



NEWS RELEASE

TVA Puts 'Smart Grid' Device to Test

KNOXVILLE, Tenn. — The Tennessee Valley Authority is testing a promising “smart grid” technology that may help utilities enhance reliability, efficiency and the ability to keep power flowing.

Ninety-nine devices designed to reroute electricity, automatically or by remote control, from potentially congested transmission lines onto underused lines have been installed on a 161-kilovolt transmission corridor spanning 17 towers east of Knoxville.

“TVA has seen a critical need for this technology and has been involved in its development for some time,” said Bruce Rogers, director of TVA Innovation Technology. “We are pleased to provide a full-scale test bed for this demonstration as part of our mission to provide leadership in technology innovation for our industry.”

The Smart Wire hardware, manufactured by [Smart Wire Grid Inc.](#) of Oakland, Calif., consists of an array of “distributed series reactance” units that clamp onto the transmission lines. The self-powered units, which resemble long rectangle boxes, act like valves on the power line. By mimicking overload, they can redirect power to less-used lines for greater efficiency.

Operating autonomously or with full operator control, the units also provide line sensing and monitoring capability to optimize system operations.

“This is the kind of advance that can put ‘smart’ into the electric grid and give us a level of control we haven’t had before,” said Rob Manning, chief energy delivery officer and executive vice president for TVA’s nearly 16,000-mile transmission system.

“The number of challenges that transmission system owners must meet increases every year. We are asked to improve grid reliability, facilitate efficient electricity markets and integrate with renewables. We think this technology may help us do that,” Manning said.

TVA was an early funder of the Smart Wire concept and has continued to support the development through the industry-funded National Electric Energy Testing, Research and Applications Center (NEETRAC) at Georgia Tech and its Smart Wire Focused Initiative (SWFI).

The transmission line demonstration is funded by TVA and several organizations including: the Advanced Research Projects Agency-Electric (ARPA-E), a research

branch of the U.S. Department of Energy; and SWFI partners Southern Company, Baltimore Gas & Electric and the National Rural Electric Cooperative Association.

The Smart Wire units were installed this past winter and will be evaluated by TVA for performance over the course of a year. ARPA-E will be monitoring the results.

DeJim Lowe, senior manager of grid modernization in TVA Technology Innovation, said the Smart Wire units could provide immediate cost savings by improving power flow on the system without major upgrades while mitigating congestion issues on the transmission system.

Stewart Ramsay, CEO for Smart Wire Grid, predicts the transmission grid of the future will have to be “almost infinitely controllable” to accommodate a variety of possible objectives, including greater reliability, greater efficiency, lower cost and renewables.

“We don’t know what the demands are going to be in 10 years,” Ramsay said. “What we do know is that having greater flexibility and control of the transmission system will support whatever those goals are.”

The Tennessee Valley Authority is a corporate agency of the United States that provides electricity for business customers and local power distributors serving 9 million people in parts of seven southeastern states. TVA receives no taxpayer funding, deriving virtually all of its revenues from sales of electricity. In addition to operating and investing its revenues in its electric system, TVA provides flood control, navigation and land management for the Tennessee River system and assists local power companies and state and local governments with economic development and job creation.

Visit the [Technology Innovation web page](#) to learn more about the Smart Wire grid demonstration at TVA. The site includes an ARPA-E video about the project.

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