate or third party. In the case when the utility will provide such service for the BPL provider, their work shall be compensated.

"There are obviously many steps required to deploy, maintain, and improve a BPL system. We seek comments identifying the party responsible for each step, the financial arrangements required to address such responsibilities, and the ratemaking/regulatory oversight issues that may occur if utility personnel and/or other resources are in any way required in any of these steps"[p.9].

6.2. Beyond what is stated above, BPL network operators (whether they are a utility, a utility affiliate or a third party) and utility powerline landlords should be given the flexibility to negotiate situation specific arrangements as part of the Right of Way Agreement that allows BPL operators to deliver a service over the powerline infrastructure. Not every utility will desire the same utility applications and not every region will be able to support the same economics or fee sharing arrangements on the broadband side. Market forces are typically the best determinant.

Regardless of situation specific assumptions, it will be critical to keep the costs associated with rolling out a BPL network low enough to encourage stakeholders to invest and satisfy their return on investment expectations from BPL deployment. Regarding any regulatory oversight requirements that may occur as a result of utility personnel being required for fulfillment, the PSC is in the best position to determine this.

"BPL customer service responsibilities are a significant consideration. While there are traditional customer service considerations, there also appear to be new issues caused by the potential effects of the technology on the functionality of other customer owned equipment. Moreover, there may be collateral service issues if BPL affects the functionality of equipment owned by others whose premises are in close proximity to the BPL customer and/or the BPL system. It is imperative, therefore, that the parties focus not only on identifying any significant customer service considerations for BPL, but also the general type of business and financial arrangements required to address such considerations. To the extent that utility personnel and/or resources are required, parties should identify any ratemaking/regulatory oversight issues created by such involvement"[p.10].

6.3. In the BPL service value chain there are different levels of customer service:
a) There is customer service provided to end users by the Internet Service Provider (ISP) or Application Service Provider (ASP).
E.g. an end user cannot access the Internet and calls their ISP for support
b) There is customer service provided to ISPs by the whole carrier's carrier network operator.
E.g. an ISP is having network (bandwidth) related problems and calls the operator.
c) There is customer service that gets provided to the network operator by the utility landlord.
E.g. the network operator is having physical network related problems and calls the utility.

The last category above is the likely area that would involve utility personnel regardless of whether the network operator is a utility affiliate or a third party operator. In any case where the core utility is providing services to a network operator there will be a Service Level Agreement (SLA) for the provision of services which may be part of or go hand in hand with a commercial Right of Way Agreement for the operator to place equipment on

the infrastructure. In the case where the network operator is a utility affiliate, affiliate transaction rules will come into play.

"Electric utilities and their customers could, at some point in the future, benefit from BPL technology that is used to access customer and electric system telemetry. Parties' comments should consider the business and financial relationships between the BPL provider and the incumbent electric utility necessary to preserve the ability to make such improvements when the technology becomes available. Because it is likely that utility personnel and resources will be used under this initiative, the comments should address any relevant ratemaking / regulatory oversight issues"[p.10].

6.4. Regardless of whether the BPL network operator is a utility, a utility affiliate or third party operator, utility utilities should be given the flexibility to negotiate certain ongoing rights as the landlord to utilize or leverage BPL networks that are riding on the utility infrastructure subject to some fair market value standard for said access or recapture of rights. For example, a Right of Way Agreement may be 10 years in duration whereby the operator has 5 years to recoup its investment and 5 years to earn a return on that investment by delivering services during which time the operator has exclusive rights to run a network on the infrastructure. If the landlord wishes to buy back that right of way, there may be a negotiated buy-out formula. If the landlord wishes to run a service over the network there may be some negotiated access fees based on prevailing market rates for said access which could be paid in cash or in kind as an offset to pole attachment or other powerline infrastructure access fees (a "barter" scenario) or any combination thereof. The point is that there should be flexibility in what is negotiated in order to make sure that the market will bear whatever gets agreed and support operator investment / deployment. Any utility personnel and resources should be considered in this situation as they would in any other transaction between the network operator and the utility regardless of whether the operator is a utility affiliate or a third party operator.

7. Electric Utility Regulatory Issues.

The regulatory framework applicable to BPL is ultimately dependent on the business structure used to deploy it, the characteristics of the technology itself (that is, how it interfaces with electric utility plant), and the roles and responsibilities of the market participants. We stated the tentative conclusion that electric utilities should not be directly involved in the provision of BPL services to the public, but rather seek to lease or sell access rights to their power lines to BPL providers. This tentative conclusion also narrows the complexity and scope of the regulatory framework required for electric utilities whose lines are also used to provide BPL services. Because of this, our inquiry into electric utility regulatory issues centers on the following considerations:

1. Use of existing electric utility personnel and resources to support BPL in any manner,
2. Incremental electric utility costs caused by BPL deployment, and
3. Cost of BPL access to the utility system.

