



Photo courtesy, Menard Electric

## IRRIGATION PIVOT

SWITCHING FROM RADIO CONTROL TO THE WEB BRINGS FLEXIBILITY TO MENARD ELECTRIC'S AGRICULTURAL DEMAND-RESPONSE PROGRAM

BY DERRILL HOLLY

Menard Electric Cooperative has offered an irrigation load-control program since the 1960s. During a control event, the co-op sends a radio signal to tell field equipment to stop, helping reduce peak demand and control power costs. Irrigators are rewarded with a cheaper interruptible rate.

It's a simple solution that has sufficed for 50-plus years. But modern demands and expectations have begun to reveal some of the system's limitations.

While a radio signal can turn off a grower's pump, for instance, such communication is one-way, with no assurance that all irrigation system components have shut down.

"There are some modern tenant farmers that have come into the area, and many are looking for tech-savvy solutions," says Alisha Anker, general manager of Menard Electric Cooperative. "It makes sense to provide these members, as well as those who've been with the co-op for many decades, with an added value they can use to grow our service and their business."

So, starting last year, Menard Electric began integrating

its demand response program with web-based technology that piggybacks onto key irrigation-management functions already in the palms of many farmers' hands.

### UPGRADES

About five years ago, the Petersburg, Illinois-based co-op began looking at options to shore up or replace its antiquated radio-control equipment. In addition to the system's limitations, intermittent communication issues and a lack of equipment support were hampering the functionality of the co-op's popular interruptible irrigation rate class program.

During the 2016 and 2017 growing seasons, they tested a revamped irrigation load-control scheme using cellular-based applications. The initiative, which included rebates and a new rate structure, was rolled out for full participation before planting began in 2018.

"We performed an extensive cost-benefit analysis that

justified foregoing the capital outlay for a new radio-controller program,” Anker says.

Nearly one-quarter of Menard Electric’s 1,230 irrigation accounts have switched to the new platform or are expected to add it this year. Anker says they hope to reach 100 percent participation within five years.

The co-op worked with the three major vendors supplying irrigation management software to its members to customize the new system. Thanks to that collaboration, Menard Electric now has visibility into real-time irrigation load, and it can precisely cease operations at the pump when a load control event is declared.

“Logging into one master web portal for each of the three qualified software vendors, we can literally see the three pivots running on an individual member account holder’s fields and control those pumps,” Anker says. “That’s something that we didn’t have access to before seeking customizations to their code for the accommodation of electric utility load control.”

## MORE OPTIONS, LESS UNCERTAINTY

The new applications have made a noticeable improvement in Menard Electric’s irrigation demand response program.

“With radio controllers, if the co-op shut off the main pump but didn’t coordinate with the other irrigation components connected to the pivots, the irrigation would shut down, but the towers could continue moving,” says Brady Smith, Menard Electric engineering manager.

The farmer would then lose track of where the tower ceased its watering operation, creating a larger headache after the load control event.

“The main problem with radio-controlled shutdowns was they caused an inadvertent lack of irrigating,” says D. Jay Frye, president of Menard Electric’s board of directors. “For growers, surprises on a hot, dry day are never pleasant, especially when they become a time-consuming inconvenience to correct.”

Since the program was launched, Frye has converted all but two of his irrigation services to the remote management platform.

## CONTROLLING COSTS

Menard Electric’s irrigation rates have also been revised. Besides the interruptible and higher-priced uninterruptible seasonal rates, the new system has allowed the creation of a hybrid load-control rate to provide more flexibility.

“The co-op’s traditional interruptible rate penalized

irrigators who were discovered riding through a load-control period by pushing that account to the uninterruptible rate for an entire 12-month period,” Anker explains. “Irrigators providing the co-op access to their remote management platform have the option of overriding a load-control event.”

In a month when that occurs, the co-op charges them the difference between the interruptible and uninterruptible demand billing components for that billing period. In addition, for the first five years of the program, a small but attractive facility charge reduction is offered to incentivize legacy systems to convert.

During the two-year testing period, not one of the 30 enrolled farmers opted to override a load-control event.

“At one point before going live, we literally had to request farmers on the beta-test to override at no penalty so we could assure the vendors’ applications were reporting accurately to the co-op after the fact,” Smith says.

## A LONG-TERM SOLUTION

Smith says Menard Electric’s new irrigation load control platform is designed to meet the needs of members for generations to come while the co-op gradually phases out radio controls.

“We’ve had an increasing difficulty locating parts and maintaining legacy radio equipment,” Smith says. “We’re also looking at new technology options for our radio-controlled water heater demand-response program.”

Anker says interest in the co-op’s revamped irrigation program outstripped expectations in its first two seasons, with all available rebate funds being exhausted quickly in 2017 and again in 2018. The co-op has capped rebate payments at \$600 per pivot, issued for only the first two pivots on a single irrigation account.

“This new program has allowed more irrigators to invest in technology that will help them do a better and more efficient job of using water,” says Frye, who farms about 1,800 acres—primarily corn, soybeans, and popcorn—with his three sons. “We’ve created a win-win-win situation between the co-op, the members, and the irrigation management vendors.

“Farmers are getting access to new technology, and the co-op is reducing its peak demand during irrigation season.”

Members are also avoiding costs associated with rebuilding an aging radio-controlled system, Frye adds. And the web-based interface provides farmers with more flexibility by putting water where it’s needed.

“Technology is evolving so rapidly, and so many young farmers are helping produce food safer and a little more economically. That’s a very wise way to use the natural resources that we’ve been blessed with.” **RE**