

NEWS

Is This the Moment for Broadband Over Power Lines?

Smart grids and the push for rural connectivity propel power-line data communications



PHOTO: Randi Silberman

BY DAVID SCHNEIDER // JULY 2009

Along-time dark horse in the race to extend broadband access to the far corners of the United States—broadband over power lines, or BPL—may have finally found its golden moment.

BPL uses radio frequencies to impose the high-speed data signals on top of the 60-hertz AC that power lines carry. The broadband data signals are therefore prone to disturbance, particularly from the many voltage transients that power lines experience.

One reason for the renewed interest in BPL is the Obama administration's pledge to provide greater Internet access to underserved Americans, even those living in rural areas, where other means of providing broadband typically aren't economical.

Last February's American Recovery and Reinvestment Act will provide US \$2.5 billion in loans and grants through one agency and \$4.7 billion through another to expand broadband connections for residents of rural and underserved areas (as well as for public-safety agencies).

BPL provider International Broadband Electric Communications (IBEC), in Huntsville, Ala., is one firm likely to tap into this new government money.

IBEC works with customer-owned electric cooperatives to give their members BPL, which costs less than other options because so much of the necessary infrastructure is already in place.

Brent R. Zitting, IBEC's chief technical officer, says that his company has been able to provide BPL in places with as few as three houses per kilometer at data rates as high as 3 megabits per second for the company's premium service, which costs home users \$89.95 per month. Most customers choose the \$29.95 option, however, which gives only 256 kilobits per second—an order of magnitude less than the download speeds cable offers.

Still, when you're used to a 56-Kb/s dial-up connection, the availability of 256 Kb/s is well appreciated, says Zitting. He expects that with upcoming government loans and grants, his company will be able to expand BPL coverage to even more areas. "We're following the same pattern as rural electric delivery back in the 1930s," he says, referring to the government programs during the Great Depression.

Electric utilities' increasing interest in obtaining real-time data on how end users are consuming electricity has also driven the resurgence of interest in BPL. Getting such data, of course, requires both suitably intelligent meters and a communications network to relay the information back to the utility.

In Boulder, Colo., for example, Minneapolis-based Xcel Energy is using BPL in combination with short-range radio links for its SmartGridCity pilot project. The links send data from power meters, hot-water heaters, thermostats, and renewable-energy systems.

According to Daniel Sangines, a communications engineer who until recently worked on SmartGridCity, the data flows along the power lines for about a kilometer before it's siphoned off the line and into an optical fiber or cellular-based backhaul system. Attempting greater BPL distances would require multiple repeaters to deal with signal attenuation, reducing the bandwidth unacceptably, he explains. In Boulder, the smart-grid network can provide a typical home with at least a 5-Mb/s link. Rather than sell the bandwidth, Xcel is reserving it for future smart-grid applications.

While BPL seems a natural match for the problem that electric utilities are trying to solve, not all smart grids are using it. Some, such as the vast grid just proposed for Miami and environs, will likely use wireless ties rather than BPL. Still, given the new funding opportunities for rural broadband and the burgeoning web of smart grids, BPL is sure to keep a foot in the ongoing race to network people and their power-hungry appliances.