



# Broadband Over Power Lines: Exposures and Solutions

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# Introduction

The ability to connect to the Internet is essential for almost all businesses, governments and, increasingly, homes. The convenience and capabilities of the Internet has led to dynamic growth in utilization with approximately 939 million users around the world and nearly 203 million of those users in the United States (more than 68% of the population). As the use of the Internet as an alternative deliver mechanism for other services, like telephone, television and other media, continues to expand, even greater consumer participation is expected.<sup>i</sup> Similarly, with the ever increasing necessity of the Internet, consumers are demanding faster service as users tire of slow dial-up speed and long waits on popular sites that can result from access through phone lines and 56k modems. Broadband access through high-speed and advanced service lines has expanded to meet this demand. Typically provided by cable companies, phone companies or traditional Internet Service Providers (“ISPs”), high-speed Internet is now available to 95% of the nation’s zip codes in which 99% of the population lives.<sup>ii</sup> The carriers have increased their market penetration and are battling one another to be the communications provider of choice to consumers as they offer bundled packages of phone, television and Internet access.

New competitors with many of the same advantages as phone companies will soon enter the market by offering Broadband Over Power Lines (BPL). These companies also see the benefit of a deeper relationship with consumers and potential for substantial revenue growth in delivering value-added services. BPL provides access to high-speed broadband services using the existing utility and power networks. BPL is not a new idea for electric companies. It has been around for nearly 50 years but until recently has not been considered to be a viable communication channel due to its low speed, unreliable functionality and high development costs. However, as relevant technology has advanced, delivering high-speed broadband over existing power lines is becoming viable and brings extraordinary opportunities to both utility companies and the American public. On October 14, 2004, the Federal Communications Commission (“FCC”), in order to promote wider broadband access and encourage competition, gave approval for the development of BPL, and utilities and others are quickly moving to leverage new technologies to make use of the existing infrastructure. Utilities rightly view BPL as an opportunity to develop new revenue streams by bundling additional services to customers. On the user side, consumers will benefit from increased competition versus traditional Internet access providers and through ease of use, as nearly every home in America is already connected. In addition, while high-speed Internet is widely available, there are still approximately 13 million people in the United States that do not have access to broadband because cable and telecom companies do not offer it in their areas (typically due to the high expense to reach these areas).<sup>iii</sup> BPL offers a good solution to this problem because with BPL, high-speed Internet can be made available to every place that has electricity.

The idea behind BPL is simple. Users plug a computer into the wall or connect to a wireless transmitter located on a nearby electric pole and are connected to the Internet. The utility provides high-speed transmission of data through the same existing electric power wires. BPL allows for easy installation with relatively low entry costs because it requires no wiring changes to enable broadband access (it can be accessed from any outlet) and makes use of the already existing power grid.<sup>iv</sup>

An additional benefit of BPL implementation is that the existing electricity delivery system has the potential to be significantly improved through the development of the “smart grid.” The smart grid is an electricity transmission and distribution system that combines traditional and cutting edge computing technology to provide superior grid performance, including improved reliability, more efficient use of power, and the ability to bring new renewable power on line more rapidly. In addition, the smart grid supports a broad range of additional services to consumers including the possibility of automated meter reading, real time system monitoring, preventative maintenance, voltage control, and outage detection and restoration, all of which should improve system reliability, service, and safety for electricity customers.<sup>v</sup>

Finally, in addition to the benefits provided to Internet users and utilities from the utilization of BPL, the nation as a whole has a great opportunity to improve the security and reliability of the electric grid and power distribution through BPL. When more fully implemented, the improved grid is expected to anticipate and instantaneously respond to system problems including manmade and natural disruptions, allow for end users to manage energy use in order to reduce costs and capitalize on the use of low cost fuel generation resources.<sup>vi</sup>

