

## INSIDE

### Disruptive market strategy at \$8/month?

“The key to disruptive markets is that they not only steal market share from other companies, the cable guys and the phone guys, but they ..... 2

### Shpigler invents service to manage grid for BPL

The Shpigler Group last week went public with a service the firm invented to help its own BPL deployments by getting a handle on reams of data ..... 2

### Intellon hopes ETSI, IEEE will pick HomePlug

A standards coalition is starting to coalesce around HomePlug, Intellon CEO Andy Melder told us last week ..... 3

### Telkonet/Broadband Horizons helping Katrina evacuees

Multi-dwelling unit (MDU) BPL's leading vendor Telkonet partnered with Texas BPL integrator Broadband Horizons to deliver high-speed internet access to an improvised center in Killeen, Tex, helping 3,000 hurricane Katrina evacuees ..... 3

### Washington State University wants more Telkonet BPL

Telkonet and ISP First Step Internet reported last week that the university wants to expand the MDU BPL access the team deployed in July at a student housing building called the Terrace Apartments ..... 4

### EarthLink still ‘bullish’ on BPL

“BPL is a broadband technology that can potentially serve millions of customers and that ought not be held hostage by ..... 4

### NTCA members: BPL still a moderate threat

The number of rural telecom co-ops reporting BPL services are available from nearby power utilities rose from 4% last year to 5% ..... 4

### JD Powers survey uncovers changes in ISP market

Utilities that deliver dial-up internet service — many rural co-ops and some munis do — might be interested in a JD Powers & Associates broadband market survey ..... 5

### 2 stories in 1 minute ..... 6

- Xeline has 200 mbps
- We've heard from a reliable source

## Broadband takes its place as newest utility

### Silverman: Everything touching grid is a potential customer

### New business model attempts to serve all

Broadband is not an entertainment service, a new way to do research for home or

work, an affordable replacement for the telephone, a way to share photos with friends and family, a cable-TV style video service, a surveillance network for safety and law enforcement, a remote medical diagnosis and treatment service — nor is it the latest way to bring the world into people's homes to broaden their knowledge and enhance their experience of life itself.

It's all those and much more.

Broadband is fast evolving into a

*Continued on page five*

## Where the mission meets the (Wall) Street

Are utility needs met by today's BPL market strategy, asked Silverman.

Grid monitoring needs ubiquitous connectivity, he noted and for that it makes sense for the strategy to include selling the triple-play to high-end customers.

Those customers help fund a BPL roll-out and should be targeted first but the mission is to serve all, he reminded, and he sees literally millions of non-human customers waiting to create utility revenues.

Load monitoring and control is BEN's baseline technology but Silverman's interested in many more apps and showed a slide of animation created for the CenterPoint BPL demonstration center of air quality monitoring in schools, bridge vibration monitors and many others (*BPL Today*, 7/18, A world of BPL applications in four minutes?).

### QUOTE OF THE WEEK:

While we've been talking about consumers and end-users as customers, potentially you could think of every electrical object as a customer. A lamp post is a customer if you want to know if the lamp's burned out. The thing that fascinates me about BPL is that it takes the ability to gather and communicate well beyond just people. We're really talking about machine-to-machine communications as well.

*Larry Silverman at the UPLC annual conference in Dallas.*

New customers means new revenue

and new assets for the utility.

For an IOU, cutting operations costs will likely get passed on in the next rate case as a lower rate — although rate cases don't happen that often.

The big utility application sell for BPL has lacked a hook to get CEOs in a multi-billion dollar business excited about rolling out new services.

Adding customers means adding infrastructure — and that becomes equity.

Return on equity is bread and butter for an IOU, thus thinking of every electrical device attached to the grid — millions of them — as new customer could equate to new revenue and return on equity, things shareholders really care about.

Utilities that move sooner rather than later can get a foothold in markets where cable and DSL have yet to tread and start signing up new customers — lamp posts and people, too.

This “mission” includes electric utilities delivering the newest “utility” — broadband.

