



## SURGICAL DEPLOYMENT IN RURAL SERVICE AREA

### APPALACHIAN ELECTRIC COOPERATIVE

**Challenge ::** Appalachian Electric Cooperative realized that the most compelling case for AMR came from customers on the outer edges of its rural service territory. Eliminating trips to remote farms and far-flung communities would result in immediate cost savings by removing high-cost reads, while ensuring that all customers within the jurisdiction received the same high level of service.

**Solution ::** AEC investigated a variety of AMR applications including short-range, drive-by and powerline carrier technologies prior to selecting TUNet®. The wireless Tantalus system was chosen because its long-range capabilities would enable AEC to completely cover its service territory using only two radio towers. To cover a similar territory using PLC, 11 substations would have to be built out, locking the Coop into a commitment for full deployment and adding to the expense and complexity of the project.

**Results ::** Surgical deployment of TUNet allows AEC to apply advanced metering on its own terms and gain maximum benefits with minimal effort and expense. The Coop targeted customers on opposite ends of its service territory (some located as far as 20 miles away from the operations center) for its initial TUNet implementation.

By pinpointing the critical problems that need to be addressed (outage reporting, power quality monitoring, expensive cut in/out), and where they are located (remote sites, high density areas, hard-to-read locations), AEC made a strong case for strategic advanced metering without making a total and more expensive commitment to a complete roll out.

AEC prepared a 10-year forecast of the benefits and respective savings that it expects to derive from TUNet, projecting the system to pay for itself within six years. AEC's study accounted for savings to be realized through a variety of means

such as reduced meter reading costs and the virtual elimination meter re-reads, improved operational efficiencies (e.g. the ability to check voltage or collect endpoint data remotely without dispatching a field crew), and collection savings.

Advanced metering streamlined administration and data processing. Instant access to accurate data helped AEC improve responsiveness to customer inquiries over the phone, and enabled it to issue monthly bills more quickly, which has led to faster payment and an accelerated revenue stream. The addition of Remote Disconnect proved to be an effective way to deal with chronically delinquent accounts and collect monies owed to the Coop. AEC now performs disconnects and reconnects from head office, which has cut administration, labor, and travel costs while removing field staff from potentially difficult situations.

The ability to remotely verify power eliminated unnecessary truck rolls and associated costs. Thunderstorms are common in the region. After these events, cellular towers often cause line blinks which automatically notify the carrier and, ultimately, generate an outage call. Investigating these calls required two linemen and a bucket truck to be dispatched to what was usually a very distant hilltop site...and most often a false alarm. Now, AEC remotely verifies power and immediately informs the carrier. As a result, the Coop no longer needs to send crews on unnecessary calls and saves hundreds of dollars per trip.

**Quote ::** "The TUNet system will provide numerous value-added benefits beyond just providing a kilowatt hour reading for billing purposes. The two-way wireless technology will allow the Cooperative to monitor, control, and render better service to its members at a more efficient cost."

— Bill Underwood, General Manager

"The RF system affords flexibility and better cost justification. As our needs for AMR or other applications change or expand, the marginal cost of deployment is significantly reduced since the infrastructure is already in place."

- Bill Underwood, General Manager  
Appalachian Electric Cooperative

#### Appalachian Electric Cooperative

- New Market, Tennessee
- 42,000 members; established 1940
- 4 county service territory
- Combination of rural and urban customers
- Mountainous, densely vegetated area mixed with farmland
- Located at the foot of the Great Smoky Mountains

#### TUNet Advantages

- Surgical deployment of TUNet allows fast tracking of high-value service rollouts to select customers
- Multi-application communication network enables co-op to deploy AMR immediately and have the option to later add outage management, remote disconnect/ reconnect, load management, and distribution automation
- Leverage license held for 220 MHz frequency; excellent RF propagation in region
- Use existing meters, no need to write off assets
- Two-way communication throughout service area with rapid response time