



Phasor Measurement Units (PMUs) are being installed and used on the Southern Company grid and on the nation's grid as well. This technology provides high-resolution, synchronized data about grid conditions in real-time. This information allows us to secure our grid and mitigate the impact of problems outside of our service territory. Clifton Black (left), research and technology management engineer, and Shane Eaker, a systems analyst in energy management, are involved in the research and testing of this new technology.



Geographic Information System Mapping is used to manage our transmission and distribution assets. The map and application data of our lines and equipment, integrated video, and still images allow us to view our system electronically. The touch of an electronic map brings up the assets at any specific location. When storms hit and damaged equipment must be rebuilt, we know what materials are needed for restoration by viewing video and images of the equipment prior to the storm. Transmission supervisor Dawson Ingram and his team are instrumental in the implementation of this new technology.

POWER LINE SMART

Southern Company has a longstanding commitment to investing in and maintaining a robust electric system. Since 2000, we have invested more than \$8 billion to upgrade, expand, and maintain our transmission and distribution infrastructure to ensure our ability to deliver electricity on demand. Over the next three years, we plan to invest \$4 billion to prepare for future demand growth and help ensure the high level of reliability our customers have come to expect. And that's just Smart.

Technology continues to play an increasing role in our electric system, as well as the nation's. Southern Company is at the forefront of the research of technologies that will advance and optimize the system and ensure continued safety, security, and reliability.

We have been optimizing our system performance and reliability for a number of years through the use of technology now associated with the Smart Grid. And we are ready to implement new and innovative Smart Grid technologies as they become available.

We continue to research new technologies and how we might apply them to our business to improve on our industry-leading reliability performance.

In 2008, partnering with the National Electric Energy Testing, Research, and Applications Center, Southern Company accomplished something that no other electric utility in the world has ever accomplished—the successful demonstration of a new approach to monitoring real-time electrical characteristics of the transmission system and associated equipment. Unlike traditional approaches to grid monitoring, the new method works whether the system is energized or not.

The potential short-term benefits of this project include early prediction of equipment failure. Long term, this new approach could enable us to implement an independent grid monitoring system, creating a backup to those technologies that monitor the national grid as a whole.

An innovative technology we're testing on our distribution network is proving to be successful at restoring power following a storm or when a line is damaged. This technology re-energizes undamaged lines capable of carrying electricity by re-routing power to those lines from a different substation.

Maintaining, upgrading, and expanding our infrastructure is essential to our continued superior performance. Researching the use of new technologies is critical as well. By applying cost-effective technologies, we enhance our ability to safely and reliably produce and deliver electricity, optimize the use of our assets, and make changes to meet future needs.

In 2008, we recorded our best year ever in terms of frequency of unplanned outages and our second best for the duration of those outages. Our goal of taking our industry-leading performance and continuing to improve on it has driven these measures to all-time lows.

A photograph of a man, identified as Transmission engineer Jason Payne, standing in front of a red background with a grid pattern. He is wearing a dark sweater over a light blue collared shirt and grey trousers. He is holding a large, thick, braided metal cable in his left hand and a handheld electronic device, the LineTracker, in his right hand. The device has a screen displaying data and a keypad. Several other similar cables are visible in the foreground, some looping around the man. The overall scene is a professional setting for a technical demonstration.

Transmission engineer Jason Payne is involved in the testing of the LineTracker, a wireless remote sensor technology designed to provide real-time information that can be used to improve network quality and reliability. The LineTracker has the ability to monitor the Southern Company grid and identify problem areas, minimizing outages that are not storm-related. This technology is helping us become even more reliable.

