Utility Arborist Newsline

NOV/DEC 2021
VOLUME 12
NUMBER 6

INSIDE

FOCUS ON THE EVOLUTION IN TECHNOLOGY

UAA
UTILITY ARBORIST ASSOCIATION

AN IRREPLACEABLE LEGEND: WILL NUTTER

By Renée Bissett, Chair and Director of Marcom, ACRT Services and Diona Neeser, Program & Operations Manager, UAA

Will Nutter was an industry icon, highly active in progressing the common-ground issues that unite all of us in the profession—arborists and utilities alike. Few things shake us to our core like the passing of Will on September 16, 2021. When word got out about Will's motorcycle accident that previous weekend, a wave of prayers, well wishes, and utter disbelief swept over his family, friends, and our industry. To say Will was unique or one of a kind is an understatement. From the moment he entered a room, his presence was infectious—always smiling, never in a bad mood, and incessantly spreading positivity. You would be hard-pressed to find anyone who had a negative thing to say about him.

If you had to embody the entire industry into one person—someone who was committed to advancing utility arboriculture, ensuring safe and reliable service, and environmental stewardship—it would be Will. He not only dedicated his life's work to improve the industry, but he also inspired those around him to do the same. His contributions included his leadership on many committees, writing countless editorials, and speaking at events throughout our industry.

Nathan Quist (General Foreman, Wright Tree Service, Inc. [WTS]) said, "This man has impacted so many lives! Will is the definition of an incredible leader. His presence would bring any room to attention. Will, you are deeply missed by everyone who was blessed enough to be within your presence and held a conversation with you. Your legacy will live on through the WTS family and all the lives you have impacted."

Will stood out as an advocate for safety and was a key player in developing

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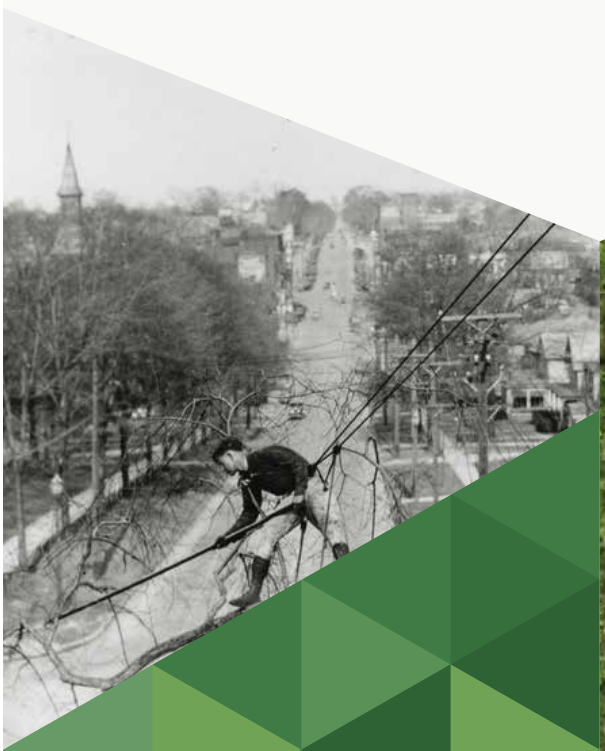

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the UAA Safety Summits that focus attention on bringing together a group of utility vegetation high performers to build out best practices, educate workers, as well as proactively address safety, which transcends competitive boundaries.

Will's commitment to safety rose to another level in 2015 when he had the idea to recognize outstanding UAA Members whose focus was safety. He, along with the UAA staff and Safety Committee, created the first ever UAA Silver Shield Award. It came to fruition in 2016 when the UAA Safety Committee—that he co-chaired with Paul Hurysz at the time—surprised him with the inaugural UAA Silver Safety Award. No one represented it more than the man who helped create it. His vision was to spark others to achieve this recognition, creating safety advocates throughout our industry, and we believe this vision is as alive as ever thanks to Will and his passion.

"He believed that leadership success could be achieved through example, and that is why he was so successful at what he did. Will certainly inspired me to emulate his example of leadership. I looked up to him as a mentor and a friend."

Paul Hurysz, UAA Past President

"Will led by example and always did the right thing," said Paul Hurysz (UAA Past President and Manager–Transmission Contract Resources, Duke Energy Corporation). "He believed that leadership success could be achieved through example, and that is why he was so successful at what he did. Sometimes, the little things in life always make great impressions. Will certainly inspired me to emulate his example of leadership. I looked up to him as a mentor and a friend. I will miss those periodic discussions with him sharing his wisdom—*if you know you need one, hire two.* He has taught us well while we had him, and we should never forget those lessons learned and the example he set for us to follow."

His more than four decades of unwavering dedication to our industry cannot be replaced. He tirelessly supported the causes that impacted our industry. Will was committed to the UAA, serving as President in 2011. Will was instrumental in creating our partnership with the ISA Southern

(Continued on page 6.)

Life as we know it is made possible by utility arborists. After all, if not for the work we do, civilization would grind to a halt. How, you ask?

By Geoff Kempter

During a typical day, the work of utility arborists—including crew members, planners, and managers—prevents tens of thousands of interruptions to our vital energy and communication systems. Without our efforts, trees would increasingly fail and impact power lines. Pipelines disappear under a tangle of brush. Line repair crews—already stretched—would be unable to keep up. In dry regions, wildfire ignition would increase dramatically. Business productivity would plummet, towns would burn, and utility infrastructure, along with the civilization that depends on it, would collapse under the weight of fallen trees.

Each of the millions of interruptions we prevent every year represents cost savings, often many thousands of dollars. All told, how much is that worth? The August 2003 blackout that affected 50 million people in eastern North America—started by a single tree—cost more than $10 billion. While we cannot accurately measure the value of what did *not* happen, we know that the annual cost of electric service interruptions that do happen typically exceeds $100 billion annually in the U.S. alone. Considering that the total utility spend on vegetation management (VM) is just a small fraction of that figure, utilities would be justified in investing more to drive this number down.

Throughout the past two years, as more people worked from remote locations, every line has become a critical infrastructure. As regulators, media, and the public increasingly recognize that utility vegetation management (UVM) is indispensable, it is up to us to ensure that it is done right. This means finding the right combination of technology, equipment, and boots on the ground to leverage the most from limited resources in an evermore difficult operating environment. Whether it is invasive species like the Emerald ash borer *(Agrilus planipennis),* frequent and intense storms and droughts driven by climate change, or a shortage of labor, our industry must adapt to an array of challenges.

This issue of UAN focuses on technology, which continues to change the way we plan and perform UVM work. As with any innovation, we should not adopt new tech just because it is new. Costs and benefits should be weighed and technology adopted where appropriate. This may vary considerably depending on the application and the type of work. Regardless, the technology must support and enhance the efforts of utility arborists who actually do the work.

Which brings me to the next point. With limited budgets and high public expectations, we need to maximize the value of every dollar allocated to VM. This may mean less emphasis on clearance and greater focus on targeting the highest risk situations both on and off the rights-of-way (ROW). For example, clearing a tree or branch that is highly unlikely to fail anytime soon is, in most cases, a waste of resources, especially if high-risk trees and branches falling elsewhere on the system.

To accomplish this, we must first make our case to decision makers, including regulators and utility executives. It will take professional expertise at every level and require us to develop the training and obtain the credentials necessary to support this incredibly valuable service. More on this in our next issue.

I'd like to remind every utility arborist that your service—challenging as it may be—helps millions of people each day. Throughout my 32 years in this industry, we have made great strides, but there is still much we can do. With some resourcefulness, collaboration, and support from the UAA, we can ensure a strong future for our VM programs. ■

We know that the annual cost of electric service interruptions that do happen typically exceeds $100 billion annually in the U.S. alone.

With some **RESOURCEFULNESS, COLLABORATION,** and **SUPPORT** from the UAA, we can ensure a strong future for our VM programs.

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Will is the type of person who makes you reevaluate your life and your legacy, motivating you to do better.

Chapter, promoting our relationship with ISA, and building our continued legacy alongside the late Nelsen Money in the revisions of our UAA *Newsline*. He was key in raising money for the TREE Fund and was Chair on the Board of Directors. Jessica Carroll (Partner Relations, ISA) said, "My time with him at UAA was so memorable and I would not be where I am today without Will. He really cared about everyone he met. He cared for my family; he loved getting updates on my girls. Everyone will miss him so much."

In his private life, he was a devoted family man. He adored his wife, Cami, his children, and his friends. Will was an advocate for taking time to play as much as working hard. His time off was spent riding his beloved motorcycle, taking fishing trips, attending concerts, traveling anywhere he could with his beloved Cami, and soaking up his family. Having just returned from seeing his daughter in Germany before heading to the Tour de Trees in Colorado, one can say that Will lived life to the fullest.

Will is the type of person who makes you reevaluate your life and your legacy, motivating you to do better. He will live on through his lasting influence in the cooperative dialogue between management and the frontline across the industry. Will served as President and COO of Wright Tree Service and was the Senior Vice President and COO of Wright Service Corp. Chairman and CEO Scott Packard said, "Words cannot express how much Will meant to us as a friend, teammate, and leader. He was a cornerstone for WTS and will be greatly missed." ■

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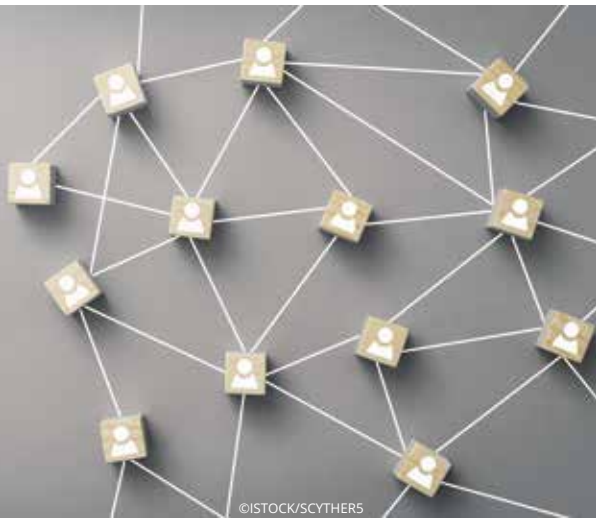
By Dennis Fallon

The utility vegetation management space is loaded with new, redefined, and continually advancing areas of study that may be leveraged to further improve our industry.



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Technology, according to Microsoft Bing, is defined as "the application of scientific knowledge for practical purposes, especially in industry." The beauty of scientific knowledge is that it is always evolving if someone is willing to take on the effort to study using the scientific method. The scientific method roughly boils down to using systematic observations to test hypotheses, draw conclusions, have those conclusions reviewed by peers, and then discuss. Often it is through the discussion phase where application opportunities arise—when the participants translate data into applicable information.

The UAA roots were established when a group of utility arborists, searching out opportunities to discuss industry observations with others, came together. Those discussions revealed a need to focus smaller groups on specific topics and areas of interest, which could then benefit the larger group. UAA committees are working to discuss how to apply scientific knowledge to our industry and provide practitioners with the information needed to effectively do their jobs. Teams of industry thought leaders voluntarily gather to discuss topics like safety, environmental stewardship, education, learning events, and the content of this magazine, along with how to get that information out to the larger membership so they may seek opportunities to apply relevant knowledge to their jobs.

