Utilities Uncover Success in Vegetation Management

This lowcountry landscape is an example of the vegetation Coastal Electric Cooperative controls in their right of ways.

BY DOUG HALLER and JOHN SMITH

Anyone who's experienced a power outage because of a fallen tree limb knows how important it is to control the brush and trees that grow around power lines. Overgrown vegetation also inhibits the ability of work crews to access and maintain power lines and causes customer dissatisfaction when it escapes utility right of ways (ROWs) and moves onto residential property. And while all utilities have some type of vegetation control program in place, some companies are rethinking and rearranging their practices to improve their customer service and the environment as well.

Three utilities, Puget Sound Energy (PSE), Northeast Oklahoma Electric Cooperative, Inc. and Costal Electric Cooperative found methods for controlling vegetation around power lines that encouraged habitat improvement and native plant growth and still decreased the utilities' vegetation management budgets.

Puget Sound's Environmentally Sensitive Right of Ways

PSE serves 1.2 million customers in Washington state and controls ROWs in a number of the state's environmentally sensitive areas. One of these areas is the Tacoma Green River Watershed, a 65-mile river that supports four salmon species, elk, black bear, cougar, osprey, blue heron and bald eagle, as well as a human population of 400,000.

In ROWs, mowing large areas of brush or using heavy machinery to cut down trees and branches can disrupt wildlife habitat. PSE recognized the impact that mowing and cutting could have on the sensitive ecosystem and implemented a Quality Vegetation Management™ (QVM) program, a series of control methods that produce positive environmental change.

"We had to mow at first, because in the early 1990s, our right of ways were so dense with brush. But after that, we transitioned to a minimal herbicide-based program that focused on QVM," said Jeff Beckwith, certified arborist for PSE. "With following QVM practices, we leave most of the under-story plants in place."

The under-story plants are the forbs, vines and legumes that grow at medium height, below tall trees. Since animals, birds and bugs use under-story plants for cover and food, QVM helps organizations find ways to control vegetation with little impact on the habitat. It also helps in removing only undesirable plant growth, such as invasive weeds.

"We decided to use a herbicide and made sure to choose one that wouldn't have a negative effect on the watershed," said Beckwith. "And by using a spray program and backpack sprayers to apply the herbicide, we keep big, heavy machinery out of sensitive areas in the watershed."

PSE uses Arsenal® herbicide to perform low-volume foliar applications and basal stem treatments. Arsenal provides long-term, broad-spectrum brush control. Its active ingredient translocates to the roots and shoots to help prevent resprouting and reduce stem densities and does not affect animals, birds, bugs or other wildlife. With reduced reliance on the mower, PSE has seen its annual vegetation control costs on the transmission lines drop from $2,500

to $1,800 per brush mile, Beckwith reported.

Joe Vollmer, BASF Professional Vegetation Management market development specialist, said PSE's commitment to manage vegetation in a way that promotes wildlife provides a great example for other utilities.

"Utility companies are realizing the positive effect they can have on the environment with selective herbicides and new application technology," said Vollmer.

According to Vollmer, mowing is a short-term fix when it comes to managing utility ROWs. With vegetation management programs that rely heavily on mowing to keep brush levels down, over a period of five to 10 years, stem densities per acre increase dramatically.

"You're going to have a much greater stem density per acre than when you started," Vollmer observes. "However, with selective herbicides and backpack sprayers, a crew can move quickly through an area and target only the vegetation that needs removal. The result is an immediate cost-savings in heavy stem areas, and long-term reductions in stem density and overall reduced maintenance on the ground."

Utility Co-op Ditches 'Hot-Spotting' for Herbicides

The Northeast Oklahoma Electric Cooperative, which services more than 40,000 residential and commercial customers in Oklahoma, created Northeast Rural Services (NRS) in the mid '80s, to perform vegetation management in its ROWs.

NRS works with 24 area co-ops to provide professional customized vegetation management services. Their highly qualified staff focuses on the utility, pipeline and railroad industries, using state-of-the-art equipment to help clients manage vegetation.

At first, the group had little organized maintenance of ROWs. Most vegetation management consisted of "hotspotting" (focusing efforts on trouble spots) and they always used mechanical control. They took a reactive approach, only trimming trees and vegetation when a potential problem was looming. Over time, NRS discovered that this practice had high costs, provided ineffective control and increased chances of on-the-job accidents or injury.

"We were frustrated that we couldn't establish long-term vegetation management with our methods," said David Cusick, ROW manager for NRS. "The money we spent on contract clearing and the limited control it provided was disappointing. Hotspotting and mechanical methods weren't giving us good results."

They decided to take an aggressive approach to vegetation management, one that would prevent overgrowth before it became an issue or caused problems for customers. NRS realized that herbicides could help them control brush and trees and would be more time-efficient and less expensive than solely mowing and trimming.

The dipping landscape in Oklahoma shows off one of NRS's well-managed right of ways.

First, NRS assessed its ROWs to figure out what was growing there and which herbicide would work well.

"We learned from our mistakes. It took us several years, at least, to see what worked best for our co-op" Cusick said. "We learned how to develop vegetation management plans. Ten years later, we had all the resources – people, equipment and experience – to branch out and use our expertise. Now, reclaiming ROWs that aren't properly maintained or aren't as wide as they should be is what we do best."

