

Friday April 24 2009

## AEP is using Amperion BPL on HV transmission lines

**BREAKING NEWS:** American Electric Power (AEP) signed Amperion for an Ohio demonstration of high-speed, IP-based broadband communications to connect three substations over transmission lines using BPL, Amperion said today. At megabit data rates, the year-old, five-mile demonstration network in central Ohio connected the substations over 69 kv lines with the longest link being 2.6 miles.

Amperion developed innovative, patent-protected techniques to recover the BPL signal in noisy environments using advanced filtering and noise-cancellation methods, said the firm.

"We're using technology that has not been used before," Amperion CEO Nachum Sadan told us yesterday. "And we have more technologies coming out to stretch it to four or five miles. That's our goal."

Using BPL for communications between stations extends the coverage of utility communications networks to topographical areas that are hard to reach with fiber in a cost-effective way, said Amperion. Fiber can cost \$40,000-100,000/mile not counting access issues that can arise.

The project was jointly developed

by Amperion and AEP and funded by the DOE via [EISA](#). Equipment vendors ABB and Cooper Power Systems provided materials.

"It is a world's first in terms of distance and high-voltage rating," said Sadan, adding that his company is unique in offering a communications solution over HV, MV and LV lines.

"The practical applications for this technology we call HV [high-voltage] BPL are protective relaying, SCADA expansion, remote station surveillance and advanced sensing," explained Sadan. "We already demonstrated the first three applications running concurrently. The network is monitored 24/7 through secure, redundant network management systems that measure availability, throughput and latency."

After initial testing on a 0.8-mile, 46 kv circuit spanning the Kanawha River in Charleston, WV, trials moved to a 5.1-mile, 69 kv circuit between AEP's Heath, Granville and West Granville stations in central Ohio, said Amperion.

Equipment to couple the BPL signal to the overhead line and continuously monitor signal quality and channel performance was installed in each station as well as at one

intermediate point along the 69 kv line. Communications for SCADA, protective relaying and remote facilities surveillance cameras were evaluated during the field trials.

While "fiber's the best," noted Sadan, who runs what started as a BPL firm and made the natural readjustment as a smart grid firm along the way. Fiber comes with a cost, he added. "HV BPL is the best alternative to fiber" and the speed of deployment even gives BPL an edge.

"With fiber, either you'll wait years or forever. With HV BPL, you can deploy it in a day," said Sadan.

Amperion's future plans include expanding the HV BPL technology to 138 kv lines, said Sadan, since about 70% of all US sub-transmission circuits are 138 kv or less.

The firm is testing applications such as synchro-phasors and sensors.

Amperion reportedly developed a number of unique signal-coupling and modulation techniques during the multi-month trial period.

"The sky's the limit," said Sadan, "with applications that we haven't even thought of."

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## EXCLUSIVE

### California PUC's Chong embraces smart grid for CO2 control

#### State's strict climate law kick-starts plans at reluctant IOUs

*Part one of a two part exclusive interview.*

California PUC Commissioner Rachelle Chong sat down for a talk with us Tuesday in San Francisco. She was fresh from her agency's daylong Smart Grid Symposium and we asked her to spend another 30 minutes discussing smart grid.

The PUC regulates privately owned electric, natural gas, telecom, water, railroad, rail transit and passenger transportation firms. Gov Arnold

Schwarzenegger appointed Chong to the state PUC in January 2006. She previously served as an FCC commissioner under President Clinton. How has the PUC been adjusting to the smart grid? How are you going to operate going forward?

"First, we as a commission have to make a decision whether we think bringing the smart grid to California utilities is a good idea. To that end, we have been very aggressive in opening a rulemaking on smart grid."

California put in place a number of foundations for smart grid including automated metering initiatives, she added. "We were one of the first in the

nation. I think, very significantly, we're one of the few states that's done dynamic pricing policies already.

"We are clearly a state that's already said we are ready and interested in the smart grid.

"As a commission, we have an important role encouraging our utilities to get involved."

The PUC did just that with automated metering and found utilities weren't interested. "We had to twist some arms to get the utilities to do it. Now, I think, they are very happy they did it because we are now well positioned, with this current move away from foreign oil and trying to have independence from

traditional fossil fuels. We are now in a position to move forward very rapidly on things like a smart grid initiative.”

The PUC’s “critical” roles include “setting policies that are friendly for smart grid and approving actual requests for ratepayer money that will pay for it.

“But I also think there’s a leadership role this commission is playing on smart grid.” That’s why the PUC held the Smart Grid Symposium this week, “to bring light on the subject, to educate the stakeholders in California about what it is and what’s going on federally -- and to get people to think about how it will impact what will be done here in California.”

Did anything said in the symposium surprise Chong?

“I liked Efran Ibrahim’s smart grid is green presentation.” He leads AMI and home area network (HAN) security research in the Intelligrid Program

at EPRI, and was one of our virtual panelists for the story we did on cyber security two weeks ago (SGT, [Apr-09](#)).

