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Emerging Technology: Broadband Over Power Lines By Sheena Colbath Harden

Broadband over Power Lines or BPL is a technology that has been in development over the last ten years or so but is just now emerging into the mainstream. BPL technology allows Internet digital signals to travel over the same lines that bring power to our dishwashers, microwaves and hair dryers at speeds comparable to cable and DSL -- up to 3 megabits per second.

The way it works is by transporting data over the same electric grid that already brings power to homes across the nation. Electricity only uses the low-frequency portion of the power line, leaving room for data to flow over the higher frequencies without interference. The data signal is inserted at certain points using any number of already available modulation methods such as those used in dedicated telephone circuits (e.g., T1 lines). The signal is then transported over the grid and boosted as it travels using repeaters at certain intervals to ensure a strong signal. The signal is then carried into homes or businesses through the lines to a low voltage outlet in each building, or through wireless transmitters situated on power poles.

Since Internet data is carried two ways (upstream and downstream) the system can be continually monitored. This will allow power companies to detect power outages more precisely and efficiently. It may also replace the need for human meter readers and allow for more accurate power usage data, making it a valuable tool for electric companies.

Several communities have launched pilot projects to test the viability of BPL. Burnet, Texas (just 40 miles northwest of Austin) is one such community. Partnering with Broadband Horizons, Burnet plans to bring BPL to about 120 homes by the end of 2004. Most of the installation costs (est. \$50,000) are being paid for by Broadband Horizons.

Advocates say that BPL is a low-cost option to help bridge the digital divide, especially in rural communities. Utility substations and power lines may require significant upgrades; however, the improvements in energy management alone may be worth the expenditure.

The FCC, who adopted new rules this fall with the intent of increasing competition, has recently reviewed possible concerns over BPL. New technical requirements were set out to ensure that BPL would not interfere with any frequency used by licensed radio broadcasters, public safety officials, the federal government or aeronautical stations.

One concern not yet addressed by the FCC is that of fair competition. Government agencies have traditionally provided public services such as water and electricity, leaving corporations to provide for our communication needs. The Internet, as a data service, is unregulated and therefore open to any entity that wishes to become an Internet Service Provider (unless prohibited by State law). Some corporations do not want municipalities entering into the field; however, advocates believe that the extra competition will be good for both the economy and in providing greater customer service at a lower price.

<http://www.fcc.gov>

<http://www.broadbandhorizons.com>