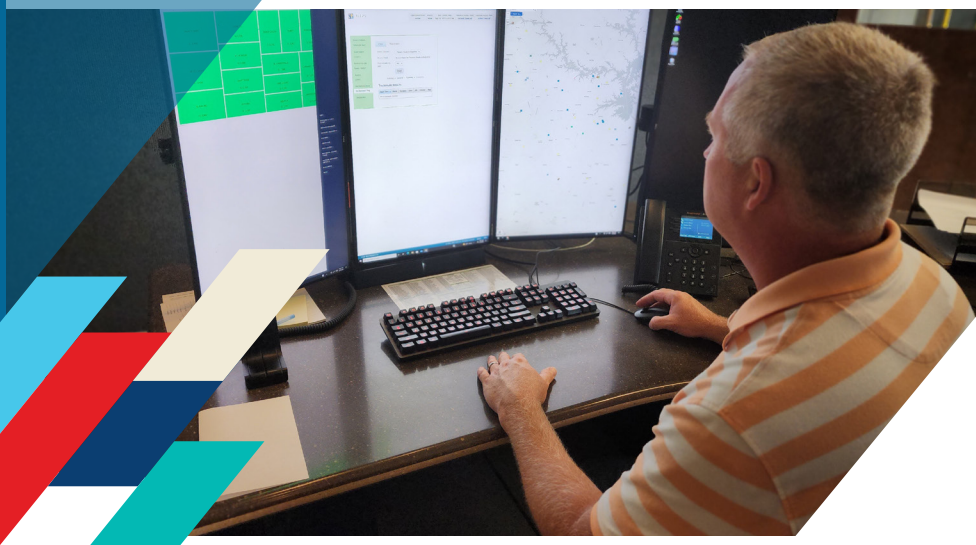
CASE STUDY

With a Firm Hand at the Helm, Hart EMC Completes Innovative Itron Gen5/Meridian Integration



In the fall of 2019, Hart EMC, a rural electric utility cooperative located in Hartwell, GA, started an NRTC-led deployment of an Itron Gen5 automated metering infrastructure (AMI) network system. Adding complexity to the deployment was that it was the first time the Itron system had been integrated with Meridian billing software. Extensive planning to mitigate the complexity and solid teamwork by Hart, NRTC, SEDC and Itron contributed to this project being delivered on time and on budget.

Hart now serves approximately 38,000 meters over six counties with modern metering connections and an extensive suite of tools consisting of customer service information (CIS), an outage management system (OMS), billing, cybersecurity, and other capabilities. It is a marriage of electric power distribution with the internet of things (IoT) and the sort of project that breaks new ground for rural utilities planning future integrations.

"As far as this sort of groundbreaking work, you can't be timid. You have to own it. If you're timid about being the first, you probably need to let somebody else do it. We're just not timid," said Russell Shirley, Hart EMC's senior VP, Technical Services, who led the project. "We already decided with all confidence to do the work. Once we did that, we didn't have to worry about it at all"

A Smooth Working Relationship

NRTC offers Itron products to rural cooperatives. It also provided project management for the Hart project. Shirley gave Itron, Meridian Cooperative (formerly SEDC) and NRTC credit for the project's success. "It matters a lot that when you're doing a project that you get top-notch people from all vendors involved," he said.

There was especially high praise for NRTC's Senior AMI Project Manager Catherine Immenschuh. "She was responsive, and she had a good handle on how the project should flow," said Justin Burdette, Hart's technical services supervisor. "Anytime things started slipping off track, we easily put them back on track."

For her part, Immenschuh gave the credit to Shirley and Burdette. "They were both very engaged and ran a tight ship," she said.

"I've been here 35 years, not just running projects, but I know how the co-op market works. We try to sit down and plan as many things as we can with what-if sessions ahead of time," Shirley said. "I'm a way-ahead person. I don't like to plan ahead weeks … like to plan ahead months or years."

He also emphasized the need for understanding exactly how the technology works before entering the project. Shirley says that from the beginning he and Burdette had a knowledge of the Itron and Meridian technologies equivalent to what other managers might have known in the late stages of a project. "So, we didn't have any surprises about [the technologies'] behavior that we had to account for. We already had plans for all that," he said.

The Integration

Hart EMC's goal was to replace its sunsetting metering technology with something that would last for the next 20 years. "We treated it as a full-on opportunity to evaluate the current technology and the current vendor landscape and look for the best in class," Burdette said. "I was attracted to the Gen5 product because of the IPv6 open standards and [the details] of building a network were things that stood out to me as important going forward."

Itron describes its Gen5 Network as a system that supports "new battery-powered devices, new applications powered

by distributed intelligence, and enhanced performance supporting mission-critical processes." Connected battery-powered devices will last 20 years. Low latency in the wireless network adds flexibility to adapt to different conditions. The system also upgrades and streamlines data storage and security. Open standards simplify the task of integrating AMI with other smart grid functions.

But until the Hart EMC project, nobody had combined Gen5 with popular Meridian/SEDC software tools.

Of particular interest was Hart's approach to OMS integration as it was likely different from what other utilities would have done. "I'd say what we did with that is probably unique … the way we took that data presented to the system operators," Shirley said. It is not often that you get to do something completely new or different.

Going into the project, "we limited the scope of things we had to provide to focus on innovative things. Since we were writing the interface as we developed the project, we were able to tailor it to the MultiSpeak interface that Itron gave us. There were no problems with misinterpretations or matching one feature expectation to another."

MultiSpeak is an industry-standard software interface developed for complex integrations. Hart EMC had extensive experience with using MultiSpeak for several other utility functions before starting the Itron project. "There were challenges because Itron and some of the other vendors don't run the same MultiSpeak versions," Shirley said. "But we were able to adapt to that. … We knew the program and we knew how to troubleshoot it and didn't have to rely on the vendor to do that."

Shirley's knowledge of MultiSpeak was an important factor in planning the project. When integrating systems from two vendors, it helps to have a mediator who understands the nuances. "I was able to say, to Itron, 'Could you give on this point,' and then say to SEDC, 'Could you give on that point,'" he said. "I think a successful integration means that you need somebody in the conversation from the utility that knows the integration standard."

As far as networking, Hart EMC connected its meters and other elements through a wireless mesh system using low-powered, unlicensed devices. "We had experience with RF, not from a meter system, but through other communication networks. It wasn't a foreign concept to us," Burdette said. "Looking at the network design and looking at the proposed infrastructure, I had the confidence that it was going to work as described."

In the end, Itron filled all the integration checkboxes and Hart EMC accepted the wireless mesh approach. "It was a vendor choice, not a technology choice," Shirley said. Network backhauling is through G&T-provided communications and NRTC-installed microwave links that the utility already had in place.

Right Up There at the Top

Itron network construction began in late 2019, just before the world was introduced to COVID-19. But effects of the pandemic or resulting supply chain shortages were minimal. It goes back to Shirley's philosophy on advanced planning.

"Executing a project is more about logistics than it is about technology. The logistics lined up for us early on when the COVID supply chain hadn't crippled us yet," Shirley said. "We ended up with almost everything in the warehouse that was needed at the start. One vendor had a little problem getting people, but all in all, it wasn't a slowdown, it was just an adjustment."

At the end of 2022, Russell Shirley, a well-known and respected figure among rural electric utilities, will retire from Hart EMC. Justin Burdette will continue to ensure AMI success. So, it is time to reflect on a career with many successes. Where does the Itron/Meridian integration rank among those success?

"It's ranks right up there at the top," he said.