Telecom Trends International predicts BPL revenue growth will increase from \$57 million in 2004 to \$4.4 billion in 2011.<sup>vii</sup> Utilities and others appear to agree with this forecast, as through July 2005 about 40 utilities across the U.S. have run or plan to run BPL trials, and are moving to capitalize on the opportunity BPL offers with respect to long-term revenue growth. In addition, sensing the promise of BPL a number of large technology companies including Google, IBM, and Motorola have also decided to make large investments in BPL service. Notably, Google, along with Hearst Corp. and Goldman Sachs have recently made a capital investment of \$100 million in Current Communications, a leading BPL service provider.<sup>viii</sup> Though significant BPL offerings may be years away, consumers will ultimately benefit from this increase in high speed Internet competition.

## BPL Loss Scenarios

Due to the nature of their service and the manner of delivery, utilities have always faced bodily injury and property damage claims and they have mitigated those exposures through industry best practices in safety, construction, delivery and notice to consumers. Where necessary they have transferred risk through property and general liability policies. Utilities have not faced large exposures with respect to the failure to properly deliver their current service offerings because they often benefit from tariff protections for regulated services that have limited their liability for service failures.

The opening up of the power grid for Internet distribution, however, creates potential risk exposures that electric companies may not have previously faced and that are probably not currently insured. In extending the services they offer to include high-speed Internet access, property and general liability policies will offer limited coverage to utilities. In addition, tariff protections are likely to be extremely limited and may not even be available to utilities when faced with the types of claims ISPs routinely see. It is important to note that just as high speed ISPs are more susceptible to network risk claims than dial-up providers (see below) utilities offering BPL may be challenged by even greater risks than traditional ISPs.

When utilities begin to provide BPL they will face the same professional liability and cyber security issues as ISPs with the possibility of claims for service failures, breach of privacy, identity theft, transmission of viruses, worms and Trojan horses, among others and they will need to implement mitigation strategies, including insurance protection, to address these exposures. In addition, BPL providers may also face content and copyright claims, though they should also enjoy some of the same legal liability protections that ISPs benefit from, such as those set forth under the Digital Millennium Copyright Act. In any event, the size of claims will grow and substantial damages are possible should utilities begin providing BPL service to businesses.

As noted above, ISP's that provide broadband access are more susceptible to computer attacks than dial-up Internet. The reason for this increased risk is that unlike dial-up (in which every time a user logs into the Internet they receive a new IP address) broadband is always on and users often have a single dedicated IP address. As long as the computer is plugged in, it is always connected to the Internet and can be attacked 24/7. Unfortunately, just as the high speed of broadband allows for nearly instant access to the Internet, it is also this same high speed that allows for attacks to be launched against a computer system. Once a system is compromised, the high speed allows hackers to quickly deposit files, worms, Trojan horses, etc. or download data, password files and sensitive documents.<sup>ix</sup> Hackers often use the computers of unsuspecting consumers as "zombies" to forward spam emails. These types of attacks can lead to claims against an ISP for identity theft, loss of sensitive information or damage to databases, files or systems. These types of incidents can lead to claims against the ISP that, when combined in a class action suit, can lead to potentially large damages. To counter such attacks ISPs like Comcast, AOL or SBC have taken action to cut off service for the customers when their computers are used for cyber attacks. Once the attack has been identified and defended, these consumers can have their Internet service restored but the affected consumer will have lost connectivity for some time.<sup>x</sup> Utilities that become ISP's through

BPL may, however, have even greater security exposures because BPL uses a single system to supply both electricity and high-speed access allowing hackers to do much greater damage. The type of attack described above is much harder to defend when using BPL as the ramifications of turning off electricity are exponentially more damaging to a consumer than the simple loss of an Internet connection. Until this issue has resolved, the ability of utilities to take action to react to computer attacks may be impaired and this inability to limit damages could materially impact the ability of, and cost to, utilities attempting to transfer risk through insurance.