Silverman calls that a “disruptive market strategy” — not just a new technology but the combination of:

- A new technology;
- The business model, or Silverman puts it — the way the value proposition is presented and perceived by customers, and
- Availability of the technology for actual deployment.

## Disruptive market strategy at \$8/month?

“The key to disruptive markets is that they not only steal market share from other companies, the cable guys and the phone guys, but they create new customers,” explained Silverman.

The national average for an electric bill is just under \$100, noted Silverman.

The price for the triple play is well over \$100.

Silverman asked attendees to write down the monthly price they thought would drive universal adoption of broadband in the US.

Silverman asked for hands to show how many attendees had written down a price of \$20/month or more?

A few hands went up.

Between \$10 and \$20, many hands went up.

Under \$10, a few hands went up.

Silverman believes it's about \$8 for internet access.

He sees a good business model in it.

One rule of thumb for BPL business models is to achieve a 20% take rate — one out of every five customers on a transformer — at \$25/month each.

Take the price down to \$8/month, get four of the five customers and that “transforms the business model.”

Delivering even 256 kbps is a lot faster

than dial-up and don't worry about video on demand just yet.

That's \$32/month/transformer deliverable that we believe could be delivered with G1 BPL gear such as in Manassas, Va, but wait, there's more.

With four-times the customers, bundle other services such as \$10/month for VOIP, \$10 for energy management, \$6 for air quality monitoring and as many more as a clever firm can dream up and the numbers start looking great.

We did the math.

Silverman's example is now up to \$52/month/transformer if you figure half the customers won't take bundled services, but that's probably too conservative.

At \$10/month for unlimited calling in North America and low international rates — features VOIP leader Vonage offers at a higher rate — cell phone rates start looking pretty ugly.

Thus folks that use just a cell phone at home are added to the bunch who just want cheaper calling.

Energy management trials that get customers to cut power use to save money have uncovered so much customer acceptance that the new energy act from

Congress urged the technique be used by states nationwide.

The California PUC is already pushing ahead with a program.

Before you add any imaginary services and plenty are sure to follow, Silverman's model is already bringing in \$34/customer and \$136/month/transformer.

“And this is not just for poor people,” noted Silverman, adding that his kids are both out of school and living on their own without land line phone service or cable TV.

“How are they going to get internet,” since they refuse to get a land line for DSL or sign up for cable. With the right BPL offer he believes they would sign up.

Utilities have a very different set of goals and mission than cable and telecom firms, he noted, and Silverman believes his strategy is a good fit.

“In the end if this technology is going to get out there,” the needs of all users — human and non-human — have to be addressed.

“It has to have scalability. It has to be reliable and it has to maximize value for all the stakeholders ... from the customers, the people to the grid, the lamp posts, you name it.”

## Shpigler invents service to manage grid for BPL

The Shpigler Group last week went public with a service the firm invented to help its own BPL deployments by getting a handle on reams of data about the radio frequency characteristics of any particular grid.

The service is called Record Assessment, Mitigation & Performance Support (RAMPS) and Shpigler Group is making it available to utilities and BPL integrators/operators as an a la carte service or part of the firm's BPL services.

RAMPS supports BPL and other grid optimization technologies with RF testing and computer management of the reams of data those tests create.

“As a BPL network escalates from a trial to full-scale deployment serving hundreds of thousands of subscribers, the role of network administrators becomes increasingly convoluted — requiring an automated, all encompassing management solution,” explained Shawn Cullingford, vice president of engineering for Shpigler.

He started work on RAMPS for internal use almost as soon as he joined Shpigler in January, Cullingford told us Thursday.

He previously worked for Pennsylvania Power & Light designing and building one of America's largest commercial BPL projects.

“In order for a utility to maintain its resources, it needs the support of a system that was specifically developed to ensure a BPL network's efficiency.”

RAMPS supports network architecture design strategy, periodic performance evaluation, FCC compliance standards, RF mitigation management and procedures and

explicit radio frequency database analysis and maintenance.