The UAA committees offer vast benefits to the industry as well as the committee participants. Leveraging a larger perspective adds depth to a discussion. The UAA continues to grow as the leading organization for those who provide professional rights-of-way vegetation management (ROW VM) services in North America. This growth is fueled by our professional and program committees, our event committees, as well as our events.

Throughout the next few months, the committees will continue revisiting their goals and level-setting those goals against the organization's vision, mission, and values. Committee leaders will set up metrics to define success and empower participants to tell their success stories. Committee structures will be reviewed to ensure they are aligned with the organization's new growth as well as our strategic plan. Now is a perfect time to get involved!

UAA committees are working to discuss how to apply scientific knowledge to our industry and provide practitioners with the information needed to effectively do their jobs.

Participation on a committee offers the industry a broader perspective, providing a platform for more voices to be heard. Committee involvement also offers participants an opportunity to hear other perspectives and share different ways to approach creating solutions. Committee leadership can also be viewed as a development tool. Working with—and learning from—external thought leaders to create positive outcomes for the industry may not be available within every organization. The UAA offers this access in exchange for a few volunteer participation hours.

In this edition of the *Newsline*, there are several articles fueling the discussion about technology advancements in our industry, including how to protect our cyber assets. The utility vegetation management (UVM) space is loaded with new, redefined, and continually advancing areas of study that may be leveraged to further improve our industry. There is a place for your voice and professional development in these discussions. Consider joining a committee or hosting an event. Our organization benefits from folks taking the time to share their observations, experiments, results, and perspectives. The more diverse perspectives involved in the process, the stronger the products. ■

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UAA SCHOLARSHIP PROGRAMS

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UAA Mentoring Program now accepting applications from students enrolled in the UVM Program. To apply go to: https://form.jotform.com/210945721189157

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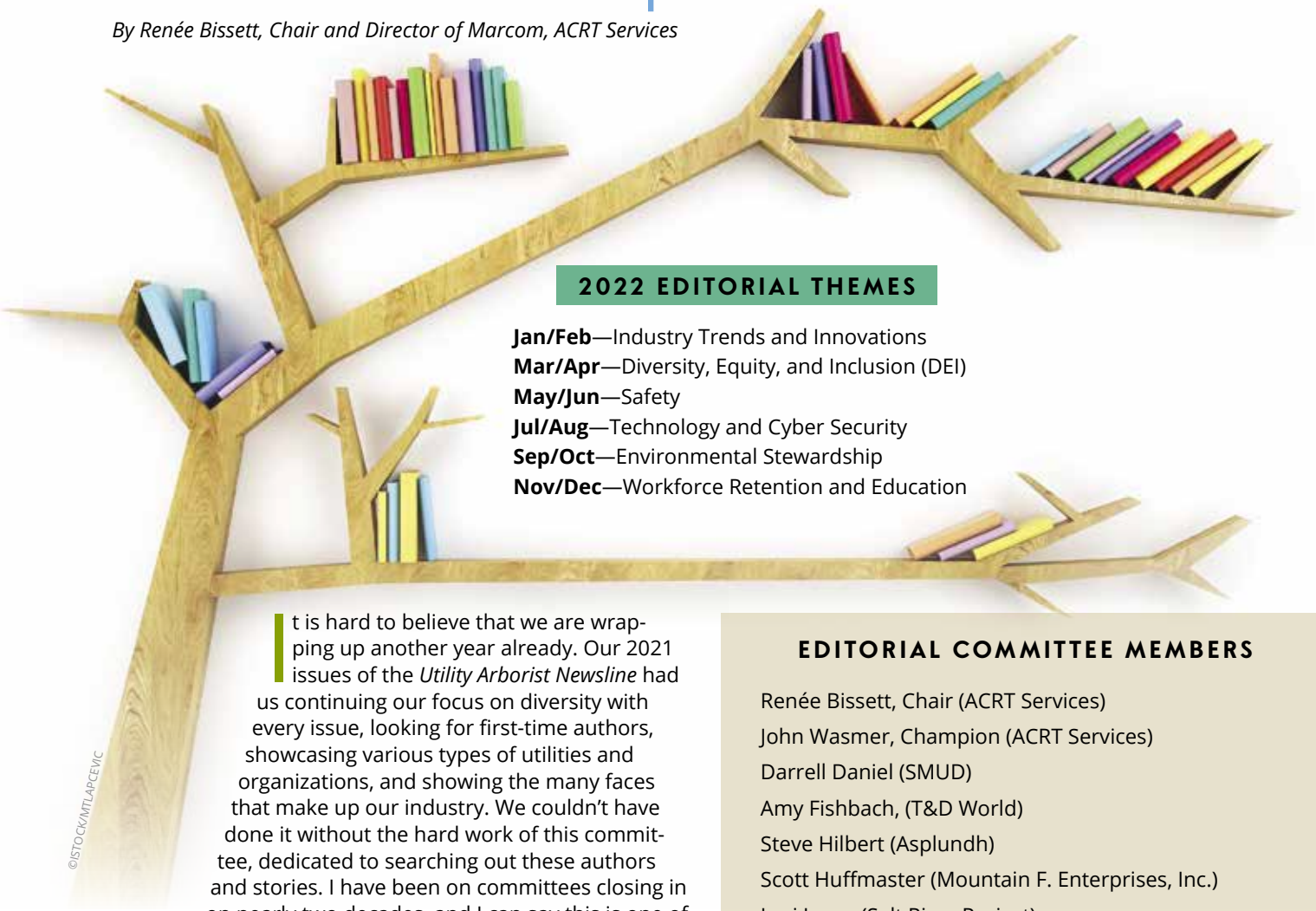
Editorial Committee Update

By Renée Bissett, Chair and Director of Marcom, ACRT Services



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2022 EDITORIAL THEMES

Jan/Feb—Industry Trends and Innovations
Mar/Apr—Diversity, Equity, and Inclusion (DEI)
May/Jun—Safety
Jul/Aug—Technology and Cyber Security
Sep/Oct—Environmental Stewardship
Nov/Dec—Workforce Retention and Education

It is hard to believe that we are wrapping up another year already. Our 2021 issues of the *Utility Arborist Newsline* had us continuing our focus on diversity with every issue, looking for first-time authors, showcasing various types of utilities and organizations, and showing the many faces that make up our industry. We couldn't have done it without the hard work of this committee, dedicated to searching out these authors and stories. I have been on committees closing in on nearly two decades, and I can say this is one of the most active and engaged groups the UAA has supporting their mission. Thank you to the team!

In 2022, you will see a facelift for this publication. For those of you who remember, the *Newsline* started out as a few pages sent quarterly and has morphed into the robust bi-monthly newsletter format it is today. Going forward, it will evolve again, maturing into a proper magazine, complete with a cover. The team is excited to deliver an even better experience to our readers with a newly designed *Newsline* to match the expanding variety of content we continue to add. We on the committee hope our readers will enjoy the new look coming to our first 2022 issue in January.

Our editorial calendar for this year covers some of our tried-and-true topics. We will kick things off in our next issue themed around industry trends and innovations (January/February). For our March/April issue, we will focus on DEI (diversity, equality, and inclusion), skills, and career paths. The UAN will always have its dedicated issue to safety (May/June) and one to environmental stewardship (September/October). Technology and cyber security will be our focus in July/August. Our final issue of 2022 (November/December) will cover workforce retention and education, with content surrounding succession planning.

Do you have a story to tell? We are always looking for feature stories that match our theme. In each issue, we like to share stories on diversity, research findings, reflections from the past, spotlights on the environment, or UVM from around the world. Visit our website (*gotouaa.org*) to see the full author guidelines and if you are interested in joining this dynamic team of hard workers—reach out and let us know. We can always use new members! ■

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Darrell Daniel (SMUD)
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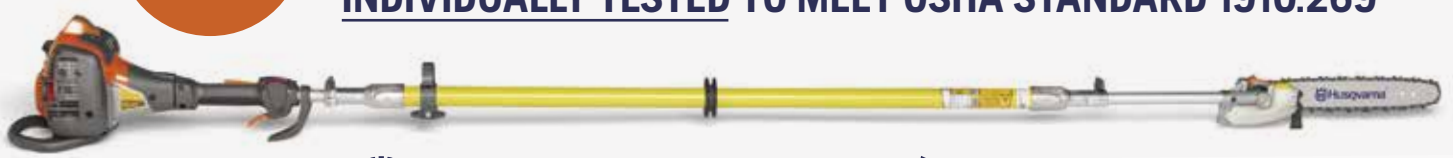

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GOLD LEVEL

DAVEY Resource Group

INNOVATIVE SAFETY APP HIGHLIGHTS POTENTIAL FUTURE OF QR CODES

By Jenna Paul, Technical Writer, Davey Resource Group, Inc.

A QR code is a barcode of white and black squares that can be scanned via a camera or smartphone to access the stored data. They are useful in many arenas, from allowing restaurants to forgo paper menus to directing potential customers to websites in advertising. In the utility vegetation management (UVM) industry, the most common use for QR codes is inventory tracking and maintenance logs. Placing a QR code on equipment allows team members to easily access, filter, and sort information on a given item. While this is exceptionally useful, there are other unexplored uses for QR codes that can positively shape this industry.

Recently, Davey Resource Group, Inc. (DRG) released a creative app that launches off a vehicle's QR code and has found and prevented more than 1,200 potential issues in the areas utilizing it. While backing collisions account for a fraction of an employee's drive time, it disproportionately contributes to negative safety metrics.

The DRG GIS/IT team developed and field-tested an internal safety application that prompts the driver to perform a 360° walk-around by scanning a QR code on the vehicle. Once the driver scans the code, the app geolocates the longitude and latitude of the driver and asks simple questions to make sure the vehicle is safe to drive. The app provides an automated and scheduled delivery of safety metric reporting to managers. This simple yet effective process adds accountability and situational awareness.

This app is effective because, while working, employees become hyper-focused on the task at hand and can bring that distracted mindset into their vehicle once the job is complete. The app's safety questions not only prompt them to analyze the current state of their vehicle before moving to a new location but also transition the employee towards a safety mindset. Therefore, physical and mental obstacles to safety are addressed before anyone hits the accelerator—greatly decreasing the risk of an incident.

> "The app's safety questions not only prompt them to analyze the current state of their vehicle before moving to a new location but also transition the employee towards a safety mindset."

This app has proved that QR codes can be leveraged as a directional device between field staff and analytical databases. QR codes were known as an effective medium for storing information on items, but this opens the door for innovative uses for the technology. The full potential of QR codes has yet to be explored, and this safety application proves that future innovations have the potential to yield huge outcomes.

