

# DOING TRIPLE DUTY IN THE APPALACHIAN MOUNTAINS



For the past four years, the Sylacauga Utilities Board has seen its reliance on Cambium wireless broadband products increase, not only in terms of numbers of nodes but also in applications over the network. The network, which had its beginnings in rural connectivity applications, now includes Supervisory Control and Data Acquisition (SCADA), and 9-1-1 non-emergency data backhaul. Future plans include incorporating Advanced Metering Infrastructure (AMI) applications.

Nestled in the heavily wooded southern edge of the Appalachian Mountains 50 miles southeast of Birmingham, Alabama, Sylacauga is known for its beautiful above ground surroundings as it serves as an entrance to the 600-square-mile Talladega National Forest.

That natural beauty can provide natural challenges in providing residents high-speed Internet services. More than three years ago, the Sylacauga Utilities Board saw an opportunity to provide its customers with a cost-effective high-speed wireless broadband network. With quickly emerging wireless broadband technology, the Utilities Board recognized an alternative to its current dial-up Internet service offerings. "We were still leery of line of sight issues with our towering pine forests and 400-foot high rolling hills," said Reay Culp, Telecommunications Department manager for the Sylacauga Utilities Board. "But there were cost-effective technologies in the license-exempt radio frequency (RF) space that we

believed could overcome interference issues with our harsh physical environment."

The Utilities Board first considered the unlicensed 2.4 GHz band, however, it could not establish a consistent link at this frequency because of the dense foliage and non-line-of-sight issues. Cambium offered a pair of 900 MHz Access Points, which are designed to maintain links over shorter distances despite environmental interference.

The utility deployed the 900 MHz radios on its Springhill and Buena Vista towers, both of which were connected to a 100 Mbps fiber connection to the Sylacauga Network Operations Center (NOC) about three miles away. The Cambium wireless broadband solution performed as advertised, sustaining 3 Mbps data speeds over a non-interrupted wireless broadband link. The utility added five additional 900 MHz Access Points at each tower to provide 360-degree wireless broadband coverage.

**"THERE WERE COST-EFFECTIVE TECHNOLOGIES IN THE LICENSE-EXEMPT RADIO FREQUENCY (RF) SPACE THAT WE BELIEVED COULD OVERCOME INTERFERENCE ISSUES WITH OUR HARSH PHYSICAL ENVIRONMENT."**

- Reay Culp,  
Telecommunications  
Department manager,  
Sylacauga Utilities Board

As the “buzz” of this new high-speed service began spreading around the community of about 13,000 and the surrounding rural areas, customers began opting for wireless broadband over the slower dial-up service the utility offered. And although Sylacauga did have private Digital Subscriber Line (DSL) and cable services, hundreds of utility subscribers lived in unserved or underserved areas for those offerings. “Our goal was not to compete with the private sector,” said Culp. “We felt we had an obligation to provide cost-effective, high-speed Internet services to our customers who live in rural areas throughout Talladega County and don’t have affordable access to cable or DSL. Today, we have expanded the network to 44 Access Points on nine towers serving 730 business and residential customers — some as far as 7 miles from the tower.”

Each tower is equipped with Cambium’s Cluster Management Module (CMM). The module is the heart of the system’s Global Positioning System (GPS) synchronization capability that allows Sylacauga Utilities Board to re-use frequencies and add capacity while ensuring consistent service to its customers. As a result, subscribers can experience consistently reliable service — even those at the outer edge of the network.