The RAMPS System development team wanted to create a scalable solution that would support a BPL deployment from the earliest stages of system layout, through deployment, then navigate the long-term operational issues that occur.

RAMPS was meant to cut network operations costs, said the firm, and could create savings for network operations of 44% according to financial modeling and case study experience.

Shpigler is fairly new as a BPL integrator.

Its subsidiary Lighthouse Broadband is installing a BPL project for Consumers Energy in Grand Ledge, Michigan — but for years has been the go-to consultancy for over 100

utilities that wanted to see how BPL would work for them.

Experience with those utilities revealed “all utilities face similar obstacles at similar junctions in a deployment and we have developed a systematic solution to support a utility in navigating these problems,” said David Shpigler, president and founder.

Market analysis told the firm RAMPS would be the multifaceted backbone system needed to maintain the ongoing operations of complex BPL networks.

To date, no other unified system exists to address the prerequisite fundamentals of any BPL deployment, said the firm.

Shpigler Analyst Michael Tuttle can tell you more (845-348-7804, [mtuttle@shpigler.com](mailto:mtuttle@shpigler.com), [www.shpigler.com](http://www.shpigler.com)).

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## Intellon hopes ETSI, IEEE will pick HomePlug

A standards coalition is starting to coalesce around HomePlug, Intellon CEO Andy Melder told us last week.

His firm's chipsets are the heart of the HomePlug standard and competition from other chipmakers whittled down to just DS2 in the last year.

DS2 concentrated on getting its 200 mbps chips on the street much sooner than HomePlug and thus it was adopted by a variety of hardware vendors as we've reported.

Vendors using the gear include Ambient, Amperion, Ascom, Corinex, EBA PLC and Mitsubishi, to name a few.

But the slow moving utilities haven't given any of these firms significant roll-outs thus weakening DS2's play for market acceptance.

Kaicom is expected to enter the US market with very competitively priced BPL gear using the DS2 chipset (*BPL Today*, 8/22).

Meanwhile HomePlug didn't release its 200 mbps chip spec and instead worked on making sure its multi-member coalition agreed on the 200 mbps HomePlug AV spec being developed — and getting support from world technology leaders.

HomePlug member Sony ramped

up its involvement this year.

As Sharp, Radio Shack, EarthLink, Comcast and other big names continued their HomePlug support, two less-famous but powerful technology firms joined up — Sumitomo and STMicroelectronics.

The latest blow was HomePlug's addition of Intel, Linksys (Cisco) and Motorola on the alliance's board and election of Intel's Marketing Manager for Bridge Products Mark Theall as president.

That brought lots of fresh credibility. "We're making sure from a global perspective that the European theater and pan-Asian theater are aware that this movement is underway — that there's critical mass forming now," reported Melder.

The alliance is talking to groups in Europe that drive the standards there to "make sure that they understand that HomePlug is the standard that they need to adhere to as we move forward in all aspects of power line communications."

HomePlug has evolved into a "family of standards," noted Melder, home networking, automation and broadband access.

Interoperability of those networks is BPL's holy grail and would be easily attained if everyone just picked HomePlug.

The same would be true for DS2 gear,

obviously — or any other's.

That's what makes standards efforts at the IEEE take so long — measured in years not months.

But if ETSI and the IEEE decided to adopt HomePlug, that would speed up the process in a big way, noted Melder.

Then "harmony" would exist across multiple standards bodies.

He agreed with us that coexistence as a first step to interoperability is an ungainly concept that would significantly inhibit each technology that complied.

And it takes the focus away from getting interoperability on the street — the one accomplishment all agree will light the BPL industry on fire.

We asked when BPL chips would be affordable enough to go into appliances to take advantage of being plugged into the network.

Refrigerators with video screens might be able to take advantage of high speed networking, but most appliances would need only low speed connectivity using the command layer of IP.

The command spec for those chips is under development, said Melder.