DRG's mid-Atlantic and Northeast regions have seen exceptional results, entirely eliminating backing collisions in both. With such a proven track record, DRG is looking forward to rolling out this app into new areas and finding new ways to innovate QR code usage. ■

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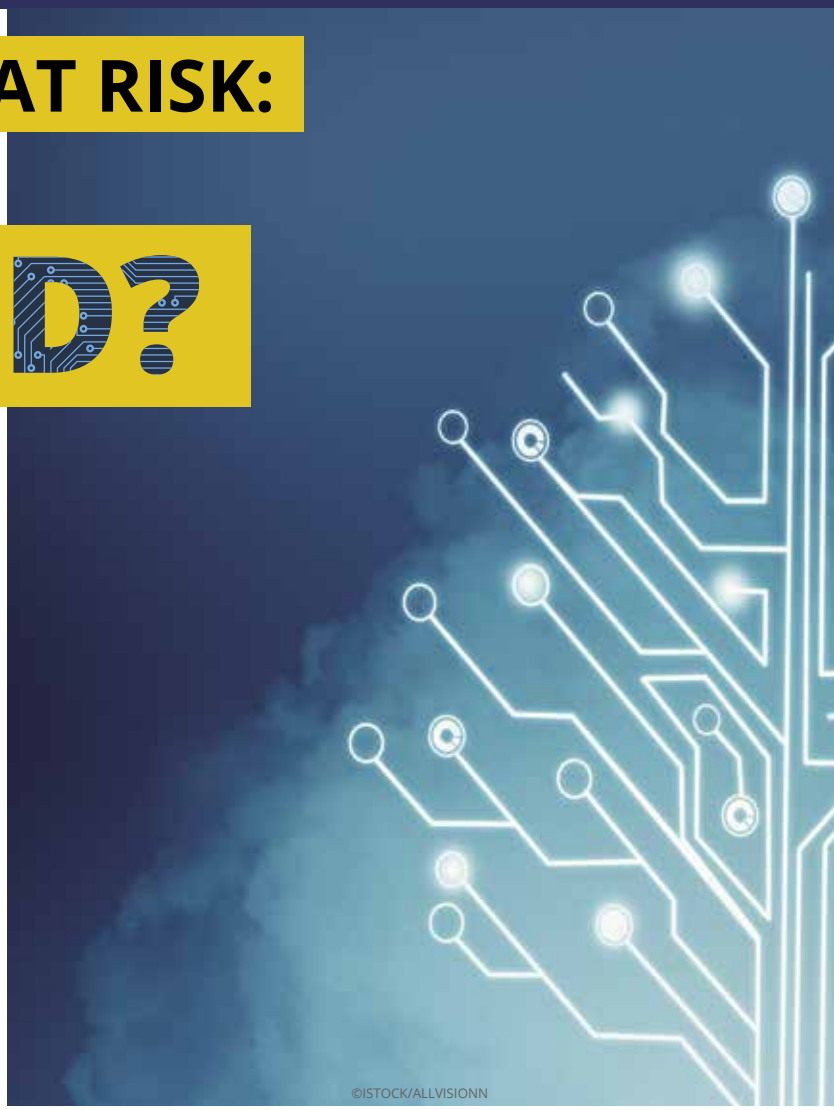
OUR INDUSTRY IS AT RISK: HOW WILL WE RESPOND?



By Joe Marshall, Business Development Manager, ACRT Services

ONE ATTACK AFTER ANOTHER

One of the greatest challenges facing the country today is the ever-increasing threat to our cybersecurity—both personally and professionally. More and more, it seems we hear about breaches, data theft, and numerous other cybersecurity attacks. You're likely familiar with many of the breaches that have occurred throughout the past several years, particularly as they involve organizations that impact our daily lives.

You may also be familiar with the cybersecurity events involving the utility industry itself. Most recently, the Colonial Pipeline attack in late April 2021 caused temporary gasoline supply shortages from the Gulf Coast to the Eastern Seaboard, all because of a compromised password for a virtual private network account that didn't have multi-factor authentication enabled. Numerous other examples abound for utilities of all types, some as tests initiated by hackers whereas others were full-blown assaults with the capability of contaminating water supply lines or even causing gas leaks and putting people's lives at risk.

The most disturbing aspect of these attacks is that they haven't been aimed directly at utilities themselves. Suppliers, contractors, and other utility service providers have all found their companies, employees, and even customers in the crosshairs. The breaches aren't just *technical* in nature, either. Hackers have exploited business relationships to gain information that will put them in a stronger position to attack utilities later. All manner of methods were used to get that information: impersonating leaders and other professionals, sending blast emails to customers to create confusion, creating websites with code designed to steal login information, submitting false job applications with malicious attachments, and more.

Sadly, many of these attacks have been successful in one form or another—particularly when a third party was used as the conduit for the attack on the utility. Unsurprisingly, a significant number of data breaches involve third parties as conduits. The attacks start small in areas where contractors and suppliers least expected to find cybercriminals poking around. Some companies were unaware that they had been breached until the government or a cybersecurity partner notified them. As hackers found the information they needed, they pushed their attacks further and deeper into the energy sector, launching more sophisticated and layered attacks to maintain their momentum.

Thankfully, government agencies became aware of the attacks and made efforts along with the businesses they notified to stop the attacks. Ultimately, these events led the government to impose greater security demands on utilities in order to protect the energy grid infrastructure from internal and external attacks. This, in turn, has led to increased security demands being placed on the organizations that support utility operations.

Conversely, much is being reported about the lack of progress from utilities and even government agencies in terms of fixing the discovered issues and making systems more secure overall. When a Central U.S. gas utility discovered malware

Security teams should consistently perform unannounced tests on internal teams to identify opportunities for additional education, software improvements, and policy updates.

> More cybercriminals beyond those responsible for the recent attacks on the energy industry will likely try their hand, and you can be sure that the methods they use will continue to become more sophisticated.

attempting to enter its systems, its security team battled hackers for days, eventually managing to expel the intruders. But when the utility's security partner realized that the attackers were most likely "nation-state operators"—those working with a foreign government against the U.S.—they immediately began reaching out to government agencies. However, after presenting the information to the FBI and the Departments of Homeland Security, Defense, and Energy, they received no follow-up.

So, what are utilities and other industry organizations doing to remain in compliance with regulatory requirements and improve their overall cybersecurity programs? As the attacks have proven, it's not only a matter of stealing a password; there are many layers involved with all manner of deceptive tactics being used to acquire information.

COMMITTING TO ONGOING EDUCATION

While there are many lines of defense for an organization to protect its data and overall security, technology does have its limitations. As so many of the recent attacks targeted employees within companies supporting utilities, organizations are continuing to expand and enhance their

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SILVER LEVEL

COWGIRL MAGAZINE HONORS ACRT PACIFIC'S ANNA BAGLIONE

Anna Baglione, a contract senior specialist planner for ACRT Pacific and an ISA Certified Arborist, has been named to COWGIRL Magazine's 30 Under 30 Class of 2021.

Each year, the award honors 30 "qualified, talented, diverse applicants who represent the future of women in the Western industry." Intending to empower young women, the COWGIRL 30 Under 30's mission is to "show just how vital [women] are," whether they're corporate executives, professional athletes, media professionals, or working cowgirls.

In March, Baglione was recognized for her work with various mule-packing-adjacent organizations.

Before joining ACRT Pacific, Baglione spent eight summers working at Rock Creek Pack Station in Bishop, California. "During my time with Rock Creek, I did every different job they could give me—cook, guide, pack, secretary, clean toilets. You name it, I did it," she said.

She's also spent countless hours volunteering for the American Mule Museum, the Backcountry Horsemen of California, and the Bishop Mule Days Celebration.

Not only does she volunteer, Baglione competes in various packing and hitching competitions. This year, she earned 13 top-10 finishes at Bishop Mule Days 2021.

The way Baglione sees it, there's a connection between the packing and green industries. "My experience in the packing industry has prepared me well for any challenge I face as an employee within the ACRT Services family of companies. I know that variety is the spice of life, and I'm thankful to work for a company that allows me to keep up with my other passions."

We're proud of Baglione and the other members of our ACRT Services family of companies who dedicate time to these various initiatives outside their day jobs. ■

internal cybersecurity education programs to combat malware, phishing attempts, watering-hole attacks, and other methods for obtaining sensitive information.

Since we are a people-focused, first-tier partner to many industry customers, ensuring our employees understand and follow best practices is essential. We invest not only in ongoing education for our employees but also in the hardware and software used both in the office and in the field to ensure utility data and customer data is protected. I encourage you and your organization to ask "Do we feel that our people are prepared for an incident?" If the answer is anything but *yes*, it may be time to invest in education.

It's also important to recognize that no organization can be 100 percent prepared for an attack, as they often strike where least expected. What matters is staying as close to 100 percent as possible by never allowing your security education and training to lapse.

BUILDING SECURITY-FOCUSED TEAMS

Information security is mission-critical for the industry as a whole, not just for utilities. While internal technology departments have a strong understanding of information security, they are also required to focus on other aspects of the company's technology infrastructure, such as repairing equipment, deploying new software, and troubleshooting problems. This means not all of their time can be focused on cybersecurity.

That's why suppliers, contractors, and other service providers supporting the industry have invested in chief information security officer (CISO) positions and teams working under them in order to build out stronger cybersecurity programs and procedures. These professionals are completely focused on security strategy, program execution and evolution, and even crisis management and legal response. Often, internal security teams are supported by one or more cybersecurity partners to expand security capabilities, monitoring, and more.

We are no exception. We have grown—and continue to grow—our internal security team to ensure our organization is following industry standards and best practices. Across the country, utilities have also invested in building out their teams to maintain compliance with the Critical Infrastructure Protection (CIP) Standards established by the North American Electric Reliability Corporation (NERC). New legislation (the Energy Emergency Leadership Act, the Enhancing Grid Security through Public-Private Partnerships Act, and the Cyber Sense Act of 2021) is also a key topic for our security and leadership teams to ensure preparedness.

Even if your organization has already undergone testing and evaluation, do more. Dig deeper. Refine everything.

TESTING AND REFINING—AND TESTING AGAIN

Having a security program doesn't guarantee its effectiveness. It's important to ensure the program *actually* works should a situation arise. To keep cybersecurity programs current and to verify that employees both understand and follow them, organizations should consider testing their programs, particularly in the form of incident response (IR) tabletops. In these tests, a company's ability to execute its cybersecurity and IR plan is evaluated. This is and should be done with the help of an expert service provider. Once complete, a report is provided along with any recommendations for improvement and implementation.

The need for testing goes beyond one-time or periodic incident response tabletop exercises, however. Security teams should consistently perform unannounced tests on internal teams to identify opportunities for additional education, software improvements, and policy updates. Again, the existence of a cybersecurity program does not equate to safe data. People and the software and devices they use are the first line of defense in protecting that data. We realized this fact and even conducted a hacking experiment to test it.

We knew we needed something more than just an internal test. It needed to be nearly identical to a true breach. We sought a partner who would ethically hack our systems to reveal its vulnerabilities. These hacks weren't limited to computers or devices alone. The partner was allowed to contact our employees directly to test their ability to discern a genuine request for information from a fraudulent one. Using this test, we were able to validate the strength of our cybersecurity program and enhance it even further.

