CASE STUDY

BEA + TRUSense Gateway™

Providing greater resiliency and reduced costs in Bolivar, TN

Tennessee public power utility Bolivar Energy Authority (BEA) took advantage of a new fiber-to-the-home network when it upgraded its aging and troublesome AMI system, which operated across a difficult-to-maintain backhaul that spanned its rural and challenging terrain. BEA chose a solution that could leverage the fiber network to eliminate antennas and deliver critical data on vital equipment while reducing technical overhead costs—the TRUSense Fiber Gateway from Tantalus.

Background

BEA, based in Bolivar, Tennessee, serves 11,211 customers across a rural and wide-ranging territory—all of Hardeman County as well as portions of four other counties, including one that extends into Mississippi.

Previously, BEA had been operating with a 14-year-old AMI system that suffered from a number of technical issues. Due to a change in ownership, support for the legacy AMI equipment fell to BEA itself. While the utility worked to maintain the system, eventually the equipment was failing to the extent that they resorted to manual readings to stay on top of billing, and BEA was told it would have to accept a rip-and-replace solution down to the meter level to stay with the vendor.

While the issues with their previous vendor's AMI system were reaching a breaking point, BEA completed a robust fiber-to-the-home project, taking advantage of grant money that became available when COVID exposed the lack of communications infrastructure in rural areas. Before their fiber was installed, local businesses were extending their WiFi to the parking lots for kids to do homework in their cars, and BEA itself was making wireless available in their lobby. The people of Bolivar needed internet, and the project provided it—now 43% of their customers are leveraging the fiber for broadband access, with Aneas Fiber providing internet and phone service.

As BEA considered how to best replace an aging AMI system, a question arose: How can we leverage over 1,000 miles of new fiber optic cable on behalf of utility operations?

The Challenge

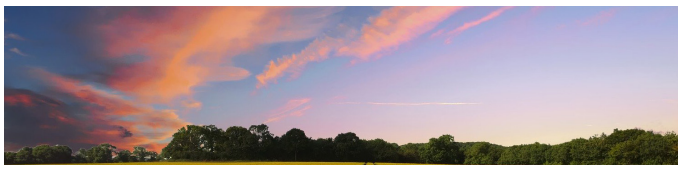
In December 2023, Bolivar released an RFP looking for the right vendor to update their AMI system.

The optimal solution would operate within BEA's sizable rural territory, which currently required extensive backhaul equipment. This backhaul included a meter-to-collector-to-tower canopy that incurred heavy maintenance costs and left antennas vulnerable to lightning. BEA was also looking for an AMI vendor that understood the needs of its community, and could provide a solution that would not age out unexpectedly and require a rip-and-replace at a substantial cost in the future. Ideally, they needed a vendor who could find a way to utilize their new fiber network to optimize the impact of the new system.

Irby Group (who had handled the fiber project) introduced BEA to Tantalus, and it became clear very quickly that Tantalus had the right solution for Bolivar.

The Solution: Leveraging Fiber for Backhaul

The TRUSense Fiber Gateway became the centerpiece of the new system BEA selected. TRUSense Fiber Gateway provided more robust AMI capabilities, and that drove the final decision: a system of 300 TRUSense Fiber Gateways supporting and coordinating over 11,000 Itron meters with integrated Tantalus communications modules. These socket-based devices do not require a battery and since they tap into the existing fiber system, they don't need extensive antennas for backhaul, which eliminates the risk posed by lightning. The TRUSense Fiber Gateway deployment was designed to collect AMI meter data from wherever a meter was located—in dense or sparse environments. The TRUSense Fiber Gateway-to-meter would average at 1:40, but would vary and sometimes be 1:1, still very cost-effective in the hardest-to-reach areas of BEA's territory. With no batteries, no maintenance, and no more manual reads, the TRUSense Fiber Gateway is worth the investment. Additionally, the future capabilities enabled due to the system's ability to gather data in real-time would pay dividends down the road.



The Result: Increased Capabilities and Reduced Overhead

Bolivar began the Tantalus deployment in August of 2024, testing with three homes at first, and then integrating with its 1,440 prepay customers. Full deployment began in September, installing TRUSense Fiber Gateways and switching out the old meters for the new. BEA's experience in field-servicing the equipment of the previous AMI system proved valuable as it is performing all of the installation with their own employees. By the time full deployment is wrapped up in May, 2025, BEA will have installed over 300 TRUSense Fiber Gateways.