## Telkonet/Broadband Horizons helping Katrina evacuees

### Installation took a whopping 12 minutes

Multi-dwelling unit (MDU) BPL's leading vendor Telkonet partnered with Texas BPL integrator Broadband Horizons to deliver high-speed internet access to an improvised center in Killeen, Tex, helping 3,000 hurricane Katrina evacuees.

The center was dubbed "Operation Thanksgiving" and is part of a state-wide disaster relief network with connections to the Federal Emergency Management Agency (FEMA) and the governor's office.

Broadband Horizons was asked by a Bell County, Tex, non-profit technology firm called BellNET to set up internet access for the center — a department store in an abandoned shopping center transformed into a shelter, day-care, message board and housing processing center.

Installation of the Telkonet iWire System was completed in 12 minutes and delivers secure broadband to every electrical outlet in the center.

A mobile lab was created with laptop computers for Katrina evacuees to use — plus representatives of the Social Security Administration, the American Red Cross and the Texas Veteran's Commission and various health and county government organizations.

"Telkonet's iWire System was the perfect solution for quick and simple internet access deployment," said Mike Bates, executive vice president of Broadband Horizons.

"The shopping center did not have any telephone lines — the only active system was the electrical infrastructure which is all that was needed since Telkonet's system uses a building's existing electrical wiring to deliver internet access.

"The Telkonet wired solution met the government's requirement for a secure internet connection," noted Bates (*BPL*

*Today*, 7/04).

"When Broadband Horizons and Telkonet were asked to participate, they immediately rose to the occasion to provide the resources required to implement a cutting-edge technology," said John Fisher, Bell County Commissioner, Precinct 4.

That "facilitated" the ability to help 3,000 evacuees find housing the local community and offer a gateway of communication "vital to the evacuees' well-being, enabling them to find lost loved ones, check back to their home communities or access FEMA to determine their eligibility for any benefits," Fisher noted.

Broadband Horizons created three BPL pilots at Texas co-ops that CenterPoint Energy and State Sen Troy Fraser referred to as inspiration for further developing BPL and creating the nation's first state level BPL law, respectively ([www.broadbandhorizons.com](http://www.broadbandhorizons.com), [www.telkonet.com](http://www.telkonet.com)).

## Washington State University wants more Telkonet BPL

### BPL replaced wireless after students complained

Telkonet and ISP First Step Internet reported last week that the university wants to expand the MDU BPL access the team deployed in July at a student housing building called the Terrace Apartments.

First Step is the ISP for the project and the team will market the service together to student housing in northern Idaho and western Washington.

"The Telkonet iWire System is ideal for older apartments, such as the Terrace that was built in the late 1950's, where it would be cost prohibitive to retrofit with CAT-5 or even to install wireless," said Mike Hall, area sales manager for First Step.

Because Telkonet's iWire System uses

existing wires, First Step can "round out" its offerings to old and new buildings.

"We initially installed wireless in some of our student housing complexes but found we were constantly getting complaints from unhappy users due to inconsistent coverage," said Bob Tattershall, director of housing.

Many complicated factors affect wireless access in a large complex and these can't be totally overcome.

Plus wireless requires new infrastructure to be deployed throughout an entire complex, noted Tattershall.

"The comparative cost for Telkonet's system was about 20% that of wireless and best of all, we can provide students with secure and reliable internet access from every power outlet in every room." Telkonet's hardware doesn't require

telephone wires — "a major plus since many students only have cellular phones," he added.

"When word got out that the Terrace apartment complex was offering wired internet access, two families moved from their apartment complex into the Terrace complex — a true testament to the demand for reliable and secure high-speed internet access." First Step Internet began offering dial-up internet access in 1994 with the idea of making access available to virtually everyone.

The firm grew to be the region's largest local ISP by supplying the lowest cost and highest quality connectivity available and delivers service via wireless and wired networks in over 3,500 apartments ([www.fsr.com](http://www.fsr.com), [www.telkonet.com](http://www.telkonet.com)).

## EarthLink still 'bullish' on BPL

"BPL is a broadband technology that can potentially serve millions of customers and that ought not be held hostage by... (sic) amateur radio operators or any other special interest," Etopia Media News Networks quoted Dave Baker, vice president for Law and Public Policy at EarthLink, reportedly the largest independent ISP in the US.