WE MUST STAND TOGETHER

The threat to the power grid is increasing. More cybercriminals beyond those responsible for the recent attacks on the energy industry will likely try their hand, and you can be sure that the methods they use will continue to become more sophisticated. It is on utilities and the companies that serve utilities to ensure that data, the customers we all serve, and the very security of our national energy infrastructure remains as secure as possible.

I encourage you as a member of this great industry to heavily evaluate your security programs, not just now but on an ongoing basis. Even if your organization has already undergone testing and evaluation, do more. Dig deeper. Refine everything. We can never let our guard down, as cybercriminals will never stop making attempts and trying new tactics. Together, we can help protect our industry and those who enjoy the benefits of our work.

Author Bio

Joe Marshall is a business development manager with ACRT Services. He holds a Bachelor of Science in Forestry from West Virginia University and an MBA in Organizational Leadership from Malone University. ■

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NATS EMBRACES TECHNOLOGY

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When the pandemic set in last year, NATS joined industries across the board to determine how to continue serving our clients best as the world flexes, attempting to adjust to a new normal. We are, indeed, continuing to adapt.

One of NATS's pillars is to empower individuals with the resources they need to safely perform their jobs so that at the end of the day, everyone returns home safely to their friends and family. By offering trainings virtually, NATS instructors can reach clients where they are and deliver what they need.

"'Solutions' is part of our name, and we want to be that solution for our clients and make sure we're providing what they need," said NATS Sales Director Brian Luzier.

The virtual offerings are making an impact, too. "NATS put on a great online OSHA-30 course," said course participant Nicholas H. "The instructor made it very easy to learn and kept everyone's attention the whole time. It was a great course, and I'm looking forward to the next NATS course."

Another course participant, Brian B., said, "This is a great program [Empower the Educator] built by amazing people with passion and love for what they do. I would take this course all over again."

Another of NATS's efforts to provide clients with what they need—right where they are—is the development of written programs and resources that can be delivered electronically through self-paced online training. Programs that have been reconfigured into this format include safety manuals, employee handbooks, job safety analysis/job briefing forms, OSHA written programs, tailgate safety programs, and vehicle and equipment inspection checklists.

As the world opens back up and NATS is able to resume more of its in-person trainings, our virtual offerings will remain on the table. ■

REGISTER FOR AN UPCOMING WEBINAR

TOPIC:

Communication in Utility Line Clearance Operations

DESCRIPTION:

This webinar takes a sociology and communication ethics approach to examine sources of criticism of utility line clearance operations. The related implications of public engagement on governance, clearance operations, and public policy concludes the presentation as we discuss how clarity from the forefront and engagement with community groups can help reduce the "shock factor" of utility line clearance operations.

Presented by Alexander Martin

MARK YOUR CALENDAR:

Dec 8, 2021 12:00 PM in Central Time (U.S. and Canada)

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POP QUIZ

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1. Colonial Pipeline had a virtual private network account with multi-factor authentication enabled when the attack occurred.
   a. True
   b. False

2. When did the Colonial Pipeline attack take place?
   a. 2018 c. 2020
   b. 2019 d. 2021

3. The Colonial Pipeline attack caused temporary gasoline supply shortages from the Gulf Coast to the Eastern Seaboard.
   a. True
   b. False

4. Utilities have been the only target of these cybersecurity attacks.
   a. True
   b. False

5. A significant number of data breaches involve third parties as conduits.
   a. True
   b. False

6. When a Central U.S. gas utility discovered malware attempting to enter its systems, its security team battled hackers for:
   a. Hours c. Weeks
   b. Days d. Months

7. What are utilities and other industry organizations doing to remain in compliance with regulatory requirements?
   a. Committing to ongoing education
   b. Building security-focused teams
   c. Testing and refining—and testing again
   d. All the above

8. While internal technology departments have a strong understanding of information security, they are also required to focus on:
   a. Repairing equipment
   b. Deploying new software
   c. Troubleshooting problems
   d. All the above

9. In incident response tabletops, a company's ability to execute its cybersecurity and IR plan is evaluated.
   a. True
   b. False

10. The existence of a cybersecurity program equates to safe data.
    a. True
    b. False

■ ANSWER KEY

1) b. 2) d. 3) a. 4) b. 5) a. 6) b. 7) d. 8) d. 9) a. 10) b.

Remembering Will Nutter

When Troy Ross (Executive Vice President of Operations) reflected on his first meeting with Will Nutter back in the early 2000s, he was taken aback by Will's friendliness and passion for safety. Traveling across the nation, meeting and dealing with others in the industry, Will was different; he wasn't putting on an act or simply making a good first impression. Twenty years later, Will was just as passionate and genuine as ever, and he served as President and COO of Wright Tree Service. IVM Specialist Rich Hendler served as UAA President following Will, who taught, led, and redefined safety for Rich. He will be remembered as a hardworking and great man—a role model others could follow.

John Wasmer (Executive Vice President of Revenue) remembers what set Will apart was how he treated everyone in the industry equally. He empowered those around him and lifted others up with him. Working with Will for more than 15 years on various committees, Renée Bissett (Marketing and Communications) remembers him as a leader, a team player, and, most importantly, an inspiration. He recognized hard work and built teams to produce greater output. Others across our organization described Will as kind—the nicest person in the industry—a true leader, and even as a celebrity within our industry. He always had time for you and was fair in his business practices.

THE LOSS OF WILL—HIS LEADERSHIP AND THE "GLUE" OF OUR INDUSTRY—CANNOT BE REPLACED. HE TOUCHED MANY AND MOVED HIS COMPANY AND OUR INDUSTRY FORWARD.

The loss of Will—his leadership and the "glue" of our industry—cannot be replaced. He touched many and moved his company and our industry forward. That is a life well lived and one that deserves to be celebrated and remembered. Our heart aches for his family, loved ones, and our entire industry. Rest in peace, Will Nutter. ■

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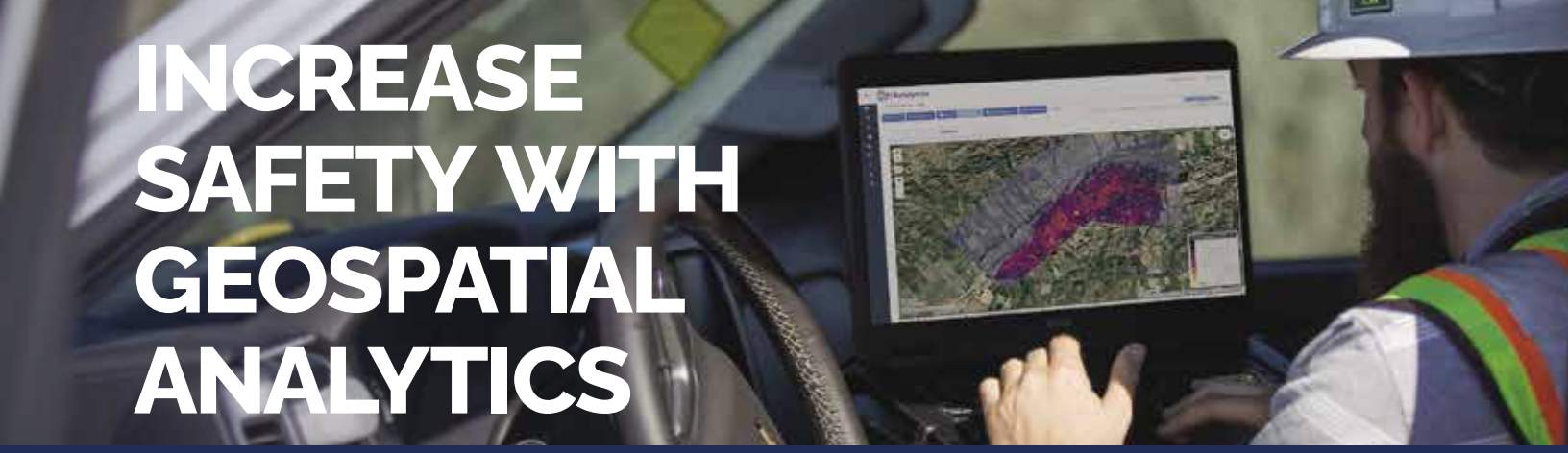

INCREASE SAFETY WITH GEOSPATIAL ANALYTICS

ACRT Services and Satelytics have partnered to help utilities identify system issues while reducing safety incidents and mitigating costs.

Utilities have thousands or even tens of thousands of line miles to manage. Identifying encroachments and other issues requires people to assess them one mile at a time — not only requiring significant time and resources but also putting field workers at risk. That's why ACRT Services and Satelytics have partnered to offer geospatial analytics to the utility industry. As the first UVM organization to provide this solution, our family of companies is able to take our safety efforts further for you than ever before while reducing program costs, prioritizing work planning, and providing in-depth system data.

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TEST DRIVING AN ELECTRIC AERIAL SAW

By Mary Hetz, Manager–Vegetation Management, Ameren Transmission

As manager of Ameren Transmission's vegetation management (VM) program, I am always looking for innovations to improve how we maintain our rights-of-way (ROW). We consider safety, reliability, and compliance with the federal NERC Reliability Standards and state mandates as top priorities as we assess new technologies. And, of course, we are seeking cost savings that come from enhanced efficiencies.

A couple of years ago, I challenged one of our utility vegetation management (UVM) vendors to develop some new methods or technologies to improve their operations. Cleve Cox, President of Aerial Solutions, Inc. (ASI), told me that his company had been working on an improved aerial saw and would get back to me when a prototype was developed.

I was keenly interested in new developments, since Aerial Solutions has been providing aerial trimming at Ameren since the mid-1990s. We have long recognized the benefit of using the aerial saw as part of our VM program in both transmission and distribution. In addition to scheduled maintenance, the aerial saw also has been useful in construction, hazard tree mitigation, and storm response.

When Cox contacted me again in mid-2020 to let me know that the prototype they had developed was ready for a pilot project, I was intrigued. Because of Ameren's focus on innovation and continuous improvement, I was interested to learn more and hoped to become the first utility to test the new technology.

Cox explained that ASI's new saw was powered by a battery instead of the more traditional gasoline-powered saw engine. He called the new aerial saw an "electric saw" or "E-saw." Cox went on to explain that ASI has multiple battery configurations for different scenarios. This enables the pilot to decrease the weight of its load when needed for high-elevation trimming, which—among other benefits—reduces the fuel consumption required to propel the helicopter.

The initial in-house tests conducted by ASI showed that the E-saw had more torque than the gas engine. The added torque meant it could cut larger limbs at a faster rate. The lighter weight and improved torque would result in cost and performance efficiencies, which are significant benefits for ASI's customers. I immediately volunteered to have the E-saw tested on Ameren transmission lines.

Before starting the project, Cox and his team members showed us the components of the E-saw and the charging system, which allowed the saw to run throughout the day. Cox explained that the batteries could run for up to an hour and a half and could be quickly exchanged for fresh batteries when helicopters return to the landing zone to refuel. The spent batteries are then recharged by the service vehicle.