Of even greater concern is that the weaknesses of electric utilities are different from those of Internet distribution companies and by coupling the two on a single power grid the potential for devastating attacks on the nation's infrastructure may exist. A strong fear is that a hacker could exploit BPL Internet services to disrupt the electric supply of entire regions causing widespread havoc and potentially catastrophic results.<sup>xi</sup> The possibility of broader damages to electricity consumers as a result of a new service offering may impact tariff protection for the failure of electricity delivery and may also impair the ability of utilities to access E&O and/or network risk coverage (or may lead to new exclusions relating to damages for power outages).

Finally, there has been some unease voiced by amateur radio operators concerned that BPL will interfere with their reception because power lines are not designed to prevent radiation of radio frequency energy. Radio operators that broadcast at lower frequency levels that could be affected by BPL include AM broadcasters, aeronautical services, maritime operations, land mobile services and certain public safety and government agencies. These groups argue that BPL will pollute the radio spectrum by impeding radio signals from reaching listeners or resulting in increased background radio noise levels.<sup>xii</sup> The FCC has been the main discussion ground for determining radio frequency claims and, though these concerns should work themselves out over time, a potential exposure currently exists.

## Gaps in Traditional Insurance

As previously noted, as utilities begin providing new services using BPL their exposures will change and, therefore, their risk mitigation strategies must change as well. Tariff protection will probably not be available for the provision of Internet access using BPL and utilities will be wise to rethink contractual relationships with customers and to build in indemnity, limitation of liability, and service credit concepts into their contracts.

From an insurance perspective, claims from customers involving failure of service, loss of data, identity theft, breach of network security, viruses, denial of service attacks, etc., will undoubtedly result from the provision of BPL service and BPL providers will need to evaluate their current insurance programs to ensure proper coverage. Utilities have historically relied on property and general liability policies to address risk transfer for power lines and the services provided over these lines. However, traditional property and general liability insurance policies are not written to address the unique risks that BPL brings and, as damage to these systems will inevitably occur, there could be large expenses associated with such damage that are not covered by insurance programs currently in place.

Property policies are generally written and meant to cover only damage to covered property. The definition of “covered property” in most property policies typically contains three large “carvebacks” that will likely limit coverage for BPL providers. As defined by an Aegis All Risk Property Policy (a representative policy for this industry), covered property includes real and personal property owned by the insured, real and personal property of others in the insured’s care, custody or control, and improvements and betterments to property not owned by the insured. The definition specifically excludes (i) “electronic media and records,” (ii) “transmission and distribution systems” and (iii) “any machine or electrical apparatus that incorporates any unproven or developmental design, technology or feature unless such design technology or feature is accepted by the insurer.”

The “electronic media and records” carveback clearly limits coverage for damage to user data caused by physical damage to a BPL system. However, some insurers do offer a coverage extension for electronic media and records that will pay the “cost to restore or replace lost information contained in electronic media and records if such electronic media is lost as a result of physical damage or loss to covered property.” Thus, electronic media and records can be covered, but only if it is a result of physical damage. If the system malfunctions for any other reason, there is no coverage for the loss of electronic material.

The carvebacks for “transmission and distribution systems” and “any machine or electrical apparatus that incorporates any unproven or developmental design, technology or feature” are also problematic. BPL is certainly still a developmental technology and will probably be so for some time so this characterization will allow a property insurer to try to deny coverage from physical damage. Should BPL services move beyond the “unproven or developmental technology” stage, a coverage gap may still exist because of the “transmission and distribution systems” carveback as BPL is a classic “transmission and distribution system” transmitting communications over the Internet to users.

