The Energy Daily
Established 1973
30 Years of Excellence in Reporting
1325 G Street, NW Suite 1003 • Washington, D.C. 20005 • (202) 638-4260 • Fax: (202) 662-9740
Thursday, January 13, 2005
ED Volume 33, Number 9

New Consortium Seeks Fair Hearing For Acoustic Fusion

BY GEORGE LOBSENZ

Researchers at four major academic institutions and one company have formed a consortium to conduct research on acoustic inertial confinement fusion, a hotly controversial concept that involves the use of sound waves in liquid to generate energy.

Founding members of the Acoustic Fusion Technology Energy Consortium are researchers at Boston University, Impulse Devices Inc., Purdue University, the University of Mississippi and the University of Washington Center for Industrial and Medical Ultrasound.

The director of the consortium is Wylene Dunbar, a researcher at Impulse Devices, a California firm that recently manufactured the first research reactor designed for acoustic fusion experiments.

According to the consortium, acoustic fusion involves the use of sound waves to bombard a liquid

(Continued on page 2)

Wood Sees Mitigation Options On Market Power Enforcement

BY TINA DAVIS

Federal Energy Regulatory Commission Chairman Pat Wood, suggesting revocation of market-based rate authority was only for truly "odious" acts, suggested Wednesday that some sort of price-capping or advance approval mechanism might be appropriate mitigation measures for any electricity suppliers that do not pass FERC's new market power screens.

In a media breakfast sponsored by *The Energy Daily* and BP America, Wood said revocation of market-based rate authority was at the farthest end of the spectrum of what the agency could do in response to failure of the market power screens. The screening process requires companies to show FERC they do not have generation market power and thus should be allowed to continue charging market-based rates for wholesale power sales.

The chairman stated "there are a lot of things short of yanking the rates" the agency can do, suggesting the model of what existing regional transmissions organizations (RTO) do to mitigate market power. "When [supply] gets scarce, you've got

(Continued on page 4)

Repeaters Are Key

Properly 'Tuned' Power Line Offers Broadest Broadband

BY CHRIS HOLLY

A paper released last week by Pennsylvania State University researchers indicates that under ideal conditions, high-speed, broadband Internet service delivered by overhead, unshielded power lines can transmit data in amounts far exceeding what DSL or cable can carry.

The research team headed by Mohsen Kavehrad, Penn State's W.L. Weiss professor of electrical engineering and director of the Center for Information and Communications Technology Research, created a new model for broadband over power line (BPL) service applications that predicted data transmission at much higher rates than currently achievable by existing broadband technologies.

Service trials of BPL technology conducted by utilities over the past year or two have succeeded in moving data at rates of two or three megabits per second, a speed comparable to what DSL technology can deliver.

But the computer simulation using the Penn State model, which corrects impedance mismatches at power line intersections that can reduce the line's capacity to carry data, found that a properly "tuned" line could carry far more data than achieved to date by any broadband technology.

"We've run a computer simulation with our new power line model and found that, under ideal conditions, the maximum achievable bit rate was close to a gigabit per second per kilometer on an overhead medium-voltage unshielded U.S electric power line that has been properly conditioned through impedance matching," Kavehrad said in a January 5 statement.

"The gigabit can be shared by a half-dozen homes in a neighborhood to provide rates in the hundreds of megabits per second range, much higher than DSL and even cable."

In their paper, Kavehrad and Pouyan Amirshahi, a doctoral candidate in electrical engineering, noted that the junctions and branches in the U.S. overhead electrical grid cause broadband signals to "reflect," which causes degradation in the transmission performance and decreases transmission capacity.

"The signal can bounce back and forth in the lines if there is no proper impedance matching," Kavehrad said.

(Continued on page 3)

ATTENTION: COPYRIGHTED MATERIAL. It is unlawful to reproduce this page without written permission from the publisher.

Properly 'Tuned' Power Line... *(Continued from page one)*

"The bouncing takes energy away from the signal and the loss is reflected in the ultimate capacity."

Kavehrad said the future performance of BPL will depend on how power companies choose to space repeaters on the lines to strengthen the signal and prevent the degradation of data transmission.

In a Wednesday interview with *The Energy Daily*, Kavehrad said the new model holds great promise for closing what he called a gaping "broadband gap" in the United States.

Broadband service is widely available on the East and West coasts of the United States and in major U.S. cities in the interior, but in isolated rural areas throughout the country the population density is too low to entice communications companies to spend the formidable amounts of capital necessary to build new infrastructure to deliver DSL or cable modem Internet service.

Indeed, Kavehrad noted the "broadband gap" is remarkably similar to the disparity of electric service in the early 20th Century. At that time, investor-owned power companies were reluctant to invest in the infrastructure needed to bring power to rural areas.

That disparity led to the formation of municipal power companies and rural electric cooperatives, which—with considerable financial assistance from the federal government—completed the job of bringing electric power to virtually all Americans.

"If you condition those power lines properly, they're an omnipresent national treasure waiting to be tapped for broadband Internet service delivery, especially in rural areas where cable or DSL are unavailable," Kavehrad said.

And just as the delivery of electric power sparked a transformation in the quality of life for rural America in the 1930s, bringing light to brighten homes in the evening hours and to power water pumps, radios and other conveniences now considered necessities, bringing broadband Internet service to all Americans could spark dramatic gains in the U.S. economy, healthcare delivery, education and countless other benefits, he said.

Kavehrad acknowledged that widespread application of BPL still would entail considerable costs, and suggested that the federal government—just as it aided rural electric co-ops and municipal utilities—should provide funds to help the industry meet the challenge of universal broadband service in the United States.

Other technical problems also stand in the way. Private radio operators, who complain that BPL signals would interfere with their signal transmissions, have surfaced as vocal and energetic opponents of the new technology.

A number of utilities already are testing BPL technology. The City of Manassas (Va.) Utilities was the first utility in the country to provide BPL service to its customers. Cincinnati-based Cinergy Corp., in conjunction with Current Communications Group LLC, announced in March that it would attempt a mass deployment of BPL—the first investor-owned utility to go public with such plans.

More than a dozen other companies are testing the technology, including Washington, D.C.-based Pepco Holdings Inc., which also is working with Current; Progress Energy, based in North Carolina, which is working with Earthlink; PPL Corp., headquartered in eastern Pennsylvania; Atlanta-based Southern Co.; and Consolidated Edison of New York.

Agenda Items Include:
Hedge Funds
The Future of the Utility Business
States Leading the Way

Confirmed Speakers Include:
Pat Wood, Chairman, *Federal Energy Regulatory Commission* (*FERC*)
Mayo Shattuck III, Chairman, President & CEO, *Constellation Energy*

Attendee Registration fees:	Jan. 3 - Apr.12	Apr.13- Onsite	***Space is limited!***
Corporate Rate:	$995	$1,195	
King Publishing Subscriber:	$795	$995	
Government/Non-Profit:	$795	$895	

Limited table-top exhibit/sponsorship opportunities!
For more information, please visit www.kingpublishing.com. or contact Melissa Monk at 202-662-9732 or mmonk@kingpublishing.com.

ATTENTION: COPYRIGHTED MATERIAL. It is unlawful to reproduce this page without written permission from the publisher.