In the fall of 2020, once ASI was certain the E-saw was ready for a safe, successful test run, the demonstration finally arrived. During the test, we cut 44 miles of transmission circuits in Missouri, south of the St. Louis area. Because Ameren was utilizing the aerial saw since the mid-1990s, we had many circuits that had been trimmed in recent years by ASI to solidly compare the E-saw with the gas-powered saw.

In testing the E-saw, we were excited to find significant cost savings. The E-saw was a more efficient tool, allowing quicker trimming. Our experience with the gas saw was that it sometimes took the saw blades a few seconds to get back up to full speed when cutting larger limbs. During the test, we observed that the E-saw blades seldom bogged down, and when they did, the recovery time was almost immediate. The pilot confirmed the same from his vantage point.

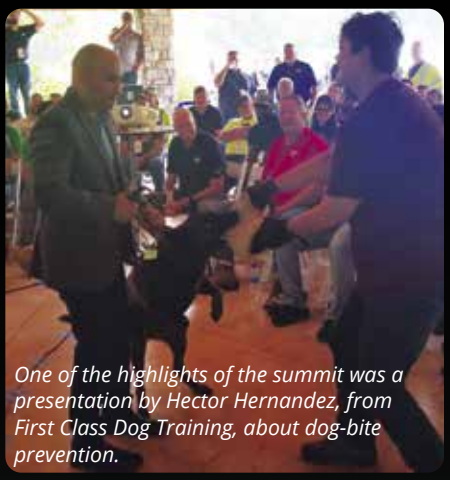
Another benefit was that the batteries allowed for longer trim times compared to the gas saw, which increases efficiency. And since the new saw is electric, it is much quieter than its gas predecessor. So much so that it appears the blades are spinning faster but are actually spinning at the same rpm (revolutions per minute) as the gas saw.

The pilot project was well-received by members of the transmission vegetation team as well as President of Ameren Transmission Shawn Schukar and Senior Director of Transmission Operations and Maintenance Luke Wollin. I shared the analysis of the test run with my Ameren distribution peers and they are also looking forward to full, system-wide implementation when the new saw is available.

We at Ameren anticipate that more widespread use of electric saws will increase cost efficiencies while managing vegetation safely and reliably. We also look forward to future innovations from ASI, which we hope will help those in our industry achieve additional cost reductions in VM programs. ■

THE BENEFITS OF ATTENDING THE UAA SAFETY SUMMIT

Whether you are new to the industry or have years of experience in utility vegetation management, be sure to attend a UAA Safety Summit to discover valuable takeaways on promoting a safer workplace.



One of the highlights of the summit was a presentation by Hector Hernandez, from First Class Dog Training, about dog-bite prevention.

The backdrop at the Gabis Arboretum was ideal for the two-day UAA Safety Summit, held July 20–21 in Valparaiso, Indiana.

"This event was unique from others in the past because this was the first time we hosted it outdoors at an arboretum," said T.K. Christie, Director of MW Distribution Vegetation Management at Duke Energy. "More than 100 people joined us this year and I heard great feedback on the presentations and speakers. Everyone seemed to enjoy it."

The Indiana summit is one of four annual safety events presented by the UAA across the U.S., each designed to help organizations develop an enhanced culture of safety and curb hazardous outcomes in the field.

"It is extremely important for the utility forestry employees to attend safety summits," said Chad Tinkel, Regional Forestry Supervisor at Michigan Indiana Power. "The forestry industry is one of the most dangerous occupations in the world. We deal with electricity—a silent killer. The summits focus on field personnel who actually live the work each and every day. These employees come to the sessions and take what they learn back into the field and share with their coworkers."

From chipper safety, traffic control, tree risk assessment to roping and rigging, attendees found the content relevant to what's happening in the industry. Hector Hernandez's presentation on dogs and customer de-escalation techniques was among the most popular events.

John Stout, a Manager of Vegetation Management at Northern Indiana Public Service Company (NIPSCO), noted the unique relationship between the sponsors for making the summit a success.

"NIPSCO, Duke Energy, and Michigan Indiana Power forged a relationship between the three utilities to make this available for all of our contractors out there," Stout said. "That really shows where the industry is going and the commitment that we have to focus on the safety of workers out there. I was standing around and talking to people as they were leaving," Stout added. "They were pleased with the topics and the depth of focus that was provided to them. I love it when the most frequently asked question is about when the next summit is going to be." ■

SHARPENING THE TOOLS THAT TRANSFORM DAILY WORKFLOWS

By Pat Hohl, PE and Director of Electric Industry Solutions, Esri

Employees can rely on safety checklists on located-aware apps to prepare themselves and keep safe from risks. Photo courtesy of Peachtree Arborists.

Digital transformation is exploding—changing work and even the way we order lunch on the go. Mobile tools that specifically account for place update arborists' work around the globe and bring exceptional value to daily workflows.

However, the original mobile solution, the paper map—the tree killer—is still alive and well. Plentiful paper forms and information keyed into spreadsheets mean that modern geographic apps represent the low-hanging fruit for vegetation management (VM). They improve information access, completeness, accuracy, and timeliness while updating antiquated workflows. Mobile technology at the crew level takes a cue from social media: once anyone makes changes, they are immediately visible to all. In the field, employees collect reliable data and quickly return it to the business.

Employees expect intuitive apps that work like the apps they use in their everyday life. These tools have to make their work experience much better. Simply putting dots on a map helps, but complete solutions need to do much more. They need to unearth value and provide ways to put it to work. "If you don't have a way to operationalize your data, it's worthless," said Clearion CEO Chris Kelly. Capture information, understand it, share it. That's a winning formula.

LOCATION MATTERS

Today, we expect location-aware apps. We treasure our smartphones that provide efficiency and convenience, like quickly finding a great restaurant nearby. However, if you turn your GPS off, the apps complain. They won't work! Nothing works right without location information—an inspiring insight.

What's needed is to conveniently bring information together in a way that makes sense to arborists. For example, have you ever seen a line clearance operation without maps? I have not.

Utilities use maps. They naturally work better to provide awareness of proximity. Understanding location yields perspective to VM concerns—traffic control, angry

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customers, danger trees, sensitive habitats, and crew locations. As a result, location is a powerful way to blend data, understand it, and use it.

Seeing arborists' work through the lens of where it happens brings things together. A modern geographic information system (GIS) moves beyond mapping to deliver location *intelligence*. Therefore, GIS is ideal for adding business value, simplifying communication, and creating situational awareness. Location intelligence increases efficiency, promotes safety, enables customer care, and encourages sustainability—each achievement reinforced with colorful displays.

EFFICIENCY

The opportunities to increase workflow efficiency are overwhelming. We see utilities moving from blanket vegetation tactics to more targeted, just-in-time approaches. They prioritize work to address their reliability and safety objectives specifically. Consequently, better timing and coordination are critical. Simply getting to and performing the right job at the right time is an obvious starting point. However, greater precision is challenging to achieve with stale manual work processes.

Apps with location intelligence add value by naturally connecting work and resources. Going further, they improve billing workflows by automatically capturing who did what, where it happened, and when they did it.

Finally, utilities rely on new technology to advance their effectiveness. LiDAR and satellite imagery coupled with spatial analysis now help users rapidly identify vegetation conflicts. The resultant insights bolster work planning. Location intelligence tightly connects modern analysis with boots-on-the-ground work management.

SAFETY

Ensuring employee, contractor, and public safety is the primary job for every utility. Unfortunately, many concerns lurk in unexpected spots. Employees need an understanding of dangerous conditions and aggressive property owners. Without specific awareness, employees often rely on local experience. Sadly, vital institutional knowledge is easily lost with staff, contractor turnover, and changing assignments.

Modern location-aware apps present everything from high-risk fire zones to environmental hazards in the context of work locations. In addition, many agencies are transitioning their safety checklists and jobsite forms directly into their apps.

When workers log safety data electronically, they communicate it immediately. Visualizing essential information on real-time dashboards and generating key performance indicators (KPIs) elevates safety practices. In addition, immediate feedback from the resultant safety knowledge base rolls up to be included in group statistics while also revealing details at the crew level.

Capturing essential safety information is the critical first step. Then, understanding it with analysis helps people find hidden patterns. And finally, sharing it exposes potentially life-saving insights for everyone who needs them—with zero paperwork.

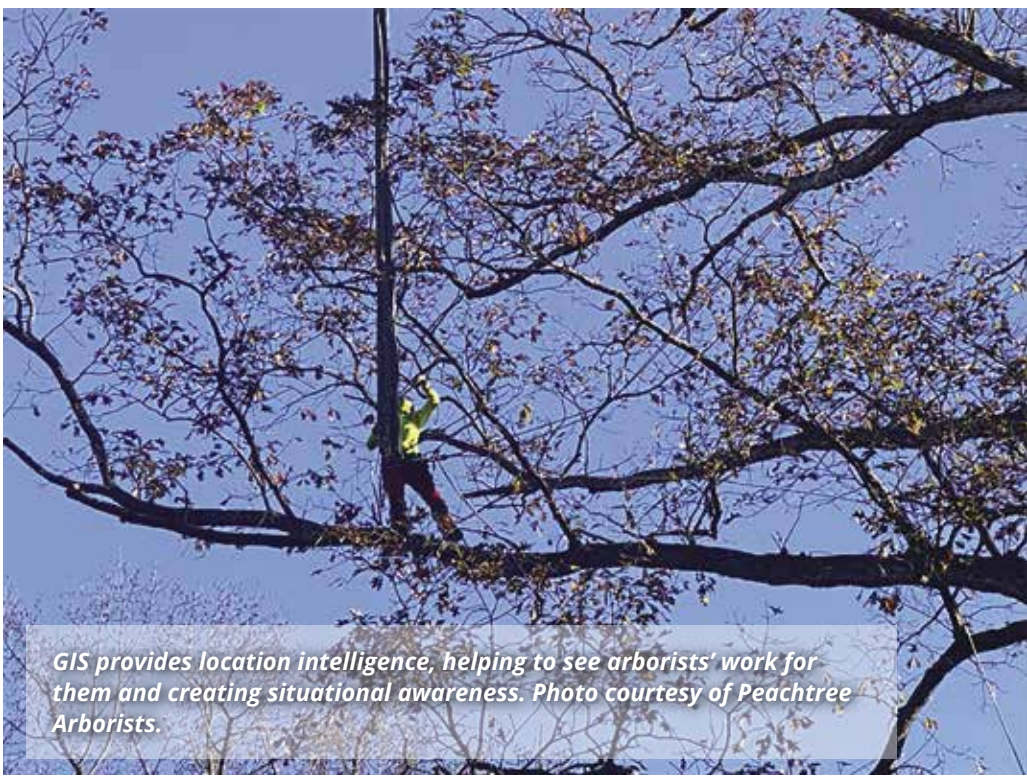
CUSTOMER CARE

Utility customers have higher expectations now than they did in the past. Modern consumer technology stimulated these expectations for the customer experience. In response, most utilities' focus shifted from being asset centric to customer centric. However, this move came with a realization that the customer is the utility's most important asset.

Excellent customer care in VM means no surprises and that promises are kept. Customers and property owners often make special requests; some are one-time instructions, and some are long-standing demands.