Similar to property policies, general liability policies also leave gaps in coverage and large risk exposures. In the Aegis Policy of Excess Insurance (again, a representative GL policy for the utility industry), property damage is defined as “(i) physical damage to or destruction of tangible property which occurs during the coverage period including the loss of use thereof..., or (ii) loss of use at any time of tangible property which has not been physically damaged or destroyed.” Because this definition does not define electronic media as being tangible or intangible property, it leaves the definition open to interpretation. However, recent court decisions have found electronic data and records to be intangible property and thus will probably not be covered under GL policies. A number of cases illustrate this point. For example, in *State Auto Property and Casualty Insurance Co. v. Midwest Computers & Moore*, the issue was whether an insurer was obligated to defend a policyholder against a claim alleging negligent performance of service work on a computer system that resulted in data loss. In its decision, the court relied on the ordinary meaning of the word “tangible” and found that “computer data cannot be touched, held, or sensed by the human mind; it has no physical substance. It is not tangible property.”<sup>xiii</sup> Similarly, in *Cincinnati Insurance Company v. Professional Data Services Inc.* and *Heart of America Eye Care, P.A. Civ.A. 01-2610-CM*, a federal district court applied a comparable definition to tangible property of that determined in *Am. Online v. St. Paul Mercury Ins. Co., CA-01-1636-A*, by sustaining that computer data and software were not tangible property covered under a general liability insurance policy. The court found that computer data, software and systems are all intangible property and therefore the policy did not cover that damage.

Finally, claims alleging the failure of a utility to supply broadband service are presumably also not covered under this general liability form. The policy excludes liability for a delay in, or lack of performance by the insured for contracted services. So, for example, if a utility fails to deliver broadband services to its customers and one or more bring a claim seeking to recover their economic losses, utilities will generally not have coverage under this policy.

Because of these gaps in the property and general liability policies utilities contemplating the roll-out of BPL service should consider alternative insurance solutions.



# Potential Insurance Solutions

There are a number of insurance policies that utilities can purchase in order to mitigate the damages that may result from BPL service failures. Among the policies that are most beneficial to utilities providing these services are Technology Errors & Omissions policies and Network Risk policies.

E&O insurance provides coverage for economic damages resulting from negligence, omissions, mistakes and errors made by the insured. E&O insurance covers economic damage, while generally excluding claims for bodily injury, property damage, and breach of contract. Companies who purchase these policies are seeking protection from damages caused as a result of their negligence (or alleged negligence) and the coverage is designed to protect insureds from the economic losses suffered by third parties as a result. These types of losses are not covered under general liability insurance and can result in significant defense costs and settlements or judgments. E&O policies are designed to handle these types of low frequency situations and can protect companies from severe and even catastrophic losses. Network Risk coverage is a subset of E&O providing coverage for the unique risks associated with any type of electronic communication including communication over the Internet. The greatest distinction between an E&O product and a Network Risk product is that some Network Risk policies are designed to provide more than just liability coverage and can respond to economic loss experienced by the insured. Together, these policies provide coverage for a wide variety of potential exposures for utilities offering BPL service including professional liability, privacy violations, network security liability, website content liability, intangible property loss, network business interruption, cyber extortion and cyber terrorism.

For example, if a utility is providing BPL service to both businesses and consumers and the utility fails to prevent hacks or the introduction of malicious code or allows denial of service attacks to continue, its customers will probably suffer damages – some more extensive than others. Consumers might bring claims related to identity theft while businesses may claim business interruption expenses. A comprehensive network risk policy would provide coverage for both the costs of defending such claims as well as any damages that may be proven by the injured customers. Such insurance may also cover content-based injuries such as libel, slander, defamation, copyright, trademark infringement and invasion of privacy from the display of material on an entity's web site. While the Digital Millennium Copyright Act provides some protection for content-based exposures, ISPs (including utilities providing BPL service) may still have defense costs that can be covered by a network risk policy. If a utility provides professional services in connection with the delivery of BPL, then those services may be covered as well.

Network risk policies can also provide first party business interruption service should hacking, a virus, or denial of service attacks shut down a utility's computer network and cause extra expense, data loss or a loss of revenue to the utility. Coverage for the damage, destruction, corruption or theft of an insureds, (in this case, the BPL service provider) important tangible property, i.e. its information assets, bandwidth and data can be covered under this first party coverage. In addition, cyber extortion, cyber terrorism, crisis communication and forensic investigative services may also be added by endorsement.

