

Southwest Tennessee Electric Membership Corporation (STEMC) Overcomes Challenging Tornado Restoration

The rural Tennessee electric cooperative leverages Render software platforms to rapidly restore broadband and pivot from construction to tornado restoration.

By Sean Buckley / *Broadband Communities*

Southwest Tennessee Electric Membership Corporation (STEMC) continues to blaze a rural broadband trail. Even an F3 tornado on March 31, which created a 40-mile path of destruction through the service area, could not stop the electric cooperative from rapidly restoring its fiber broadband network. As a provider with a small staff, STEMC had to find the best ways of incorporating existing software and pivoting from construction to tornado restoration for its fiber broadband network.

The STEMC partnership with Render and Irby Utilities helped the electric cooperative recover from the tornado quickly. The provider teamed up with the two companies to support it with network planning and digital delivery. According to the three companies, the partnership enabled STEMC to achieve a 30 percent reduction in construction schedule duration, 75 percent in resource savings and cost efficiencies.

STEMC also found the Irby Utilities and Render platforms could aid its recovery efforts. “We just worked through an F3 tornado that went through the heart of our service area,” says Billy Gordon, vice president of technical operations at STEMC. “Render’s and Irby’s software played a valuable role for us in collecting information on materials and labor for federal government agencies.”

Render’s GIS-based construction and maintenance platform automates work scope creation, ensures highly productive resources, and provides visibility and insights for office and field teams.

Render and Irby Utilities continue an ongoing partnership to deliver cooperative networks across Arkansas, Tennessee and Mississippi. In addition to STEMC, they partner with Clay County Electric Cooperative Corporation, Craighead Electric Cooperative Corporation, First Electric Cooperative Corporation, Tippah Electric Power Association and Woodruff Electric Cooperative Corporation.

As materials left STEMC’s warehouse, the platforms enabled the cooperative to access information on materials

such as fiber and other equipment. STEMC’s fiber team also had engineering coordinators following behind the electric line workers as they restored power to homes in its region.

“We were able to create this workflow on the fly and track those materials as they were leaving the warehouse,” Gordon says. “Our experience with Render may be an ad hoc case, but we were able to leverage the technology to help us through a time of need when, as a fledgling business, we don’t have all those processes in place yet to work through an F3 tornado.”

RAPID RECOVERY TIME

Five days after the tornado, STEMC electric crews restored the electricity. The following day, the STEMC fiber unit fixed its internet so that customers could access service.

“Our crews had work in hand on their iPads and were waiting on electric crews steady poles and energizing lines,” Gordon says. “As we waited, we already had our work deployed and the tasks and work orders drafted.”

STEMC’s fiber crew finished the telecom restoration six hours after the electric repair. By comparison, a traditional telco takes more than a week to achieve service restoration. “With traditional methods, we would have been much like the traditional telcos, which were installing cable and running drops a week and a half later,” Gordon says.

Since STEMC’s broadband unit knew where the active services were, it could deploy the work for the mainline cable and deploy the drop infrastructure to locations that could receive drops. “We were running fiber drops before the electricity was restored, knowing that once electric service was restored, customers would call in and say they were ready for internet service,” Gordon says.

Render and Irby’s platforms were initially designed to plan network construction. “It’s STEMC’s specific use case that has driven us to extend our platform into connection, operations and maintenance activities,” says Sam Pratt, CEO of Render. “It’s also the fact that operators and their internal



STEMC's partnership with Render and Irby Utilities helped the electric cooperative recover from an F3 tornado quickly.

and external crews are becoming familiar with the Render platform, and this is an effective way to deploy resources rapidly and to ensure the integrity of the data.”

The expanded offering enables service providers to expedite customer connections and maintain and enhance the integrity of the network asset across the entire fiber life cycle.

EASING FEDERAL REPORTING

The Render platform helps operators respond more efficiently to local and federal reporting of restoration goals and timelines and notable statistics and costs because of the precise geospatial data that can be collected.

In an event such as restoring service following a tornado, STEMC can use the Render platform to inform a company management team about what is being done to restore service.

“We can let our management know what activities were completed,” Gordon says. In the case of the tornado, “We were able to use the Render platform to look at what we got done, what tasks were remaining, and what

tasks were waiting on construction crews to be available.”

He adds that knowing what resources would be available “allowed us to plan better and focus on what work was ahead of us and what resources would become available next, so no one was waiting on anything.”

In the event of natural disasters, federal agencies require initial estimates. Later, agencies often will conduct site and field visits to see what equipment and facilities were replaced.

“We can access photos with GPS coordinates that are date and time stamped and can be sent to federal agencies,” Gordon says.

He added that although some could take advantage of the system to get funding, “We got everything documented: when it was installed, what it looked like when it was finished, and the materials associated so we could accurately predict when we would be finished.”