Over time, it is far too easy to lose track of these expectations, particularly those scribbled in a faded notebook kept on a dusty dashboard. The best intentions count for nothing when overlooking a customer's request. You risk turning an ally into an adversary if they logically conclude their request was not important enough to be honored.

GIS marks customer matters at their exact place. As a result, crews avoid surprises and meet expectations by considering these facts about their location in real time. So, imagine the customer's unexpected delight when



GIS provides location intelligence, helping to see arborists' work for them and creating situational awareness. Photo courtesy of Peachtree Arborists.

your representative greets them with full knowledge of their special instructions from the last trimming cycle!

SUSTAINABILITY

Customers and utilities are increasingly concerned with sustainability. Working with vegetation is an opportunity for positive reinforcement by supporting environmentally friendly practices. The best way to organize these efforts is around the location of plant life, work activities, and community needs.

For example, it is often expensive to obtain large quantities of wood chips. Leading arborists use routing to pair their waste products with local needs, like mulch for community gardens or parks. Matching customer needs to VM activities is a real winner. Furthermore, it saves disposal costs while promoting goodwill in the community.

A colleague recently told me of a southeastern U.S. utility that matches the waste from specific plant species to the dietary needs of animals at the local zoo. For instance, pandas eat bamboo almost exclusively. Digital tracking enables the correlation between daily waste products and animals' needs. As a result, the zoo is thrilled to take the animals' favorite fresh feed while saving the utility's workers a trip to the dump.

Lastly, we see a growing interest in promoting pollinator habitats. Utility arborists have a unique opportunity to take a leadership position in this effort. However, this demands accurate and user-friendly data collection tools to manage vegetation and improve habitats while monitoring invasive species. Location intelligence directly supports evaluating land uses and control methods that minimize habitat disturbance.

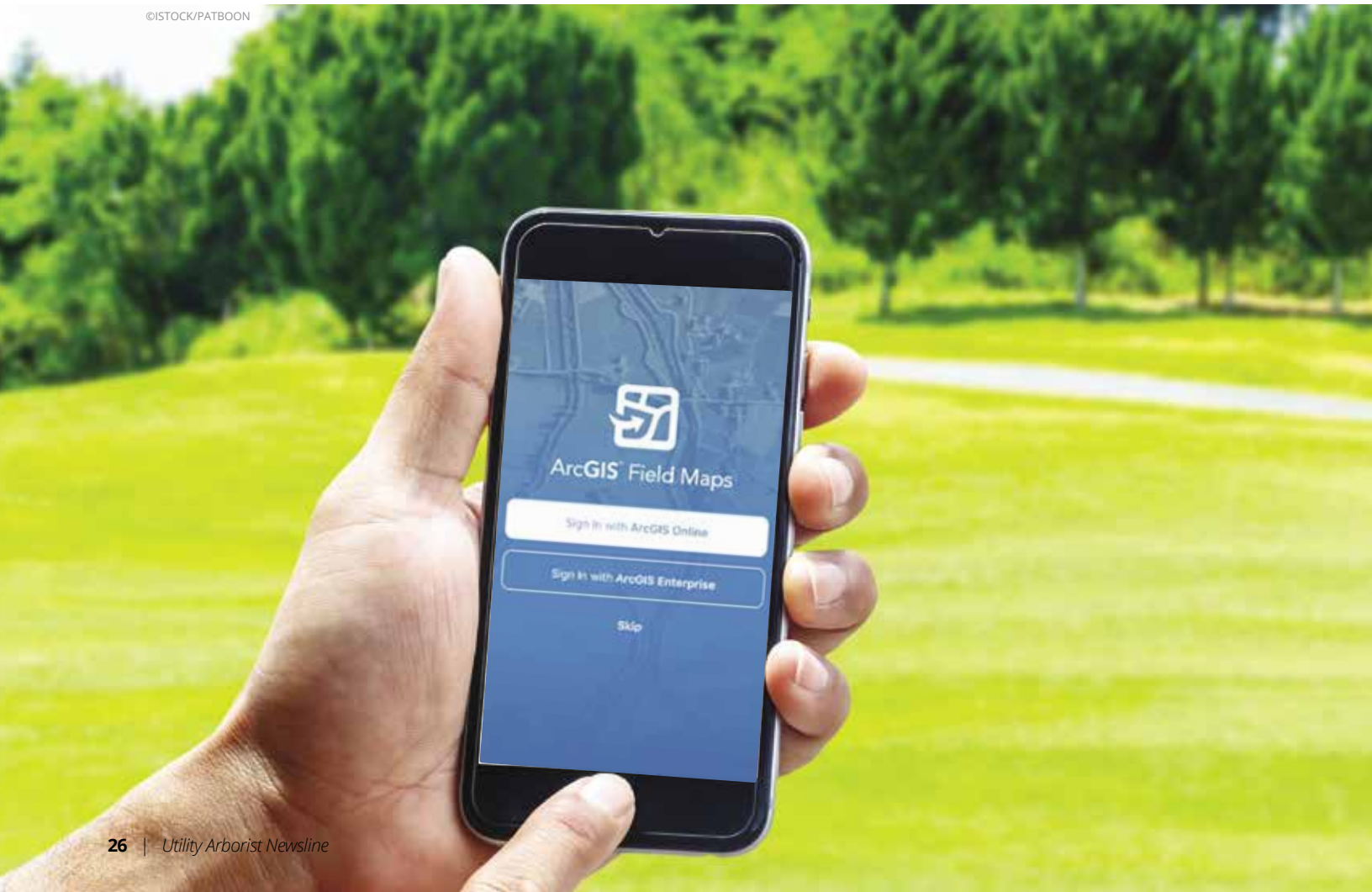
TECHNOLOGY UPDATE

Putting location intelligence to work hinges on three ideas: capturing information, understanding what it means, and securely sharing it with those who need it. Many utility arborists already use tools based on Esri technology to perform these functions.

Three previously separate field apps—ArcGIS Collector, ArcGIS Explorer, and ArcGIS Tracker—will be retired in December 2021. Esri is phasing these out in favor of a single app called ArcGIS Field Maps. Esri launched ArcGIS Field Maps in October 2020 to encapsulate data collection, map viewing, location tracking, markups, use of smart forms, and other functions in a single interface.

Maps that are accessible from ArcGIS Collector and ArcGIS Explorer are also accessible in ArcGIS Field Maps. The new app is easy to use and deploys with a single sign-on (SSO) to improve the user experience.

Data from ArcGIS Field Maps readily feeds into dashboards and analysis. Therefore, information and insights are



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easily shared across an organization and with the public for maximum benefit.

WRAP-UP

Mobile technology apps at the crew level are quick wins for improving utility arborist workflows. The apps capture essential information. Once captured, straightforward analysis reveals productive insights to drive efficiency, safety, customer care, and sustainability. Because location is so integral to VM, location intelligence unlocks clear benefits and shares them across the entire business.

Author Bio

Pat Hohl, PE, is Esri's director of electric industry solutions. He was a pioneer in the use of GIS for electric utilities. He has over 35 years of experience in utility engineering, technology, operations, and executive management. In addition, Hohl is an accomplished author, university professor, and a registered professional engineer in California. ■

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The Utility Arborist Association is the leading North American organization for the enhancement of quality utility arboriculture and right-of-way (ROW) management. Our success relies on the support we receive from all of our members, sponsors, and volunteers.

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All applications and supporting material of qualifying companies are reviewed and selected by the PinE Committee.

We want to take this time to congratulate and thank our 2020 PinE Award Recipients.

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IMPLEMENTING A SUCCESSFUL VEGETATION MANAGEMENT PROGRAM ON AN AI-DRIVEN TECHNOLOGY PLATFORM

By Brian Flage, Business Manager and Hari Vasudevan, Founder and CEO, Think Power Solutions

Vegetation management (VM) is often the single largest line item in a utility maintenance budget. There are 5.7 million miles of transmission and distribution cables across the U.S., and controlling the growth of trees and plants around them is necessary for ensuring uninterrupted utility service. It is estimated that U.S. utilities spend billions of dollars each year to maintain vegetation located near utility infrastructure.

According to Edison Electric Institute, the size of the investor-owned utilities' Industry Capital Expenditures was valued at $139.8 billion in 2020. Another report published by FTI Consulting, Inc.—through its work for the National Rural Electric Cooperative Association and National Cooperative Services Corp.—found that electric cooperatives contributed $60.3 billion of capital investment between 2013 and 2017. Based on past performance, expectations are that these numbers will grow at a rate of 15–20% each year. Any additional capital investment in the country's infrastructure could significantly increase the size of the VM budgets and, hence, the market for the relevant technology platform to manage these services.

Despite the billions of dollars that utilities spend on VM programs, trees and plants continue to be a primary challenge for utilities globally.

VEGETATION MANAGEMENT AND ITS CHALLENGES

Outside influencers of a VM program—budget, severe weather, fire concerns, public and political pressures, labor issues, and regulatory requirements—can quickly cause a program to deviate from its intended track. The more pressure these outside forces exert on the program, the easier it is to lose sight of the fundamentals. Over time, utility vegetation managers can find themselves busy with a flurry of activity and still without the desired impact. Regardless of whether a utility is on a cycle, budget, or compliance-based program, each has a desired goal for the year (call it "the plan"), and being able to continually monitor the progress of the plan is crucial.

This is where a robust technology platform can provide continuously updated insight. By properly documenting the details of work being performed, along with frequent checks of system vegetation conditions, it is possible to maintain the necessary awareness of how work is progressing against the plan. This data coupled with powerful analytics tools, and more recently supplemented by AI and machine learning, helps the modern manager schedule "just in time" work by identifying areas of elevated risk, factoring in current vegetation conditions, weather, and other location specific dynamics.

POWER OF THE TECHNOLOGY PLATFORM

Despite the billions of dollars that utilities spend on VM programs, trees and plants continue to be a primary challenge for utilities globally. Vegetation may account for more than half of externally initiated power interruptions. This shows a need for better collaboration and data-gathering platforms tailored to the workflows in infrastructure-related industries such as utilities, telecom, and construction.

A technology platform that enables stakeholders to rapidly gather critical data, perform business analytics, and present the findings in a dashboard to allow executives to manage projects and risks in real time is mission critical. Dashboards,

data grids, mobile connectivity, and analytics allow real-time tracking of VM engagements both for on-site project managers and off-site program oversight personnel.

From an operational perspective, VM data tends to fall into two general categories: (1) system vegetation condition data and (2) work activity data.

1. SYSTEM VEGETATION CONDITION DATA

Data pertaining to the vegetation on the system can be obtained from various sources. This type of data is used to set budgets and priorities, plan what type of work is needed, and decide where it needs to be done.

OUTAGE RECORDS

Most outage management systems provide useful information about interruptions that have occurred. Since this is an existing system at most utilities, it is commonly used to help make VM program decisions.