Over the past 10 years, NRS has learned what works best in herbicide mixes, rates and applications, and how integrating herbicide use into a ROW vegetation management program provides a return on investment not possible with mechanical control alone. They also used Arsenal herbicide to control their ROWs.

"In the process, we've cut control costs to about half of what a mechanical program costs, and created a more wildlife-friendly habitat for local species," said Cusick.

Nearby utility cooperatives noticed NRS's vegetation management success. NRS now contracts with many of those cooperatives to manage their ROWs using an integrated program of mechanical and herbicide management. In 2003, NRS further expanded its clientele to pipelines, including Southern Star Central Gas Pipeline, which serves a five-state area in the Midwest.

"We're quite happy with NRS," said Rick Schuman, district manager for Southern Star Central. "They look at the ROW early in the year to give me an estimate and stick to that estimate. They have good equipment, and good, experienced employees. I can count on them to follow through on their promises without any supervision on my part."

Because of its ability to reclaim ROWs, NRS achieved substantial growth in the last 10 years. A company that started as a subsidiary supporting the work of one electrical co-op now serves 24 different co-ops covering 8,000 miles of distribution and 20,000 miles of transmission.

"Co-ops are like a big family," said Cusick. "We've gotten most of our work because neighboring co-ops have seen the results we've been able to achieve in ROWs, and they trust us to be able to help them too. If we're able to share our knowledge and expertise, and save other co-ops money in the process, we all win. Why try to re-invent the wheel when you have someone right down the road with experience who can help you achieve your goals?"

Meeting the Lowcountry Challenge Through Teamwork, Trial and Time

The low-lying coastal wetlands and marshes in South Carolina, better known as 'lowcountry' to Southerners, are home to several endangered and threatened animal species, including the gopher tortoise and the wood stork. Lowcountry is also a perfect habitat for invasive weeds such as phragmites and tropical soda apple. Kenneth Nichols, maintenance supervisor for Coastal Electrical Cooperatives (CEC), is responsible for controlling weed and plant growth in this ecologically sensitive area.

"With 1,100 miles of lowcountry ROWs under management, our overall goal is to effectively control woody brush while encouraging the growth of native grasses and flowers," said Nichols.

But doing this efficiently and with minimal environmental impact has challenged the utility cooperative for more than a decade. In the late 1980s, budget cuts at the cooperative put ROW management on the back burner. By the early 1990s, underbrush in CEC's ROWs was out of control – almost 25 feet tall in some areas.

"We started using a brush hog-type mower to try to get things under control, but we just couldn't keep up and it was expensive," Nichols said.

CEC's primary problem was controlling stem densities in the ROWs. Mechanical methods like mowing can exacerbate this problem by leaving a stump that re-sprouts 10 more plants – making the brush even denser and tougher to control than before mowing. To reduce stem densities and prevent re-growth, Nichols tried a high-volume foliar application on 20% of CEC's miles in 1994 and saw great results – in the neighborhood of 90% control.

Coastal Electric Cooperative is careful not to let its right of way management affect the migrating and nesting birds in South Carolina's lowcountry.

The next year, Mark Walling joined CEC as manager of engineering and operations and teamed up with Nichols to test a number of chemical mixes and high-volume application methods.

"After trying different tank mixes, we found the best long-term control with an Arsenal herbicide and Accord™ mix," said Walling.

Walling achieved 95-100% control with the Arsenal and Accord mix, but had to reapply other herbicides to achieve this same level of long-term effectiveness.

By 2001, Walling and Nichols were ready to try moving the cooperative's system to a low-volume application.

"In the last 10 years, utilities have learned so much about what works best in terms of herbicide mixes, rates and applications – and why low-volume applications are an excellent way to save money and put less chemical into the environment," said Walling. "So, after a few years of high-volume applications that successfully reduced stem densities in CEC's ROWs, we felt that we could achieve excellent control with a low-volume treatment. This saves us money in the long-run and helps CEC be a better environmental steward."

During the last 10 years, the cooperative's annual vegetation management budget has remained at $500,000. The bulk of this year's budget – $400,000 – is for tree trimming, with the remaining $100,000 for herbicide treatments.

"It's taken us a long time to catch up, but we've been able to manage our ROWs with a flat budget during the last decade because we've moved to herbicide control methods," said Walling.

In their first test using low-volume applications on about 70 miles of CEC's ROW system, they achieved impressive results – 95-100% control. These results showed that CEC could achieve long-term control with a low-volume application. With the test results in hand, Walling approached the cooperative's board of directors with his goal: one crew with backpacks spraying low-volume herbicide on a four-year cycle.

"Coastal Electric Cooperative's board is innovative and was very comfortable with the low-volume control results we demonstrated," said Walling. "Sometimes people think having a guy walk around spraying is more expensive, but once we showed the board we'd done our homework, tested the technique out and could save money – for example, $40,000 less next year – they were very supportive of our switch."

In 2004, CEC converted its entire ROW system to low-volume application, which successfully controls brush and trees while allowing native grasses and flowers to thrive in the ROW. Walling believes that the vegetation management team will soon be able to convert to a four-year cycle as the entire system moves through the low-volume rotation. ■