



A lot of growth is happening in rural counties of northeast Texas, and it's happening fast. Rapid population growth is causing expected development, like new housing, commercial centers, and industrial parks, all of which require new power distribution networks. However, Scott Donham, P.E. and Engineering Manager at Rayburn Electric Cooperative, sees a more complex list of needs for electric power in the area.

"We have solar generators and battery storage," he says, noting power generation sources connecting to Rayburn's transmission lines. They also support growing large-demand customers like "crypto miners and different customers that...require stations and lines to be built and upgraded." New electric power transmission substations and lines need to be built quickly to meet these rapidly growing demands.

Large-demand customers also need redundancy—multiple routes that power can take from generation to the customer—so a trip or failure in one substation does not turn off the lights for every customer down the line. Improvements like these ensure reliable electric power, but they require new transmission infrastructure, like substations and power lines, to be constructed.

Rayburn was founded as a generation and transmission cooperative in 1979 by several distribution companies to improve prices and service for their customers. The company has always maintained substations and lines, but Donham describes recent changes as a result of their service area's population growth and Rayburn's decision to fully open their lines a few years ago.



Rayburn Electric Cooperative is a nonprofit generation and transmission electric cooperative formed in 1979 by seven distribution cooperatives in Northeast Texas. Rayburn serves rural communities in 16 counties north and east of the Dallas Metroplex.

Increasing and Increasingly Diverse Power Needs

Electrical substations use protective relays, automation controllers, IT equipment, and other intelligent electronic devices to protect, monitor, and control the flow of power. These devices are installed in panels, metal enclosures similar to the breaker-box or fuse-box in a home, but much larger. “The brains of the substation,” as Project Coordinator Shannon Beber calls the panels, are one of the last steps in constructing or upgrading a substation, and they are absolutely necessary before the substation can be energized.

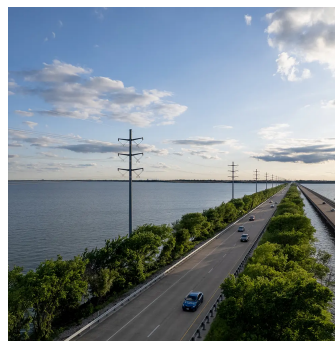
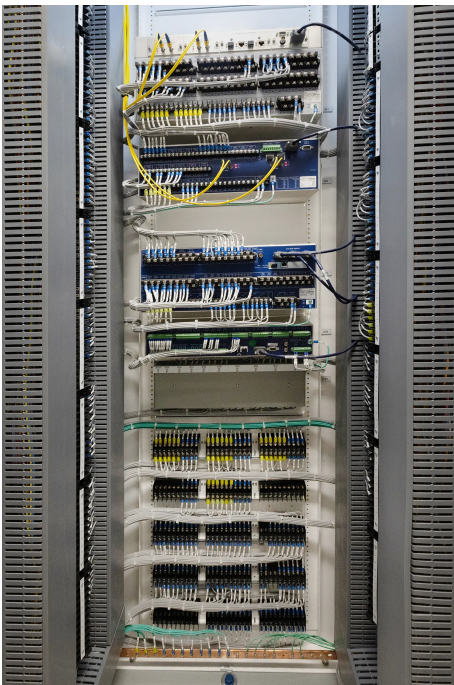
Panels are complex components of a substation. Individual devices need to be configured for each application and wired to communicate with each other and other elements in the system, and SEL helps avoid delays by simplifying the panel manufacturing process.

As an engineer at Rayburn, Donham had seen how SEL devices could help improve reliability. After learning about the SEL Real-Time Automation Controller (RTAC) at a conference, he convinced Rayburn to invest in one to remotely collect more data than simple breaker status, providing better information about the health of the system. He says he “legitimately learned, installed, and commissioned [his] first three substations with the RTAC using [SEL] YouTube videos,” so he knew what the devices were capable of. His program was so successful that not only did Rayburn invest in more RTACs, but they also regularly send engineers to seminars and other trainings to get valuable hands-on experience with RTACs and other devices.

So, when he found that SEL offered panel options, Donham was happy to hear that SEL could not only supply the relays, automation controllers, and networking devices, but also could assemble, configure, and test the panels before the delivery—simplifying commissioning and letting Rayburn engineers focus on other cooperative needs.

“Rayburn...had built one transmission line [and performed] breaker upgrades at seven stations between 2007 and 2017. We built twelve stations last year.”

Scott Donham
P.E. and Engineering Manager at
Rayburn Electric Cooperative



Rayburn Electric Cooperative owns and operates over 275 miles of transmission lines, serving distribution members in 16 counties north and east of the Dallas Metroplex.