"EarthLink is as bullish on BPL as anyone.

"We are working very hard with Ambient and other companies to make BPL a market reality."

The firm teamed with Progress Energy for that firm's BPL pilot and

although Matt Oja who represented the utility at the time (he's at IdaComm now) reported EarthLink was eager to join the project, we've heard little since about the ISP's involvement with BPL.

"Wireless and BPL technologies are not likely to be competitive in cost and performance with cable and DSL over the last mile to the home," the report quoted Baker ([www.etopiamedia.net/bplw/pages/bplw15-5551212.html](http://www.etopiamedia.net/bplw/pages/bplw15-5551212.html)).

EarthLink Principal Research Engineer & Director Brian Wenger is to present to the upcoming HomePlug Powerline Alliance conference ([www.homeplug.org](http://www.homeplug.org)).

The firm has an ad for a senior product manager responsible for developing municipal broadband product initiatives and managing all phases of "cross functional product implementation and operation."

The job includes managing "product lifecycles and vendor relationships in the delivery of EarthLink services over various municipal broadband technologies such as WiFi, BPL, FTTH and WiMAX (<https://earthlink.recruitmax.com/ENG/candidates/default.cfm?szCategory=jobprofile&szOrderID=3306&szCandidateID=0&szSearchWords=&szReturnToSearch=1>).

## NTCA members: BPL still a moderate threat

The number of rural telecom co-ops reporting BPL services are available from nearby power utilities rose from 4% last year to 5%, the National Telecommunications Cooperative Assn (NTCA) found in its 7th annual broadband survey of its members.

Of the 92% that offer broadband, 99% offer DSL and 10% see BPL as a serious threat to their operations.

That's down over 50% from 22% last year, NTCA found, but 43% see BPL as a "moderate threat," — about the same as last year's 42%.

NTCA sent the survey to each of its 560 member firms and 161 companies (29%) responded.

The co-op's member firms continue their leadership role in bringing broadband services to consumers throughout rural

America, said NTCA.

The co-op's co-op applies the concept of banding together to create buying power to get goods and services for co-ops at lower prices than those firms could otherwise find.

VOIP is offered by 4% — up from less than 1% last year — and the number that reported facing competitors that offer VOIP is 57%, up from last year's 42%. Seventy-one percent of respondents plan to offer VOIP in the foreseeable future.

Forty-two percent offer video service to their customers — half via hybrid fiber coax (HFC) and 46% using DSL.

Twenty six percent of those not offering video plan to by December of this year and 37% plan to offer it before the end of 2007.

The survey revealed an 18% rise in

respondents calling the process of getting financing for broadband projects fairly to moderately easy — from 68% to 86%.

Of those delivering broadband, 74% of respondents reported that their customers can get 200-500 kbps and 72% reported they offer 1 mbps up from 57% last year.

The survey also showed a continued steady increase in take rates for these services.

Competition for broadband and related services is growing for the respondents and 85% reported competition from at least one provider.

That's up from 76% in the 2004 survey, said NTCA.

Competitors include national ISPs, satellite, cable firms and electric utilities.

We expects IBEC's 20 co-ops looking

for RUS loans for new BPL plans may impact those numbers (*BPL Today*, 8/29).

Marketing efforts have risen to meet that competition at 84% of respondents' firms — changing their marketing approach to include price promotions and bundled service offerings to better

compete with other providers.

Last year only 63% reported such changes and offerings.

The survey was organized into eight sections: general questions about current operations and future plans, competition and marketing, fiber deployment, VOIP,

BPL, video, finance and the availability of capital and finally miscellaneous thoughts.

Click this link to see the NTCA release and find a link to the report: [www.ntca.org/ka/ka-3.cfm?content\\_item\\_id=3659&folder\\_id=522](http://www.ntca.org/ka/ka-3.cfm?content_item_id=3659&folder_id=522) ([www.ntca.org](http://www.ntca.org)).