As discussed earlier, using BPL to provide Internet services may also impact the reliability of the delivery of electricity. Because of the uncertainty surrounding this issue and the exponential size of the potential damages, utilities may have difficulty in securing E&O coverage for exposures related to the failure of the delivery of electricity due to a BPL failure. Liability for these damages may or may not be covered by tariff protections and until this issue is resolved from a technical perspective, BPL service offerings are likely to be limited to trial runs. Similarly, utilities may be unable to secure any coverage at all for the potential liability created by BPL service negatively impacting radio operations of others. As noted, both of these exposures may be large and technological improvements and safeguards may be the only viable risk mitigation solution.

E&O and network risk coverage will be available, though the number of insurance carriers providing this type of coverage is limited and those willing to write coverage for a new technology like BPL will likely be an even smaller subset. Utilities should expect a rigorous underwriting process that includes a network risk assessment and contract review. In addition, policy language will be important and even small changes in definitions and exclusions can expand or limit coverage.

## Summary

BPL's continued growth appears inevitable as consumers demand fast, easy and dependable Internet service and as utilities seek to capitalize on their existing infrastructure. BPL offers utilities a tremendous opportunity to leverage a connection to the consumer that other broadband competitors cannot match. With this expansion into new service lines utilities must examine emerging exposures and need to understand the risks and potential liabilities associated with BPL. Because it is unlikely that existing property or general liability insurance policies will properly address these new exposures, it makes sense for utilities to consider E&O and network risk insurance as part of their risk mitigation strategy. Aon recommends that, as part of a comprehensive risk management strategy, BPL providers work with experienced brokers who are experts in Network Risk and E&O coverage and the corresponding legal issues and who have a thorough understanding of the insurance marketplace. The underwriting process must be skillfully managed and the complexity of coverage demands innovation and expertise. Those utilities that successfully leverage these resources to transform their risk transfer strategies will realize the benefits of enhanced coverage.

## For More Information

For additional information contact Steve Bridges at +1.312.381.4493 or Katherine Pelling at +1.312.381.4481.

## Appendix

<sup>i</sup> Internet World : “Internet Usage Statistics- The Big Picture”

<http://Internetworldstats.com/stats.htm>

<sup>ii</sup> FCC Releases Data on High Speed Service for Internet Access

[www.fcc.gov/Bureaus/Common\\_Carrier/ Reports/FCC-State\\_Link/IAD/hspd0705.pdf](http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hspd0705.pdf)

<sup>iii</sup> Austin American Statesman. “Are Power Lines the Internets future?; Broadband Access Through Electrical Outlets Gains Favor” Bob O’Keefe 17 July 2005

<sup>iv</sup> NARUC “Report of the Broadband Over Power Lines Task Force” Feb. 2005

<sup>v</sup> CenterPoint Energy and IBM Examine Innovative Ways to Use Broadband Over Power Line 7/11/05

<http://www.physorg.com/news5075.html>

<sup>vi</sup> See endnote 4

<sup>vii</sup> “Powering Up A New Kind of Broadband” Jim Duffy 9/12/05 <http://www.networkworld.com/news/2005/091205-bpl.html?rl>

<sup>viii</sup> CURRENT Communications Group Announces Strategic Investments to Catalyze Broadband over Power Line Deployments June 6, 2005

<http://www.currenttechnologies.com/news/index.html>

<sup>ix</sup> See endnote 8

<sup>x</sup> See endnote 4

<sup>xi</sup> See endnote 4

<sup>xii</sup> “Powering Up A New Kind of Broadband” Jim Duffy 9/12/05

<http://www.networkworld.com/news/2005/091205-bpl.html?rl>

<sup>xiii</sup> State Auto Prop. & Casualty Ins. Co. v. Midwest Computer & Moore, 147 F. Supp. 2d 1113 (Okla. 2001)