



## **PowerGrid ‘smart grid’ demo in Austin shows BPL’s real value**

### **May be widest collection of applications anywhere Platform handles AMI, green power, DSM, even line sag via radar**

BPL integrator/operator and smart grid PowerGrid Communications yesterday opened its BPL-based “smart grid” showcase with Austin Energy as part of UTC Telecom 2007 Conference and Expo Austin, Texas. The conference runs through tomorrow the showcase is in PowerGrid’s Austin office and will be available for tours by appointment for at least a year, PowerGrid CEO Chris Britton told us last week. The showcase displays perhaps the widest variety of applications in any demo we’ve reported -- all tied together with PowerGrid’s GridEye Management System software platform and BPL to communicate. The platform lets the customer -- whether that’s PowerGrid customer Austin Energy, the utility’s customers or the municipal government -- see and interact with applications appropriate to the user. One example would be a consumer using GridPoint’s energy management system -- a PowerGrid partner that uses an advanced battery device and software to manage power consumption and hookup onsite green power.

The consumer can see on a web portal in real time when their home switches from grid power to solar panels, for example, or when the pool pump shuts down to save power during a peak price time. We’ll describe more of the impressive of applications later in this story. PowerGrid is showing the City of Austin, its power customers and the wider utility industry what BPL’s real value may be. As a networking technology, BPL limited value by itself, PowerGrid Chairman and CEO Chris Britton reminded us last week.

The value of a deployment is hard to calculate until the applications it supports begin to show real-world benefits and cost savings.

Austin Energy chose PowerGrid for its pilot, we reported in February (BT, 2/20), and when the latter firm suggested doing a showcase, the utility believed it would be a good way to show its own management plus elected officials of the City of Austin “why they should implement a BPL network,” Britton reported. The city’s utility faces some challenges including some old and hard to read meters plus meeting its own big commitment to green power.

“They wanted the showcase to really portray the goals of the city and of the utility.

“When Chris [Britton] designed the whole thing he really went a long way to crystallizing in one single place what a BPL network can do and the value it can bring,” said Britton.

Austin Energy is one of the nation’s largest community owned electric utilities serving over 380,000 retail customers in Austin plus Travis and Williamson Counties, Texas.

The pilot is using Corinex brand 200 mbps BPL gear to pass about 200 homes and businesses.

### **GridEye has many views**

PowerGrid is presenting a case history at the UTC event today including a graphic showing the utility’s grid with overlays representing AMR for power and water plus video surveillance cameras, said Britton. The showcase includes GridPoint’s home DSM and onsite green power interface plus municipal and utility-level applications including command and control for DSM, outage management, street light and traffic monitoring and much more -- all communicating via BPL and using a web-based portal interface, Britton explained.

That’s GridEye, and PowerGrid uses it to let the utility, the municipality and end users see and control the

applications appropriate to them.

“It peels back like an onion,” he added.

Austin Energy’s view using GridEye is from the transmission grid all the way down to each element on the network, said Britton, and he described the views as being on separate “tabs.”

All told the program has a dozen or so such tabs and the utility and PowerGrid can access them all.

The City of Austin can access views of the water and electric meters plus surveillance cameras around the city and in some buildings and a variety of alternate energy projects.

One is a chiller plant that uses cool water to offset air conditioning costs, said Britton, and it’s to be linked to the BPL system.

The next layer of the onion is for consumers.

“They don’t see AMR but they see DSM,” said Britton, plus broadband data and options such as VOIP and even home security.

Whatever level one is using, “you can see it and direct from anywhere” since it’s web based.

### **What GridPoint brings**

A solar array from Meridian Energy Systems is on the roof of the PowerGrid office keeps the GridPoint system charged.

The latter’s software lets the user see how a change in consumption – turning on a microwave oven or the HVAC -- is handled in real time, explained Britton.

And the user can interact with the system in real time “from anywhere around the world on a web portal,” noted Britton.

GridPoint started out making battery- based uninterruptible power supplies -- to give computer users a chance to save files in a power outage, for example.

The firm’s systems evolved a lot and now can help make onsite green power work by storing the output from a variable generation source and managing the use of power from the grid.

The system can be programmed -- where time of use power rates are in place -- to store power from the grid when it’s cheaper for use later at peak price times.

And it can opt to use mostly onsite power and turn to the grid as a last resort. PowerGrid’s BPL lets users see and control the system in real time.

### **Utility apps covered**

GridEye reports the broadband speeds at the nodes across the network, Britton reported, letting the utility find power quality issues where they interfere with bandwidth, for example. That kind of flexibility is a BPL trademark.

“Now that we’ve got essentially all the moving parts we now can decide where to apply the solution based on the community needs,” said Britton. “We could bring gas in,” if gas metering was needed. PowerGrid plans to keep adding utility applications to the showcase. The BPL system interacts with Austin’s 45 mbps WiMesh network, too.

### **Guard that never naps**

Austin Energy and the city authorities can likely both benefit from a video analytics technology PowerGrid is using with the BPL system. It’s a computer system that watches surveillance video and does remarkable analysis of what it “sees.” The images from a camera at a substation might be watched for unscheduled presence of people and ring an alarm for an attendant’s attention. The city could use it to count the number of people walking along a city block or the number and speed of cars on a street. The system can be set to send an alert or alarm or just save the video for later viewing.

### **Water meters linked**

“The City of Austin has problematic water meters in spots -- difficult to read, hard to get access to,” Britton

explained.