## JD Powers survey uncovers changes in ISP market

Utilities that deliver dial-up internet service — many rural co-ops and some munis do — might be interested in a JD Powers & Associates broadband market survey that found ISP's that offer accelerated dial-up service and broadband tend to keep their customers that switch to faster service — rather than losing them to another broadband provider.

The McGraw Hill-owned research firm is best known for rating the satisfaction of customers in a variety of markets.

The latest ISP survey of 6,313 residential customers found cable firm Cox rose 20 index points — the most improvement of any of the firms — to win for broadband.

SBC Yahoo! ranked highest among dial-up providers.

The study is called the *2005 Internet Service Provider Residential Customer Satisfaction Study* and was released last week.

The firm looked at seven factors: performance and reliability, cost of service, image, customer service/technical support, billing, e-mail services and promotions.

After Cox came Verizon, BellSouth and Bright House, respectively.

SBC Yahoo! was followed by AT&T Worldnet and EarthLink, respectively.

Dial-up accelerators are having a big impact on the number of hours dial-up users spend online, the study found.

Overall internet use among dial-up customers grew from 15.6 personal hours/week last year to 17.8.

Among those using dial-up accelerators, internet usage averages 19.9 hours — 10% higher than broadband users who average 18.1 hours/week, said the report.

Customers using dial-up accelerators also report spending less on internet service than the dial-up average \$19.35/month compared to \$20.04 for all dial-up users.

Price competition brought the monthly costs high-speed users report down slightly from \$44.12 in 2004 to \$43.83.

"Speed is the name of the game in the internet world and customers who use accelerators are more likely to switch to broadband products like DSL and cable modem down the road," said Steve Kirkeby, senior director of telecom research at JD Power and Associates.

"With nearly one-third of dial-up users saying they intend to switch to a high-speed connection in the next six months, dial-up accelerator users are more likely to switch to their current providers' high-speed product, retaining them as customers for the long term."

DSL subscribers are significantly more satisfied than cable modem users for a second year but cable modem providers are growing market share faster than DSL.

Cable modems account for 28% of internet subscriptions — up from 24% in 2004, said the report.

DSL accounts for 16% of internet service — up just 1%.

Of the 32% of dial-up users that say they'll definitely or probably switch to high-speed in the next six months, 47% plan to pick DSL and 30% want cable.

**High-speed subscribers are more price sensitive than dial-up in deciding when and where to switch, said the report, but connection speed is much more important for dial-up than high-speed subscribers.**

The survey found that discounted packaging affected the decision of 62% who chose high-speed but only 39% that chose a dial-up ISP.

"Price competition among high-speed providers is increasingly prevalent," said Kirkeby.

Service interruption is a key concern for over half of high-speed subscribers but price is the main reason they switched, he added.

"Long term, however, product performance will be the main reason they stay," he predicted ([www.jdpower.com](http://www.jdpower.com)).

## Broadband takes its place as newest utility

### *From page one*

utility, an entitlement in the information age and economy.

President Bush declared as much when he directed that all Americans have access by 2007.

With all but a few technical and industry problems left to solve, BPL is poised to take its place alongside other traditional and alternative technologies in bringing broadband to the masses.

And that's so fitting since the very mission of electric utilities is access for all.

So at what price would high-speed internet become universally accepted in the US?

Broadband Energy Networks (BEN) founder and CEO Larry Silverman asked that question on the last day of the UPLC annual meeting in Dallas this month.

Thomas Edison was asked in an interview if his new service — electricity — would be just for the rich, Silverman noted.

The inventor replied that he would make it cheap enough for everyone to afford.

That answer surprised people of the day, said Silverman, and when we look to the future we should expect to be surprised.

Much less happens in a year than we expect — yet much more happens within a decade than seems possible, he noted,

adding that thinking about the future "is all about expectations."

Silverman showed a chart with adoption curves for some leading technologies of the last 100 years.