PROS:

- As an existing system, it is essentially "free" to use
- Data helps quantify the impact that vegetation is having on overall system reliability

CONS:

- Details are often lacking (e.g., "Tree in line" is a comment that is often used in an outage report, but lacks specificity—perhaps it was a grow in or fall in, alive or dead, in ROW or out.)
- Trees are frequently over-blamed when true root cause cannot be determined
- Outages only relate to problems that have already occurred—of little use for prevention

LIDAR

Captured via helicopter, fixed-wing plane, or UAS (unmanned aircraft systems), LiDAR (Light Detection and Ranging) can provide a very detailed assessment of vegetation conditions.

PROS:

- Direct measurements obtained via LiDAR are highly accurate
- LiDAR data, once collected, has uses beyond VM

CONS:

- LiDAR data acquisition and processing tends to be quite expensive, which can limit its use
- LiDAR measuring equipment and data processing is all highly specialized and is therefore not a "do-it-yourself" solution

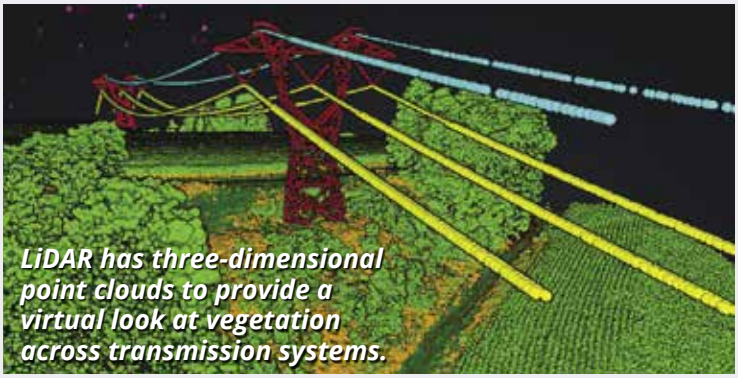
SILVER LEVEL

FirstEnergy

LiDAR Supports Vegetation Management at FirstEnergy

FirstEnergy operates nearly 300,000 total circuit miles of transmission and distribution lines that serve more than six million customers in five states, which makes pruning trees and controlling vegetation vitally important. FirstEnergy's vast footprint requires managing vegetation across a large territory, including the norther Ohio farmlands, the Pennsylvania woodlands, the mountains of West Virginia and Maryland, and the wetlands of New Jersey—each region with unique challenges.

In 2010, FirstEnergy began using Light Detection and Ranging (LiDAR), a remote sensing application that utilizes infrared light from lasers to measure distances and identifies potential clearance concerns along transmission lines. FirstEnergy's familiarity with LiDAR, plus advancements in data analytics, prompted their vegetation management (VM) group to explore the feasibility of integrating LiDAR into its existing program. Today, LiDAR provides critical data to support the company's VM program, collecting and processing data on more than 13,000 corridor miles ranging from 69–500 kV.



LiDAR has three-dimensional point clouds to provide a virtual look at vegetation across transmission systems.

VM has integrated aerial imagery, vegetation clearance information, and LiDAR three-dimensional point clouds to provide a virtual vegetation clearance "understanding" across the transmission system. These data sets provide numerous benefits, such as enhancing worker safety—a core value. LiDAR helps pinpoint vegetation that requires immediate attention, reducing field inspections for foresters, and it identifies field conditions before forestry workers arrive. Dead trees are identified through imagery and an artificial intelligence algorithm to reduce manned helicopter vegetation patrols.

FirstEnergy's transmission department is also utilizing the engineering grade LiDAR data acquired by the VM group. Fewer data-acquisition flights reduces both exposure to personnel and costs.

Going forward, FirstEnergy's VM staff plans to utilize LiDAR as a springboard, looking forward to advancements in LiDAR technologies, imagery resolution, artificial intelligence, satellite imagery, and predictive modeling to optimize a cycle-based approach to maintenance work that will provide customers with safe, reliable, and affordable electricity. ■

SATELLITE IMAGERY

The commercial availability of high-resolution (sub-meter) stereoscopic and multispectral imagery now provides a new source of information to the utility vegetation manager.

PROS:

- Faster and cheaper than LiDAR in collecting data for large areas
- The speed of acquisition and relatively low cost can allow for more frequent data capture

CONS:

- The image processing used for VM is still an emerging technology and the results are often not as reliable as those from LiDAR
- Areas of potential concern often must be field verified prior to sending a crew to perform work

FIELD SURVEY

Utilities can still acquire condition data by sending people to the field to collect it.

PROS:

- Can be part of a formal work pre-planning program
- Offers a great deal of flexibility
- Easier to complete in-house
- With a good data acquisition tool, work can be completed quickly
- Can be less expensive than other options

CONS:

- Large projects may still require contract resources
- Field survey reliability is limited by perspective (i.e., what they can see from where they are)

2. WORK ACTIVITY DATA

Once work commences, it is important to document the work and monitor progress of the plan. This is a crucial but often overlooked step. Outside forces will almost certainly begin to pull resources away from their planned activities as budgets change, unanticipated tree growth or mortality occurs, or political pressures require dropping everything to relocate and perform work in a new area. Information collected about work activities help a manager determine if and how severely these changes have impacted the overall progress on the plan.

There are several ways to acquire data about current work activities:

Information collected about work activities help a manager determine if and how severely these changes have impacted the overall progress on the plan.

WORK INVOICES

When contractors are performing the work, there is often useful information in the invoices about what was done.

PROS:

- There is no additional cost for this information

CONS:

- Invoices may not contain a great deal of detail
- Invoices often require manual entry of the desired information into another system
- Time lag between when the work is performed and when the information is available
- Detailed locations of where work was performed will generally not be available

POST-WORK FIELD SURVEY

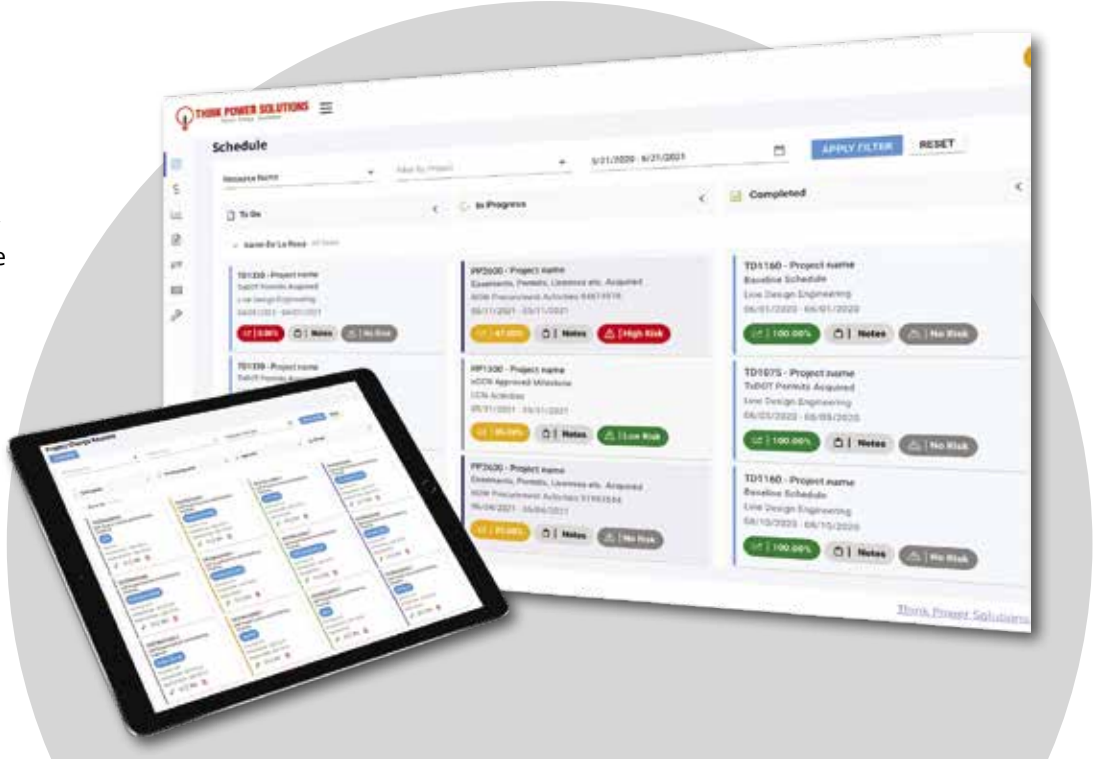
The utility can conduct field surveys of completed work and document the details needed.

PROS:

- This effort can be combined with QA/QC (quality assurance/quality control) inspections

CONS:

- Keeping up with the pace of work completion may be difficult
- Not all work details may be evident to the auditor
- This method often requires extra time and expense



Having a reliable technology platform helps vegetation managers keep track of progress and know when to deploy crews based upon risk level.

CONTRACTOR-REPORTED DATA

Contractors can use a utility-provided mobile software solution to capture details of work performed as they are performing it.

PROS:

- Provides real-time information
- Allows for accurate and detailed reporting of work as it is being completed

CONS:

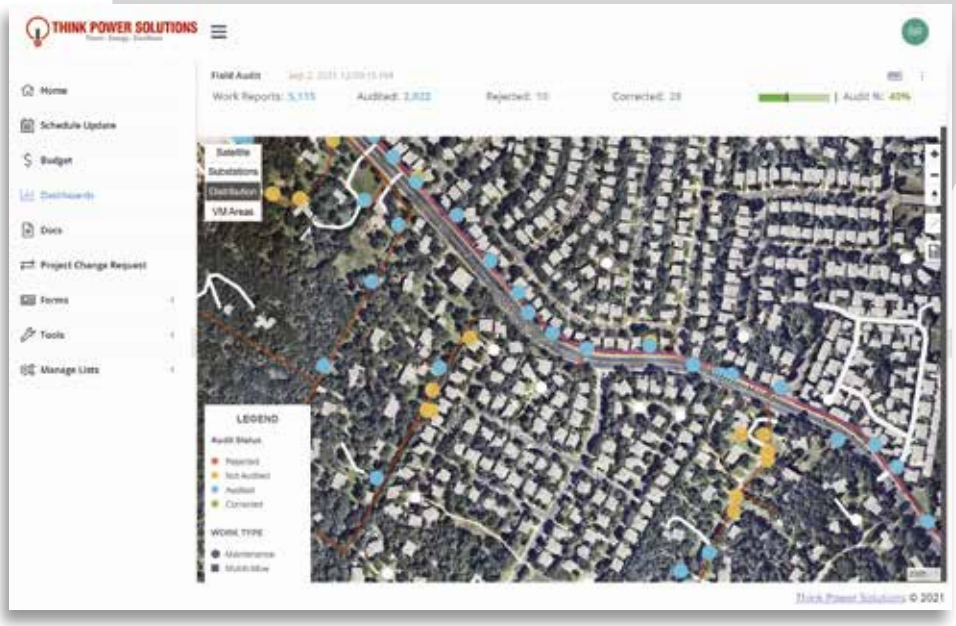
- Some systems can be cumbersome and difficult for field workers to use
- May require purchase of additional hardware, although some systems allow reporting via a phone app