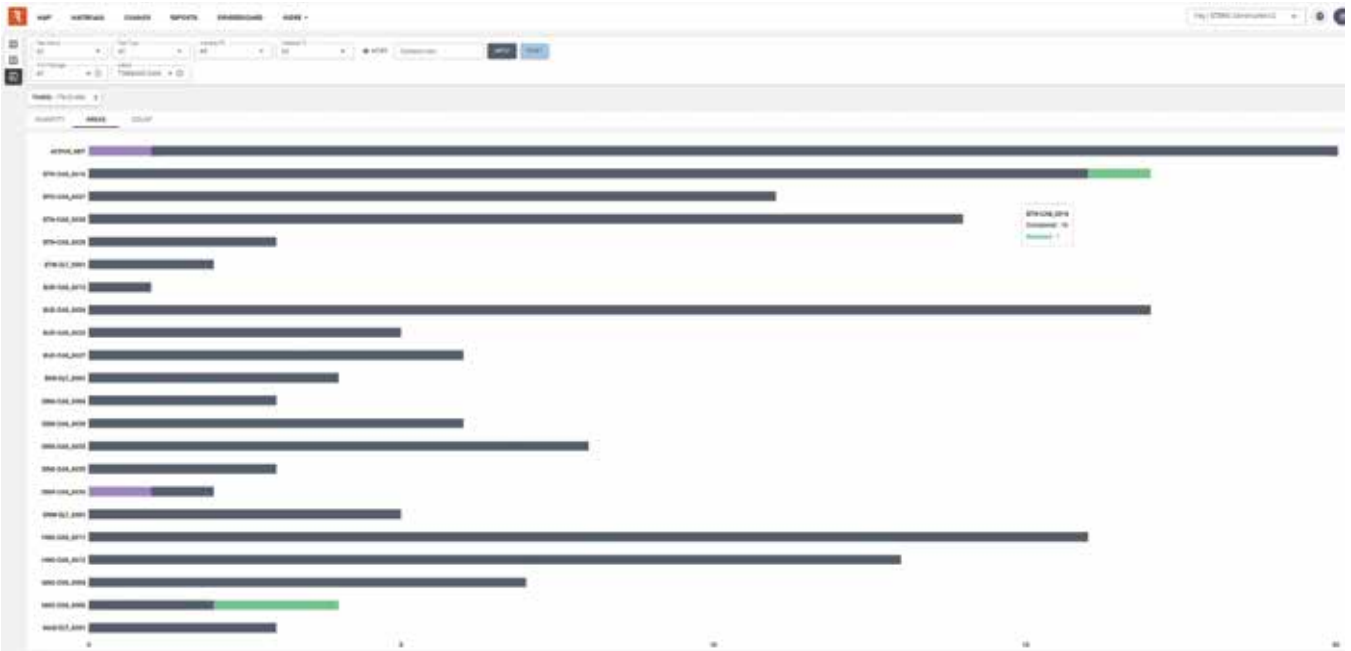
FOCUS ON RESILIENCE

What’s compelling about the STEMC story is the overall can-do attitude of

electric cooperatives. “Our restoration reflects the resiliency and nimbleness that electric cooperatives have in this space and the ability to do what’s best to serve our customers,” Gordon says. “We’re well known for thinking outside of the box to serve the customer.”

Joshua Collver, operations manager of technology and communications for Irby Utilities, agrees. Irby’s platform has some functions that allow providers to draw a polygon and create a label and material staging for storm responses. “With the live monitoring the power utilities possess, they can go into the platform, draw a polygon, create a label, export it, and start staging material based on what they need,” he says. “STEMC had the foresight to have materials on hand, so if a situation like this comes up, it’s not waiting for anyone to ship more fiber, poles or splice cases.”

Further, STEMC’s actions allowed it to mobilize and operationalize the broadband network quickly. “If you start putting all these tools together and mixing them with the skills and capability of what the utilities have, it



This graph illustrates progress toward task completion per cabinet following the tornado.

standpoint,” Gordon says. “They allowed us to estimate materials on a per-county basis.”

In addition, the labels shorten the time getting reimbursements for grant-eligible areas takes. “Something that would take a day with pretty intense spreadsheet work with labels is just a click away,” Gordon says.

FIBER-RICH NETWORK HERITAGE

Similar to other electric cooperatives, STEMC’s fiber journey was long in the making. In 2005, it began installing middle-mile fiber to interconnect its five district offices and 21 electric substations. The electric cooperative needed the fiber to backhaul communications from an established automated meter reading (AMR) system. At that time, STEMC began to sell wholesale dark fiber facilities, transport services and local loops to other providers.

One transport and local-loop customer was Aeneas Internet and Telephone, a facilities-based CLEC that has provided communications services in west Tennessee since the late 1990s.



STEMC’s fiber crew finished the telecom restoration six hours after the electric repair.