The city is using electric AIVIR in parts of the city and PowerGrid wanted to show the utility the benefit of integrating “it all into one command and control system that touches the grid ubiquitously,” said Britton. “We brought multiple solutions in technology into an integrated platform.” PowerGrid used a product from Datamatic that connects older metering technology to modern networks. At the showcase “you will see water meter reads in a city park and fire stations tied into electric on-demand AIVIR and DSM-enabled platforms -- all brought back through the BPL grid right to our laptop for command and control in the demo center,” he added. The approach works for any level of water metering from citywide to subdivisions, MDUs and homes.

### **MuNet meter’s the hub**

PowerGrid’s using BPL-enabled AMR power meters from MuNet.

The meter acts as the hub for the home or business, Britton reminded, thus it communicates with the water meter.

PowerGrid experienced firsthand the convenience of the ubiquity of power lines when it connected a water meter at the baseball field, noted Britton. The water meter was far from the power meter but a nearby power line offered a convenient connection to the BPL system. MuNet reported having HomePlug enabled meters in November, 2005 (BT, 11/28). “We’ve worked with them for almost two years now,” said Britton. PowerGrid’s only been around for a or so but Britton was the CEO of IdaComm -- the telecom subsidiary of IOU IdaCorp -- during its years as a BPL pioneer. The firm did much of the leg work in designing the BPL pilot and demonstration center for CenterPoint Energy in Houston before pulling out of the BPL world in January of 2006.

### **It’s a sag watcher**

Line sag is accepted as the cause of the Summer 2003 Northeast outage where drooping distribution lines connected with trees and started the infamous cascading power interruption. Britton first told us in January of a technology meant to watch for line sag and alert the utility (BT, 1/23).

Back then the talk was of video

analytics but now PowerGrid uses radar to watch for lines that droop into the danger zone.

PowerGrid’s newest technology partner Sojitz (BT, 4/24) found a product from the New Japan Radio Company that uses a miniature radar device to measure line sag within a centimeter.

And it’s much more affordable than the video approach, said Britton.

### **Municipal apps included**

“Street lights are a major user of power” and are the source of so-called light pollution, noted Britton.

PowerGrid adopted a street light technology from a major vendor in Europe called Streetlight Vision, he added, that lets the city set rules for turning lights on and off.

Variables for programming the lights include time of day, region of the city or by street or individual light, and the lights can be dimmed.

Britton has seen studies that broke down a typical city’s power use and found street lights could be as much as 10% to 30%.

“As this technology becomes certified in the US, you’ll see us bring more of it in,” said Britton.

A municipal lighting unit is included on display in the demo center, he added, but the firm is awaiting US standardization -- in a month or so -- before doing a demo on real streetlights in Austin.

The system is used in Paris, for example, and those charged with operating it could control the lights from anywhere in the world, noted Britton.

“It’s very simple command and control right from a laptop.”

### **Time of use is coming**

“Very few localities today have time- of-use and premium billing but its coming,” said Britton, and the PowerGrid system “sets up the architecture, the market signals for the consumer to select a plan, manage their kilowatt cost per minute, per hour -- all the command and control is there.”

Once the price signals are received, PowerGrid has relays that can turn on and off high-consumption devices such as hot water heater, pool pump, air condition and furnace, he added.

Using the GridPoint unit perfects the DSM plan by connecting to onsite power such as solar now and later a home- sized “micro” wind power option -- or just charging the battery during off-peak periods.

### **Home security’s offered**

PowerGrid teamed up with SecTech Global -- “the largest security technology company out of Israel,” said Britton

-- for home security surveillance cameras, lighting controls.

It’s a wireless system that uses a central hub that’s plugged into an out-of-the-way.

The system can be accessed remotely via the web and uses the broadband connection to alert authorities of a tripped sensor.

Traditional systems use a phone line that can be cut or fail and at best offer “intermittent views of the status of your home,” said Britton.

The SecTech system connects directly to the BPL network and carries live video for surveillance and seeing who’s at the door.

The homeowner can remotely see the status of doors and windows and whether the home is occupied, said Britton.

And it took 10 minutes to install the base unit, said Britton.

### **BPL’s value emerges**

“One of the messages behind the showcase is that to drive real value one of the things that you really need to do is to bring together lots of different pieces to really deliver the promise of BPL,” said Britton.

“Whenever you are dealing with proprietary technology, the problem is you have to invent everything.

“PowerGrid decided early-on to create an open platform so we’ve brought in what we consider the best-in-breed.”

The home security system can interface with ZigBee and LonWorks and thus shows the importance of flexibility, said Britton. “Every customer has their preference every utility has their partners so you have to be able to essentially have an open standard and an open network” ([www. powergridcomm.com](http://www.powergridcomm.com)).

**BOTTOM LINE:** Many in the BPL industry have been predicting a day when the number of IP-based or linkable applications would flourish for utilities, building owners, homes, industry and municipal authorities.

Now we’re seeing a growing list of firms around the globe bringing such abilities to market including some we expected and others -- like the video analytics -- that may have seemed more remote or futuristic.

PowerGrid takes choosing applications seriously, but we can’t help thinking it must fun to shop around for “cool” gadgets systems that serve serious purposes and bring new abilities to utilities, cities and the general public.

But it’s the logical evolution from the invention of IP and the silicon chip wedded the ubiquitous power infrastructure.

BPL promotes the realization of a 2Pt century vision of electronics, software and networks that perform a bit of magic -- and “just work.”

