



Working outdoors with the Recon rugged handheld computer, built to survive the weather.

PROJECT HIGHLIGHTS

Three line crews travel over 1,600 miles each winter, checking on transmission lines in 14,000 rural field structures. In the past, each stop required them to fill out three separate paper reports, noting the condition of each structure along with any nearby problem vegetation and access gate information, all while standing outside in Midwest winter weather.

They knew there had to be a better solution, and they found it. Now, they rely on the Trimble Recon with GPS capabilities to find each location, quickly enter data through pull-down options and tabs, and to upload all the information directly to the PC at the office.

RECON RUGGED HANDHELDS SAVE TIME AND STREAMLINE DATA COLLECTION FOR RURAL ELECTRIC CO-OP

When Sho-Me line crews found themselves standing in the middle of a forest, or in a cattle farmer's pasture in the snow and gusting wind, trying to juggle a stack of papers and take notes with a pencil and freezing fingers, they knew there had to be a better way to collect data about the condition of Sho-Me's electrical transmission structures.

As a rural electric cooperative in Southern Missouri, Sho-Me power was built on the principles of efficiency and economy. Founded in 1941 by residents who were challenged with getting electric companies to deliver electricity to the remote, rural areas in which they lived, ingenuity is still at the core of the company's values.

"Each winter, our linemen are responsible for surveying more than 1,600 miles of transmission line. They collect the data during winter months, then go back out and make repairs during warmer months," said Andy Meyers, geographic information system (GIS) administrator at Sho-Me. "We have more than 14,000 structures in the field, and in the past, linemen had to complete three separate paper reports for each structure."

Until recently, Sho-Me linemen would travel in pairs along the company's transmission lines filling out forms and making notes about which poles needed to be repaired, which trees should be trimmed and which gate provided the nearest access. Back in the office, photocopies were made and distributed to everyone who needed the data, including the people who ordered new poles, and those

who worked with the vegetation maintenance company each spring.

"It took a long time for the linemen to fill out all of the paperwork in the field, and we ended up with so much paper it was almost impossible to use all of the information we spent so much time collecting," said Meyers. "We knew we needed a better system for collecting and organizing our data, we just weren't sure where to start."

Meyers and others at Sho-Me created a database as a first step toward moving from paper to an electronic system. Each day, someone would manually enter into the database all of the information collected in the field the previous day. While this solution helped make the information more accessible, it was still time-consuming and didn't address the challenges of collecting the data in the field.

"We were headed in the right direction, but what we really needed was an electronic solution that was seamless from the field to the office," said Meyers. "I began researching our options for rugged



Save steps, save time, increase accuracy and improve productivity in the field.

Missouri Cooperative Adopts Technology for Line Inspection

handheld computers to use in the field, and it became clear almost immediately that the Trimble® Recon® handheld computer was the best tool to meet our needs.”

Because the Recon is waterproof and meets military specifications for drops, vibrations and durability in extreme temperatures, collecting data on the handheld computer would enable the linemen to work in conditions in which they couldn't previously work, such as drizzle. It also meant the computer could withstand being dropped from a four-wheeler or thrown in the back of a truck.

Meyers purchased six Recons and worked with a provider of mobile software solutions to develop an application that included a forms database to make it easy to capture all of the data previously collected on the paper forms.

In addition, they imported maps of all of Sho-Me's transmission structures, lines and power stations into DeLorme mapping software, which was then loaded onto each Recon, and equipped each one with a global positioning system (GPS) receiver. Once the handheld units were loaded with the necessary applications, the linemen were trained and ready to begin collecting data electronically.

“There wasn't much of a learning curve because everything was so easy to use,” said James Cox, foreman of Sho-Me's line crew in Willow Springs, Missouri. “We could see from the beginning that the Recons would allow us to work more quickly, and we were excited to know we wouldn't have to stand

in the field writing everything down on paper anymore.”

Since then, when Sho-Me's three line crews set out on their assignment each day, each team of two is equipped with a Recon. Because of the mapping and GPS capabilities, they're able to see the exact location of each structure, as well as any topographic features, such as rivers or ponds, that they might encounter along the way.

As the linemen stop at each structure, they move through tabbed screens on the handheld computer, where they record information that falls into one of three categories: the condition of the structure, the vegetation surrounding it and nearby gates.

The linemen use pull-down menus and check boxes to indicate specific details under each category, such as the height of the brush in the right of way, as well as the drivability of the right of way, whether or not there are trees that need to be trimmed, the location and size of nearby gates that provide access to the property, and the condition of each pole.

“If we select the box that indicates a pole is damaged, for example, we are automatically given a list of possible explanations, such as woodpecker damage or a broken cross-arm,” said Cox. “Then, we can indicate where the nearest gate is that's wide enough for our trucks to fit through, which saves time when we come out to repair it in the spring. The whole process is basically point-and-click, which has made our jobs as linemen much easier.”

At the end of each day, the crews return to the ready-room, where the Recon is plugged into a desktop computer and the data collected that day is downloaded into the company's database. Once in the database, the necessary teams can run reports on the data, such as how many poles on a specific section of line need repair, which trees need to be trimmed, and who owns the land where crews will be working in the spring.

“The entire cooperative power company model is set up to provide power to our members at the lowest price possible, and time is money,” said Meyers. “This system is saving us time at every step in the process. We're saving time in the field collecting information and just as much time back in the office processing it. The hours we used to spend collating paper, alone, is a huge savings for us, and time that can now be spent on other, more productive work.”

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