ELECTRIC CO-OPS MAKE MARK IN FIBER BROADBAND ARENA

Electric cooperatives are increasingly becoming more significant in driving fiber-based broadband into rural areas of the U.S. According to the National Rural Electric Cooperative Association (NRECA), which represents most of the nation's 900 rural electric cooperatives, 210 offer broadband to approximately 500,000 customers.

With new federal funding being made available, 100 and 200 additional co-op members are considering the role they may be able to play, whether deploying broadband themselves or partnering with a service provider. New data by the Fiber Broadband Association revealed that electric cooperatives deliver fiber broadband to around 675,000 homes. The advocacy group estimates that figure will grow at a 40 percent compound annual rate to reach 3.6 million over the next five years.

But a critical turning point came in 2017, when the state passed the Tennessee Broadband Accessibility Act, which eliminated a restriction that prevented electric cooperatives from providing retail broadband service. When the law changed and STEMC conducted a few feasibility studies, the co-op decided to move forward with a rural broadband project.

At the same time, Aeneas started building its fiber plant, mostly in rural communities served by STEMC. Gordon says that STEMC had a solid fiber vision, and it found that Aeneas had the customer support systems needed to run a retail broadband business.

"One hurdle we identified in our business plan was developing and

growing retail-oriented teams for customer service, multi-tier technical support, sales, marketing and network engineering," he says. "Aeneas already had those things in order and executed exceedingly well. Their local service mission resonated with our electric cooperatives; they already had built a brand name in many west Tennessee communities."

He adds that "a discussion of synergies and the ability of Aeneas to directly complement the business plan" led to the purchase of Aeneas in 2019.

STEMC began deployment of its smart-grid fiber network in April 2020. The cooperative's electric service area covers parts of 11 counties in southwest Tennessee and services a combination of urban and rural locations. The network was designed with additional fiber capacity to serve its 45,000 member-owners during a five-year implementation. Three years into deployment to pass 52,000 electric meters, the project is 18 months ahead of schedule, with nearly 3,000 miles of fiber cable installed.

STEMC and Aeneas are jointly building and expanding a fiber network

TENNESSEE ELECTRIC CO-OPS GET \$198M TO EXPAND RURAL BROADBAND

Tennessee is enhancing its focus on the rural broadband market. In September, the state awarded \$198 million in grants to 11 electric cooperatives to deploy in rural areas. The \$198 million is nearly half the state's allotment for rural broadband from the federal American Rescue Plan (ARP). On September 12, Tennessee Gov. Bill Lee announced \$446 million in grants for rural providers from the Tennessee Emergency Broadband Fund, which received ARP money for economic recovery from the COVID-19 pandemic. A report on the NRECA website revealed that electric cooperatives received 44 percent of the funds. Each grant winner must provide matching funds and deliver a minimum of 100 Mbps/20 Mbps within three years to areas deemed unserved. Each co-op will apply its grants to 33 broadband projects. Southwest Tennessee Electric Membership Corp (STEMC), which previously purchased CLEC Aeneas, will receive grants of \$19 million and \$20 million for

two broadband projects. The remaining 10 co-ops and their contributions are listed here:

- Appalachian Electric Cooperative/Trilight, \$8.6 million
- Chickasaw Electric Cooperative, \$13 million
- Cumberland Electric Membership Corp., \$17.5 million
- Fayetteville Public Utilities, \$9 million
- Gibson Electric Membership Corp., \$2 million
- Middle Tennessee Electric/United Communications, \$53 million
- Meriwether Lewis Electric Cooperative, \$4.5 million
- Powell Valley Electric Cooperative/Scott County Telephone, \$13 million
- Tennessee Valley Electric Cooperative, \$22 million
- Volunteer Energy Cooperative, \$15 million



STEMC and Aeneas are jointly building and expanding a fiber network to bring broadband communications to the region.

to bring broadband communications to the region. The two entities paved the way for a multiyear, multimillion-dollar investment into west Tennessee.

This new network will eventually expand to provide high-speed internet access to every consumer member in STEMC's service area. The gigabit fiber network will also allow STEMC and Aeneas to bring broadband internet and telephone services to many unserved regions in southwest Tennessee.

The first construction phase of nearly 1,000 miles of fiber cable began in the spring of 2020. Phase one focused on Tipton County and Chester County. Grant applications have been submitted to serve Hardeman and Haywood counties. The entire project is expected to take five years to complete. In addition, the network

will allow STEMC to monitor and remotely manage equipment across the utility's 11-county service area, reduce costs, improve reliability and increase operational efficiency.

Areas STEMC and Aeneas serve were affected during the tornado. Gordon says STEMC "had daily briefings during the event so the Aeneas customer care and technical support

team could be aware of restoration timelines in case customers called with inquiries."

STEMC has completed about 75 percent of its fiber-to-the-home (FTTH) network build. "Some of the cables that will be reimbursable have not been put in service yet," Gordon says. "In some places, we are putting up the cable for a second time." 🙌



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