“The part I liked was, he was showing that if we engage in all of our carbon-emission-reduction programs ... it would really mean there would be less demand response required of consumers. I think his point was, you can only ask consumers to conserve so long. They tend to do it for a while in a crisis situation but if you ask them to do it for 10 years, they will stop.

“His point that we can’t just selectively do parts of the carbon-emission reduction program and think that’s enough really hit home.” Chong admitted that in the last couple weeks her focus on smart grid opened her eyes to the role smart grid could play in carbon emission reductions.

California “quite unusually” has a

law mandating global warming emission reduction “in a very aggressive way. This commission has been charged with reducing carbon emissions from electric and gas sectors,” she added. She now sees the amount of carbon emissions saved by the smart grid is “very significant.”

Our reporting on the PUC’s symposium included concerns expressed about what seem to some to be mixed signals coming out of DOE, where the agency wants to see collaboration in applications for ARRA money but then capped grants at \$20 million. If that’s a 50% matching grant, its only enough to manage a limited trial and hardly enough for multiple firms to split between them and have much to show, went the argument (SGT, [Apr-22](#)).

We asked Chong to describe her reaction to those concerns.

“We were kind of surprised, too. One thing we did hear in Washington from the policymakers is they want to have a fair geographic distribution of the projects.... On the other hand, they do want this research to be good, innovative,” and cutting-edge, she added. “They don’t, for example, want to just fund all meter upgrades because that would be a waste of money, right? That’s not new technology.”

“What was important in the NOFA [notice of funding availability] was they did at least delineate some particular areas they are interested in -- energy storage, grid monitoring and regional demonstrations.”

How drastically does the smart grid affect the PUC’s rate case work?

“It will happen in the usual way. Generally, the utility will ask for things in their general rate case. Those occur every three years.

“As an example, Southern California Edison just finished their general rate case. There were some smart grid projects that were approved.” For those, Chong explained, Edison could conceivably apply for some of the DOE funding with greater confidence because the PUC already approved the money. “And they could try to get 50% of it paid for through the matching funds, if DOE finds it worthy.

“As for new projects that the IOUs conceive of, if they want to put that investment in the rate base, they would need to come to the commission to get approval for that.”

One issue that comes up -- including at the symposium -- is whether the commission will have time to look over proposals the IOUs are going to submit to DOE to endorse or certify them “given

## If DOE raises \$20 million grant ceiling, who will cheer?

DOE is considering raising the ceiling for smart grid stimulus funding applications, a DOE spokeswoman told us yesterday.

Industry response in the first week after DOE released a “notice of intent” for its Smart Grid Investment Grant Program suggested the proposed grant ceiling may be too low (SGT, [Apr-22](#)). DOE had announced that it would provide grants ranging from \$500,000 to \$20 million for smart grid technology deployments, the White House said April 16.

Yet some industry officials immediately protested that a \$20 million cap would be too limiting for a major initiative.

“DOE states that the purpose of the Smart Grid Investment Grant Program is to stimulate the ‘rapid deployment and integration of advanced digital technology that is needed to modernize the nation’s electric delivery network,’” noted Itron CEO Malcolm Unsworth, “a purpose that will be difficult to realize given the current \$20 million limit for grants.”

For many of the “shovel-ready” AMI and smart grid projects that have already been approved by utility commissions, he added, “a \$20 million stimulus grant would represent only a few percentage points of the overall project budget -- offering utilities little incentive to accelerate or expand their projects.” Those goal of stimulating the

economy would be better served if the grants could boost the deployment to 40 million smart meters, said Unsworth.

Not all firms minded the grant limit.

“I don’t know whether that’s a good or bad thing for us,” said Amperion CEO Nachum Sadan told us Thursday. “I know some of the big boys had complained about it but for us, we’ll be happy with a smaller chunk.”

Both perspectives may be accommodated. DOE Senior Advisor Matt Rogers was quoted by the *Washington Post* Thursday as saying that the smart grid money would probably be “segmented” so that one part would be aimed primarily at smaller firms and another with a higher dollar limit would help larger commercial projects. He was named by DOE Secretary Steven Chu in February to oversee the department’s stimulus spending and loan guarantees.

“Our intent was to fund a diversity of projects and help small companies as well as large,” said Rogers. “We’re in the middle of evaluating a restructuring.”

A final version of the guidelines are expected late next week.

Sadan wants to see DOE continue to support smaller firms such as his own, rather than just helping the big players. “You have a lot of little guys coming up with alternative, innovative applications. It’s an exciting time and we have to make things happen for us as a nation.”

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the very short time frame we know we have now. The deadline is roughly the end of July. That's going to be very tough. Usually, things don't happen here any faster than six to nine months and that's considered very, very fast. So we're going to have to figure out what to do about that."

What else will the PUC have to figure out quickly regarding smart grid?