The deployment and operation of BPL technology may require the use of utility personnel and/or resources. The magnitude of these requirements is unknown at this time, because it is dependent on the roles and relationships established in the business model. Nevertheless, it is in the public interest to develop a definite set of guidelines addressing the identification and appropriate treatment of such costs.

Therefore, we ask the parties to consider the types of costs that might fall into this category, the process used to identify such costs and the appropriate funding source to pay these costs. In a similar vein, we also ask the

parties to consider these questions while keeping in mind the possibility that the BPL provider might use some of its personnel and/or resources to benefit the electric utility.

"The deployment and operation of BPL technology may also cause the utility to incur incremental costs that it would not have experienced absent BPL. Once again, despite the fact that the level and magnitude of such costs is unknown and highly dependent on the roles and responsibilities established in the specific business model employed, it is in the public interest to develop a set of guidelines addressing the identification and appropriate treatment of incremental electric utility costs as the result of BPL deployment. We ask the parties to consider in their comments the types of incremental costs that the electric utility might incur, the process used to identify these incremental costs and the appropriate funding source for such costs"[p.11].

7.1. We would propose that any incremental costs incurred by a utility in a BPL deployment would either be offset directly by billing rates paid for line crew installation or indirectly by the value gained by having a high speed, 2 way communications channel on the distribution network which heretofore has never existed. For instance, having a BPL network in place may discover that the utility has capacitor banks that are not operating properly, power quality issues that were previously unknown or simply may help the utility manage its assets by going through the process of auditing and mapping the grid during deployment of the BPL devices. For the first time ever, utilities will have visibility into the distribution grid network. The applications and services that might result from BPL are not yet fully realized but we feel confident that any costs associated with the deployment of this technology will reap "dividends" for the rate base either directly through compensation for installation costs incurred and indirectly in the form of new and better services.

"A key element of BPL technology is its interface with the electric system's poles and wires. We believe that there may be intrinsic value to BPL providers in gaining access to and using electric utility assets and that this value is dependent on the economics of BPL technology, rather than a formulaic allocation of sunk utility costs to the BPL provider. As a result, we ask the parties to indicate those electric system components to which a BPL provider would require access. Are current tariffs and pole attachment rates reasonable charges for BPL providers? Should BPL providers pay other fees to access and use various components of the electric utility system? Additionally, we request the parties to consider how such a fee should be developed. We are concerned that any access charge based on historic utility costs may not accurately capture the value of such access. We believe that an access fee based on the results of a competitive process is more likely to produce a reasonable result. We seek comment on how such a process might be structured. Lastly, to the extent that the electric utility receives payments for the use of or access to its assets, should such proceeds be available for the benefit of electric customers? We encourage parties to present options for competitively pricing the use of and/or access to the electric system by the BPL provider"[p.12].

7.2. Ambient is an equipment vendor with related professional services and is not generally a network operator. That said, we do want our network operator partners / customers, whether they be third party operators working with utility landlords or a utility affiliate, to have a viable business model. It would seem that there should be some flexibility in the setting of access fees to make sure that deployment occurs and accommodate the reality that some regions may have a more profitable dynamic than others. The attractiveness of a deployment from an operator's perspective (i.e. meeting return on investment hurdle rates in order to raise capital to support capital expenditure requirements and produce a profit) will ultimately determine the right mix of fee sharing.

"While we believe that the most pressing electric utility regulatory issues are addressed in this Notice, we encourage parties to raise other pertinent issues in this category which they believe we should consider. We also note that some parties may prefer a different business model for deploying BPL services and offer it in their comments. To the extent such models require greater involvement by utilities and therefore greater use of utility resources in deploying, maintaining, and improving the BPL system, we expect those parties to describe the appropriate regulatory framework for such situations where the utility and the BPL provider are more closely related" [p.13].

Ambient has no bias regarding whether the network operator is a utility, a utility affiliate or independent third party assuming that the chosen model is conducive to effective, efficient deployment. To the extent that the BPL network operator is a utility affiliate we would defer to the existing body of affiliate transaction rules already established for business relationships between utilities and their unregulated affiliate subsidiaries.

8. Conclusion

Ambient feels strongly that it is important to retain a flexible stance regarding the appropriate business models that are allowed to unfold in order to encourage the adoption and deployment of any new technologies that are emerging. We would respectfully submit that a predisposed bias towards "strict separation" and a "landlord model only" approach may not allow for a full appreciation and realization of the potential BPL may have for utilities. Certainly, this is true in the realm of core utility applications that would clearly benefit the rate base in the form of reduced operations and maintenance budgets, as well as, the potential for higher quality core electrical services. What worked in California and Texas may not be the best solution for New York, but there are lessons that can be learned and best practices shared from others who are addressing the same issues.

Respectfully submitted,

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