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Supporting New Development

“Cooperatives are very big on either saving money or adding value,” Donham says. As their distribution partners continue to grow, new infrastructure adds value by protecting lines connected to large-load customers and providing backup connections for rural residential customers. However, building transmission infrastructure is expensive and time-intensive, two factors at odds with the rapid growth that rural Texas is experiencing.

Regional regulations restrict Rayburn and its member cooperatives from de-energizing lines for any reason during high-demand months each summer. Donham says that Rayburn is always ready to “launch new projects as soon as the... summer window ends.” But, with four engineers on staff, this rate of new construction led the cooperative to reach out to suppliers for standardized, all-in-one solutions, ready on Rayburn’s schedule.

Donham attributed the success in meeting customer demand to finding good partners early. SEL has been a supplier for more than thirty projects since 2018, each requiring three or six preconfigured panels. He and Beber knew that the company could get overwhelmed if their partners couldn’t help them meet their timelines. As Beber put it, if relay panels or other components aren’t ready to be installed on time, the cost to the cooperative can be significant. “Thousands of dollars,” she says. “If the contractor has to go to another project, that could delay [us] even more because I would have to wait for them to be ready to come back. Then the remobilization fee could be anywhere from \$25,000 to over \$100,000.”

Getting prewired and tested equipment panels delivered to a substation construction site when they are needed—with protection, automation, and IT devices in place—means that Rayburn can focus on designing the infrastructure needed to serve their customers. Rayburn and SEL have created standardized panel design templates for three- and six-panel substations, modifying them to meet each project’s individual needs before shipping the final panels.

Donham, Beber, and project teams at SEL all remarked that the consistent designs for projects have provided benefits beyond a simple customer-supplier relationship. Engineers from both companies are familiar with the core panel designs, which helps them error-check designs more efficiently and confirm that an order’s details match a substation’s exact needs. These seemingly small benefits ensure that a panel is ready when it is delivered.

A Pace That Requires Partnership

Rayburn’s pace of construction requires reliable partners and suppliers as well as the knowledge that a finished substation is ready for operation. “Reliability is huge in the cooperative world, especially as a transmission provider. We need partners we can work with and trust,” Donham says, adding that Rayburn is guided by its own internal values—integrity, respect, innovation, and excellence—and they look for those values in partners.

As Donham puts it, a good partnership means that Rayburn “has a voice in things and gets treated as a player,” with the same level of respect that much larger transmission companies might expect. It’s a relationship that benefits Rayburn’s customers by helping improve efficiency and reduce wasted material and effort, down to working with SEL to reuse RTACs Rayburn had in storage after they had been made redundant by substation upgrades.



Rayburn Project Coordinator Shannon Beber calls panels the “brain of the substation.”



The company's unofficial motto—"status quo is not company policy"—is emblazoned on coffee mugs and shirts at the office, and that ethic finds its way into small improvements Rayburn and SEL make with each new project. Rayburn engineers work with SEL to innovate together and solve problems, like changing fuse locations in panels to improve technician safety. Donham also notes that their relay settings and other details are all kept in acSELEATOR TEAM SEL-5045 Software databases, making it easier to collaborate and double-check each project's specifications.

Beber appreciates partners who will work with her to schedule panel deliveries to substation sites when they're needed. She emphasizes that "it takes a team" to ensure that realistic schedules are set and kept and that the keys to success are communication and integrity. "If something is on backorder, SEL doesn't hide it. I would rather a supplier be honest about a delay, so we can pass that along to our contractors and our teams."

Even when some of these efforts, like reusing RTACs, are small line items on a substation project budget, Donham takes every effort to "help make electricity cheaper or more reliable for our members." These efforts add up; Rayburn and SEL both know that every innovation is worth pursuing in their missions to decrease cost and increase reliability and safety of electric power.

This close alignment of core values contributes to Rayburn choosing SEL as a partner in several projects—substation devices are expected to serve for decades, and cooperatives with limited budgets need to know that their suppliers have the integrity to stand by their products for that entire service life.

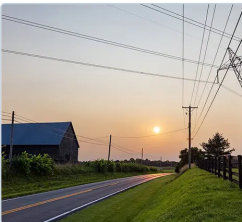
Rayburn's work doesn't show any signs of slowing. Their distribution cooperative members serve continually growing customer bases, requiring more transmission substations to feed those networks and reliably deliver power. SEL is ready to support this continued growth with a customer-focused approach, state-of-the-art technology, and top-quality panel solutions and services. Although the area has been developing rapidly for several years, Beber doesn't see the pace slowing yet: "We're getting ready for the upramp in growth."

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