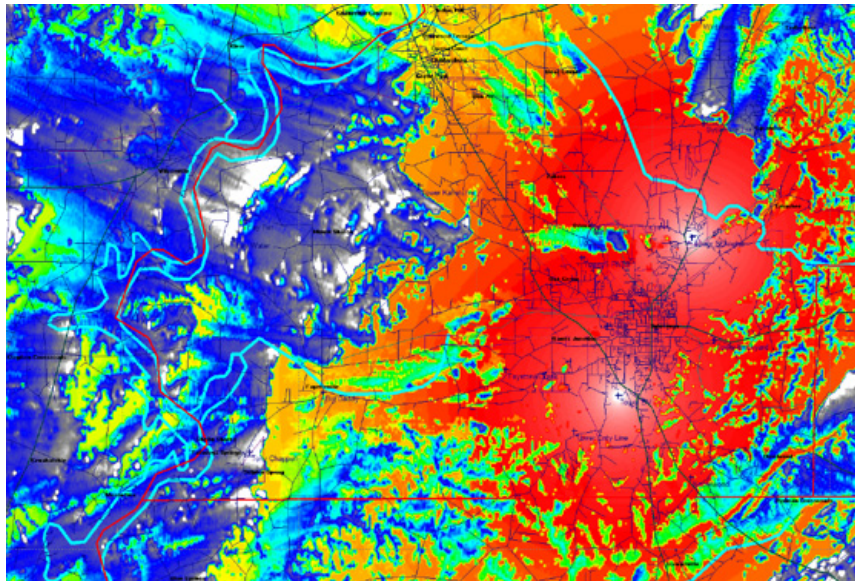
## NETWORK EXPANDED FOR ADDITIONAL APPLICATIONS

In addition to supplying high-speed Internet services, the Utilities Board benefits from other applications run over Cambium’s wireless broadband network, including gas and water SCADA, licensed and license-exempt backhaul and video security.

High resolution surveillance cameras, integrated with Cambium 900 MHz Subscriber Modules with connectorized antennas, monitor the Network Operations Center. A Point-to-Point 49400 AES (Advanced Encryption Standard) secured backhaul is used for transmitting non-emergency data from the county’s 9-1-1 system.

“As we expanded our network, which now covers about 200 square miles, we saw the opportunities to run SCADA applications over the network,” said Culp. SCADA data is regularly transmitted from four remote water tank and three natural gas sites. Construction of a 1,500 gallon-per-minute water well is nearing completion and the utility will remotely be able to monitor the well’s pumping level, flow, turbidity, chlorine residual, variable pump speed, three-phase volts and amps.

“The appeal of deploying Cambium’s wireless solutions includes ease-of-deployment, low maintenance needs, reasonable cost, high capacity and proven reliability,” said Culp. “And I am able to remotely update firmware and monitor signal strengths on the system with Cambium’s



^ Broadband coverage in the Sylacauga, Alabama, region in 2006 is shown in red. Today, with Cambium’s wireless broadband network, coverage has been extended throughout the region.

Element Management System.” The EMS can reduce time and dollars spent on network management by providing centralized control including provisioning, fault management, performance monitoring, configuration management, firmware management and security.

Looking ahead, the Sylacauga Utilities Board is planning to take advantage of more wireless broadband technology for AMI and other Smart Grid applications. “We expect to have an AMI pilot study under way later this year to collect detailed energy usage data from our electric, gas and water networks,” said Culp. “We are committed to providing state-of-the-art utility services — electrical, natural gas, Internet, water and waste water — to our more than 12,000 customers. Cambium has been an integral part of that commitment.”

## ABOUT CAMBIUM NETWORKS

Cambium Networks provides world-class wireless broadband and microwave solutions for military, government, municipal and enterprise customers around the world. It currently has more than 3.5 million products deployed in thousands of networks in over 150 countries, with its breakthrough technologies providing reliable, secure, cost-effective connectivity that’s easy to deploy and proven to deliver outstanding metrics. Cambium’s ecosystem of partners, development engineers, and support teams work together to design and deliver innovative, forward-looking solutions that provide data, voice and video connectivity when and where it’s needed.

**“THE APPEAL OF DEPLOYING CAMBIUM’S WIRELESS SOLUTIONS INCLUDE EASE-OF-DEPLOYMENT, LOW MAINTENANCE NEEDS, REASONABLE COST, HIGH CAPACITY AND PROVEN RELIABILITY.”**

- Reay Culp,  
Telecommunications  
Department manager,  
Sylacauga Utilities Board

