

Executive Summary – BPL 2006

Main issues affecting the widespread deployment of BPL:

- Agreed technical standards leading to interoperability
- Adoption of the “Texas/California Regulatory Model” or a similar model in all States
- Lower Cost/longer range BPL equipment to improve the economics of standalone Smart Grid applications and commercial broadband service to rural areas
- A viable BPL business case for standalone Grid Automation applications

With these issues resolved, it is estimated that in 2008-9 BPL will feature:

- Interoperability between Access and In-Building systems and interoperability between vendors
- Increasing BPL operations providing commercial services to selected communities
- Increasing number of BPL trials/operations providing Smart Grid applications
- Longer range BPL equipment design for standalone Smart Grid services and rural areas
- Development of integrated Grid Automation projects using BPL by large utilities (thereby avoiding islands of automation)
- Widespread use of BPL for In-Building data networks
- Widespread use of BPL for Home Networking of communications, computing and entertainment systems.

BPL Technology

Third generation Access BPL technology can provide a raw throughput of 200 Mb/s, which makes it competitive with Cable and DSL. This technology is available in chipsets from DS2 and in equipment from Corinex, Ambient, Amperion, IBEC, Kiacom, Mitsubishi, utility.net etc. The rival Access BPL chipsets based on HomePlugAV technology are not yet available, but also promise to deliver 200 Mb/s raw throughput through suppliers such as Current Technologies, Motorola, etc.

The main advantages of BPL Technology are:

- No new wires – the transmission line in the form of the distribution grid is already installed and so reduces the infrastructure cost and reduces the deployment time.
- Symmetrical bandwidth – upstream and downstream – unlike Cable and DSL
- Home networking – the signal is available from every power outlet in the home or office.
- In-Building Networking – no new wires

The major technical issue that has created problems for BPL systems that use the 2-30 MHz band is complaints of interference from the Amateur Radio community. These complaints have come from all over North America. This issue is being resolved through limitations imposed by the FCC rules, the introduction of adaptive notch filters and by some companies by using frequencies above 30 MHz.



BPL Standards

BPL Standards are progressing through the IEEE, and the most important standards are for coexistence between different BPL devices could be drafted by early next year (2007). The development of open standards for BPL is a slow process, but one that will spur the development of BPL by encouraging competition and economies of scale that will drive down costs and increase equipment availability.

BPL Regulatory

Federal policy makers have provided regulatory clarity with regard to BPL technical operations. States such as Texas and California have further encouraged utilities to deploy BPL. However, BPL can be deployed without such state laws and rules.

BPL Deployment

Mass-market commercial deployment of BPL is beginning to occur in Dallas, Texas, where it is being rolled-out to 2 million homes and businesses. This wide-scale deployment is being driven by smart grid applications, as well as public policies to promote broadband access and competition, as well as energy reliability and efficiency. In addition, deployment by electric cooperatives and municipal utilities indicate that the technology can be deployed successfully in rural areas.

Recommendations

It is recommended that Utilities plan the automation of their distribution system and the selection of a communications system as a single integrated project (as advised by EPRI) and not implement a series of unconnected “islands of automation”. This is not to say that BPL must be deployed all at once to support every conceivable application. Instead, the overall plan can be implemented in phases based on the priority sequence of each utility. The important point is to plan the integration of BPL in order to avoid “islands of automation”.

It is recommended that in advance of developing a business case for standalone grid automation (internal utility) services, research be undertaken to establish a monetary value for the benefits of using Smart Grid, Automated Grid and Intelligent applications on the distribution grid. The objective is to justify investments in grid automation to the utility management and the utility regulatory bodies.

It is recommended that UPLC and the BPL industry work together to expedite the development of interoperable equipment standards for both Access and In-Building BPL, which is the necessary step to further the growth of the BPL industry and adoption of BPL as the default communications medium for the distribution grid.

It is recommended that the BPL industry address the requirement for a communications link for major grid automation projects now underway and show how BPL systems can perform the communications function economically.

It is recommended that UPLC and the BPL industry develop systems and financial solutions for Rural Broadband applications. The systems solutions should consider combinations of technologies such as WiMAX Wireless Access, MV BPL, LV BPL and WiFi. The financial solutions could include access to funds through the RUS Broadband Loan program, which is available to any broadband solution (not just BPL) to rural America. Other sources of funding could include the Universal Service Fund and state funding.