All the curves were similar — slow at first, then faster — but a closer look revealed that some arced up to close to 100% adoption relatively fast such as refrigerators, radio and the color TV.

Others such as cars, clothes washers and even telephones moved along a sometimes jagged path and still aren't nudging 100%.

Clothes dryers and air conditioning moved up the scale pretty fast, but dishwashers have reached only a little over half way, Silverman's chart revealed.

The steepest adoption curves on the chart were for internet — with a slightly slow start but a steep climb — and broadband had a similar incline.

Neither was anywhere near 100%.

If he'd included the worldwide web, it would have started around 1995 “and you'd see it up around 70% today.”

It took about 40 years for electricity to reach full adoption, Silverman noted.

Adoption takes longer than you would like, “but things are moving faster than they used to.

“Hopefully we'll find that BPL follows these similar curves.”

Broadband is a creation of the information economy.

To understand that economy one could look at the value of a gold nugget “then and now.”

In the “old world” the nugget was worth what you could get for it in commerce, but in the information economy lots of new values are created independent from the nugget itself such as geological studies, research reports and refining techniques, Silverman explained.

“Does information about electricity have value,” he asked.

“If so, what can we do with it?”

“The kinds of information that we look at on the grid, for example we look at transformers and capacitors and you can see the temperature, the voltage and

the current.

“That gives you information about which you can make decisions but first of all you have to have access to the information — you need to be able to sense it.

“And then you have to have a set of rules that tell you what to do based on the information.”

He gave the example of seeing the frequency drift in a network and knowing it needed to be shut down.

That can be automated.

“It's not just the information about the grid itself that has value but the locations where things are on the grid.

“You have electrical terminations in lots of places where you want to know what's going on there whether it's lighting inside of a tunnel or light poles on a bridge.”

We've reported Silverman's assertion that everywhere a termination exists is a potential source of information (not only about the grid but the surrounding area too) and potential automation (*BPL Today*, 7/18, 6/20).

“We're looking not just at the grid but the things the grid also touches.”

He breaks potential devices and services BPL offers into sensing, control, communication and analytics — “the rules that tell us what to do” based on the information.

“BPL technology does not exist in a

vacuum. It is part of a larger communications and technology ecosystem,” and one single technology won't be the best answer for all utility applications.

Sensor and control technology is getting smaller and more affordable, Silverman assured, benefiting from new nanotechnology and wireless research — and it will “use less power itself.”

Silverman believes BPL will be the medium those devices use to communicate.

**He quoted a prediction that by 2010 the majority of traffic on the internet will be machines communication with each other.**

Standards drive volume up, noted a slide.

Volume drives costs down and costs drive the business model.

Technology isn't important unless it commands a market — yet to be deployed it has to provide value greater than its cost.

That business model isn't the only factor in deciding to deploy BPL, Silverman noted.

The other factor he calls “the mission.”

If BPL is a utility, the BPL utility's mission is to provide affordable, reliable electricity and information to everyone.

“That's a very worthy mission for the industry.”

## 2 stories in 1 minute

**Xeline has 200 mbps:** The Korean BPL chipmaker revealed its own 200 mbps chipset at the UPLC conference in Dallas this month. The chipset supports quality of service for the triple play and can be used for in-premises and MV line BPL access and backbone, the firm reported. “We are striving to closely cooperate with industrial partners to penetrate and expand into the market,” said Xeline CEO

Dr Giwon Lee, and the firm plans to contribute “substantially” to the international BPL standardization movement ([www.xeline.com](http://www.xeline.com)).

### We've heard

**from a reliable source**, but have not confirmed at press time that the man that designed DS2's 45 mbps and 200 mbps chipset, Juan Carlos Riveiro, had resigned.

**Tell us what you think.** We want to hear from you. Send your comments, questions and suggestions about this week's *BPL Today* to [sam@ghinews.com](mailto:sam@ghinews.com).

**Abbreviations:** To see a glossary of *BPL Today*'s abbreviations, go to [www.bpltoday.com/glossary.htm](http://www.bpltoday.com/glossary.htm).

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