The Tantalus system is designed so that every TRUSense Fiber Gateway can provide everything needed to collect meter data. It's set up as a triple-redundancy network, as every meter has three ways to come back online if knocked out. The whole system is using the fiber network for AMI and SCADA purposes.

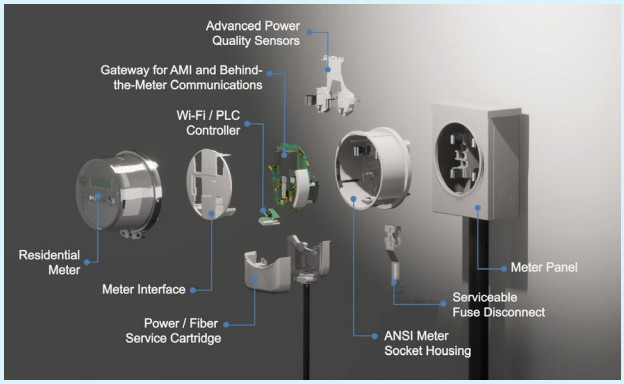
In addition to removing the expense of backhaul maintenance and truck rolls, the off-site hosted server structure of the Tantalus solution has also reduced the need for multiple on-prem servers within BEA. Prior to the Tantalus deployment, the utility was self-maintaining 18 servers to track the information needs of the system. With a fiber network and a hosted solution, they are down to eight servers and expect to reduce further to six once the full deployment is complete in May of 2025, which saves them even more money on in-house maintenance.

These cost savings, the ability to leverage their existing fiber network, and a greater operational flexibility have all been augmented by the insights provided by Tantalus' analytics package. The moment it became operational, BEA began to realize just how much real-time data was being collected—and what more they could do with it.

Soon after installation, the analytic capabilities of the Tantalus solution proved their value. In one instance, Tantalus TRUGrid™ Transformer identified two overloaded transformers before they failed, allowing for the equipment to be swapped out and saved. In another situation, high voltage swells were detected in two different areas of the BEA network. The TRUSense Fiber Gateway confirmed it was due to a stuck regulator, and this issue was fixed in a timely manner before further disruptions occurred.

TRUSense Gateway: A Pivotal Solution

To modernize and digitize the grid, you have to harness the power of data not only from the substation-to-the-meter, but also access devices located behind the meter. And that's what the new TRUSense Gateway allows you to do—whether you're leveraging fiber, ethernet or cellular connectivity.



The TRUSense Gateway accelerates grid modernization for utilities of all kinds by delivering broadband data connectivity all the way to edge of the grid, including behind-the-meter. It's installed in a standard meter socket, between the socket and the meter, and delivers:

- Streaming substation-quality grid-edge power measurements
- Power quality issue detection, waveform capture, diagnosis and mitigation
- Vendor-agnostic approach to DER integration
- AMI infrastructure for electric, water and gas metering
- Connectivity available via Fiber, Ethernet or Cellular

More and more utilities are turning to TRUSense Gateway to harness the power of data, enhance the reliability and resilience of their grids, and save money while doing it.

Conclusion

BEA and its community are already realizing the benefits of the Tantalus deployment even before its completion.

"The tremendous speed of the system and the access to data is eye opening," says Steve Herriman, Purchasing and IT Manager at BEA. "And now we don't cringe when the weather turns and we see lightning on the horizon. We just don't have that vulnerable radio equipment out there sitting on towers, and we don't have stacks of servers in-house. And the capabilities of the analytics system will allow us to start addressing load shed during events in a more proactive way that protects the community."

The Tantalus AMI network powered by TRUSense Fiber Gateways is providing Bolivar with a solid foundation for growth. With a system that can evolve with the needs of the community and real-time data that can improve the functionality and resiliency of the grid, BEA is planning to invest further resources in its infrastructure, and leverage additional Tantalus applications and analytics solutions such as TRUGrid Reliability and TRUGrid SCADA to stay ahead of network issues.

Tantalus
HARNESS THE POWER OF DATA