"Part of what we're trying to do is educate our energy division so that they are aware of what's going on," in smart grid. The idea is to make sure they aren't "working in a silo as they are working on particular dockets," such as procurement

or renewable programs. "Part of today was to bring a lot of the staff into the room so they could become educated on these federal elements and what smart grid means. I think that that went very well."

*To be continued...*

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## Senate Energy Committee vets efficiency bill

The US Senate Energy Committee this week reviewed the merits for requiring utilities and others to implement programs for cutting consumer energy demand through a national energy efficiency resource standard (EERS).

A nationwide EERS would mandate

levels of electricity and natural gas savings to be achieved through a variety of consumer and industrial efficiency programs along with more efficient building codes.

Also reviewed was the Save American Energy Act of 2009 (S 548),

introduced by Sen Chuck Schumer (D-NY), which would establish a federal EERS to require electricity producers to achieve a 15% improvement in energy efficiency by 2020. Natural gas distributors would meanwhile be required to boost their efficiency 10%.

Despite the well-known benefits, energy efficiency programs are not being used to their best potential, said Energy Committee Chairman Jeff Bingaman (D-NM). "I look forward to learning more about how a utility efficiency standard would work nationally, either as a standalone law or as part of a renewable electricity standard."

The potential for benefits through energy efficiency is considered among the lowest-cost options to reap energy savings estimated to reach as much as 30% in some states, said the committee, which noted that 19 states have implemented utility efficiency standards since 1998. Recently, the proposal for a national renewables standard would also call for state utility efficiency standards to become federal law.

For more information, visit the committee website at <http://energy.senate.gov/public>.

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## Wellinghoff wants smart grid to help thwart new coal, nuclear

The days of building nuclear or coal plants may be over, said FERC Chairman Jon Wellinghoff at a US Energy Association forum Wednesday. "We may not need any, ever."

"As chairman of FERC, I am committed to making clean energy a fundamental component of the electricity that consumers rely on every day," he added in a statement on the FERC website. "Nationwide, less than 7% of our electricity generation comes from renewable resources and we are not making the best and wisest use of our greatest energy resource -- demand-side resources which harness the ability

### 5 stories in 90 seconds

#### Houston report now

**available online:** The report from a Houston taskforce that we wrote about in several recent issues (SGT, [Apr-22](#)) is now available online for download here: <http://www.houstontx.gov/citizensnet/20090421a.html> (and we noticed that this link worked only intermittently).

#### GE expects \$4 billion/

**year from smart grid:** General Electric expects its smart grid electricity monitoring business to draw \$3-4 billion in annual revenue over the next three-four years, Reuters quoted John Krenicki, a vice chairman of the largest US conglomerate and CEO of its Energy Infrastructure unit. "It's going to be a lot like wind. It's going to take off quickly." GE's annual meeting with shareholders was this week in Orlando, Fla. The US will likely be the most "meaningful" growth market for smart grid technology due to the Obama administration's stimulus plan, he added. On Monday, GE, Cisco Systems, Silver Spring Networks and FPL Group announced that they were collaborating to roll out a smart grid system throughout Miami (SGT, [Apr-21](#)).

#### Webinar looks at

**getting ARRA cash:** Intergraph and Stellar Grants are hosting a web-based discussion to help utilities go over the process of preparing to apply for ARRA bucks. The session is at 1:00 pm EST, Tuesday, April 28. Grant application strategy and process guidelines will be discussed

and the presentation is free of charge. Intergraph sells solutions that enable utilities to efficiently manage and operate advanced grids. Stellar Grants is involved in grant-writing and funding services. Registration required: <http://www.intergraph.com/promo/sgwc>.

#### PGE explains AMI

**in YouTube video:** A Portland General Electric representative described smart meters and the smart grid, ostensibly to customers, in a 50 second video available on YouTube: <http://www.youtube.com/watch?v=jYLElragSSo>.

#### US utilities seek new

**partners to add variety:** Most US energy firm executives intend to form a strategic partnership this year, according to a poll released Wednesday by IntraLinks, a critical information exchange provider. Among the reasons most cited for striking partnerships were to offer more products or services (30%); solidify an existing business relationship (27%); mitigate a decreased availability of financing (22%), or to generally maintain their business' health or limit its potential exposure to bankruptcy (14%). Respondents also indicated plans to obtain financing or raise capital for projects (34%), acquire an asset (23%), sell an asset (20%) or file for an initial public offering (3%). Archived audio of the event is available for download with a free membership: <http://www.intralinks.com/our-company/resource-center/webcasts/>.

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of consumers to use electricity more efficiently.

“Our electricity service has been predicated on supply, with limited focus on improving the efficiency with which it is used or on enabling customers to do their part by participating in electric markets on par with generation.

“To improve our performance in these areas requires us to upgrade our transmission system and refine our operation of the electricity grid to accommodate the particular characteristics of these resources,” he added. “Investing in and operating smart technologies will be an important part of this.”

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