TECHNOLOGY PLATFORM WITH MOBILE DATA COLLECTION, DATA GRIDS, AI, AND DASHBOARDS BRINGS RESULTS

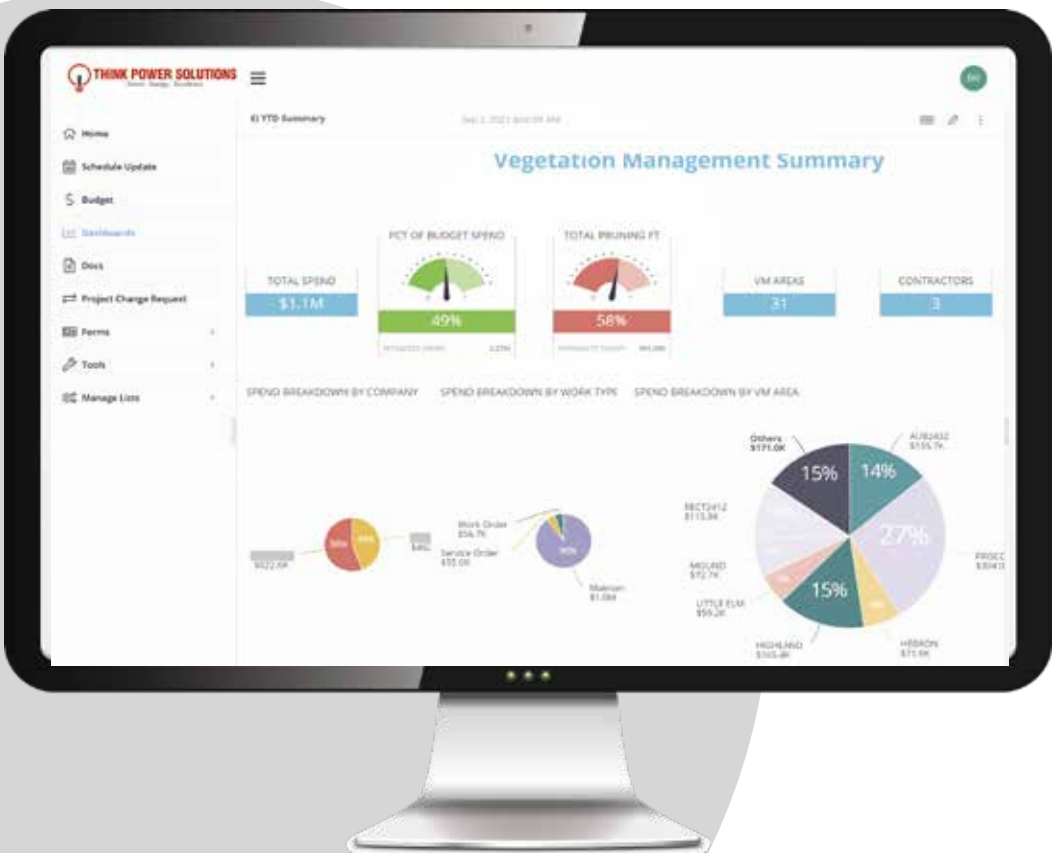
It is safe to say that Microsoft Excel is the most widely used software solution in the VM world. However, to manage large or complex data relationships, make direct updates from the field, or perform in-depth analysis or reporting, Excel is not the best choice. Data alone has limited value. It is the insight that can be gained through analysis of that data that allows a manager to make better decisions. A comprehensive solution built on a powerful technology platform can create real value for a program by extracting useful intelligence from all the data that exists.

VM-related technology is becoming a must-have for utilities, telecom, and other mission-critical industries. Modern software platforms provide real-time project

▼ *Data findings presented in a dashboard help executives to manage projects and risks in real time.*



▶ *Dashboards, data grids, mobile connectivity, and analytics allow real-time tracking of VM engagements both for on-site project managers and off-site program oversight personnel.*



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updates, and AI for business intelligence can provide utilities, telecoms, and other mission-critical industries with documentation that ultimately leads to more effective initiatives. Data security should always be a leading priority and is best achieved by combining several steps, beginning with highly secure logins on devices out in the field and multifactor authentication.

A powerful technology platform goes a long way in capturing, storing, archiving, and retrieving the VM data needed for successful program execution. Digitally capturing all relevant information of a VM situation reduces data inaccuracies, redundancies, and assists with proper archiving after the project is finished. Historical data provides context about the resources, risks and decisions made, and provides a precedent that can help justify the case for future VM program approaches.

AUTHOR BIOS

BRIAN FLAGE, BUSINESS MANAGER

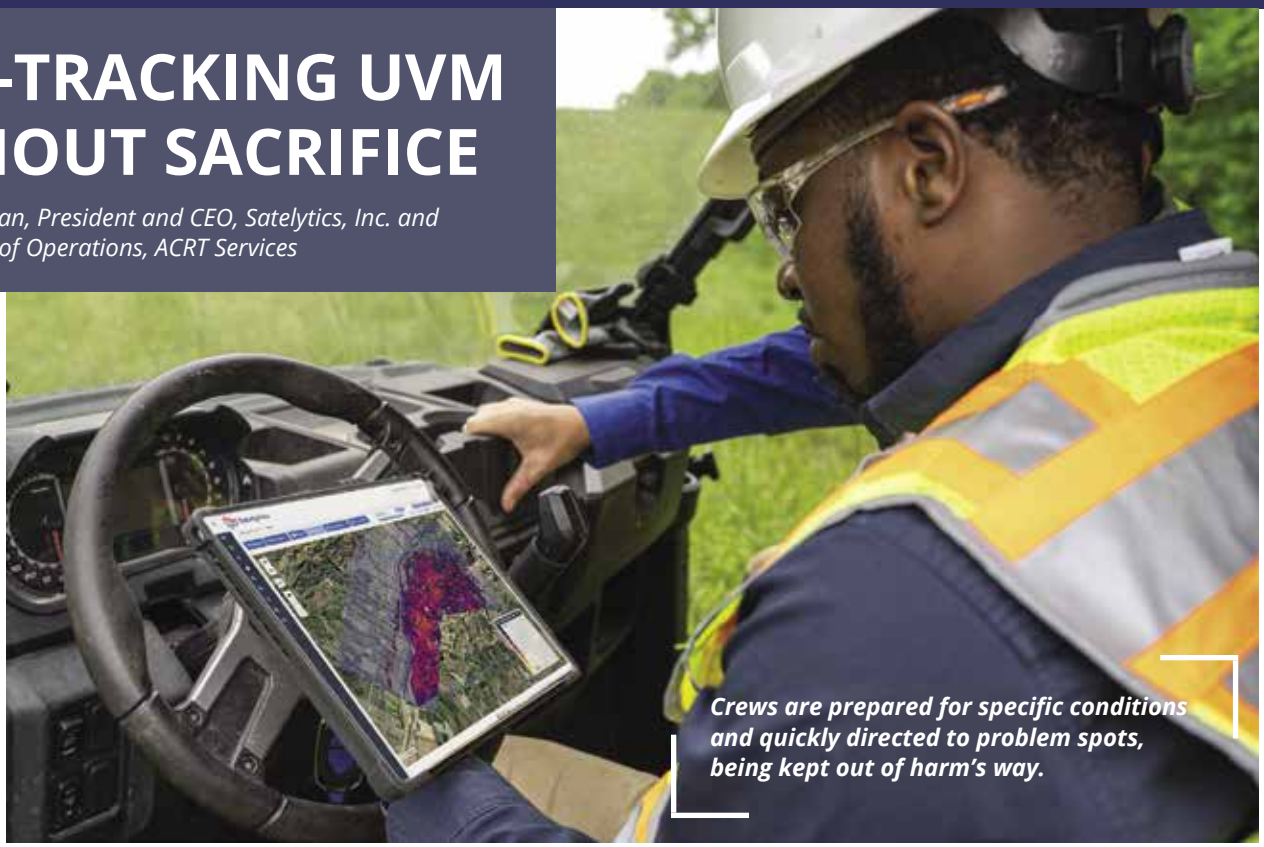
Brian Flage is business manager at Think Power Solutions where he manages field service and technology clients in the electric utility industry and leads the company's VM efforts. Flage identifies new opportunities to improve customer processes using creative technology and field service solutions and has designed custom software solutions and work with development group to deliver projects.

HARI VASUDEVAN, FOUNDER AND CEO

With more than a decade in the industry, Vasudevan has established, led, and managed program teams that provide all engineering, environmental, construction, O&M, asset management, and program management services and support on transmission, distribution, and substation projects across the U.S. He led the identification, bid, capital program management, and execution of the Texas Competitive Renewable Energy Zones (CREZ) program for several utilities. He is also Vice Chair and Strategic Advisor of Edison Electric Institute's (EEI) Transmission Subject Area Committee (TSAC). Vasudevan holds a bachelor's and master's degree in civil engineering and is a registered Professional Engineer in multiple states. ■

FAST-TRACKING UVM WITHOUT SACRIFICE

By Sean Donegan, President and CEO, Satelytics, Inc. and Troy Ross, EVP of Operations, ACRT Services



Crews are prepared for specific conditions and quickly directed to problem spots, being kept out of harm's way.

Infrastructure of the power utility industry presents a unique set of challenges. With tens of thousands of miles of transmission and distribution lines and towers, utilities and vegetation management (VM) companies face the mammoth task of inspecting and keeping these corridors clear of potential hazards. As a result, corridors are inspected and maintained on infrequent cycles spanning years—plenty of time for an accident to occur, especially in heavily forested and remote locations.

While this sounds like a tall order, quality utility vegetation management (UVM) along corridors is becoming more achievable with the aid of new and expanding technologies. Corridors can be monitored routinely without having to deploy crews into unknown dangers, thereby mitigating risk and cutting back on remediation costs.

SEARCHING FOR A MATCHSTICK IN A HAYSTACK

Unlike in urban settings, utility companies cannot rely on customers to spot and report encroachments on powerlines in the vast, uninhabited forested locales of transmission lines and towers. It is often up to crews in the field to find, document, and report faulty equipment, vegetation encroachments, and changes in vegetation health and growth that should be monitored closely. Overall, this process is hazardous, time-consuming, and has the potential for human error.

Likewise, flyovers present similar shortcomings—whether employing a fixed-wing aircraft or a helicopter. Many find drones to be a safer alternative, keeping operators on the ground. Unfortunately, this technology still has its drawbacks. As with ground crews and traditional aerial surveys, drones are limited in the area they can cover in a timely manner, making them impractical for surveying geographically dispersed assets. The large amounts of imagery and data that drones collect also take time to analyze and send to utilities—typically weeks or months. By the time results are ready, the data is already outdated and unable to address the current needs of the organization.

Other methods of remote sensing are being embraced by utilities for UVM. LiDAR (Light Detection and Ranging) is a method where lasers are used to measure distances to surfaces. With this information, computers generate 3-dimensional mapping of various surface characteristics. The data produced by LiDAR can show vegetation growth and decline, aid in determining canopy height, and serve as a tool in identifying plant and insect species. LiDAR is currently a tool of choice for UVM, however, it has several crucial limitations.

The most common platforms for LiDAR are fixed-wing aircraft and helicopters, both of which require human employment. Additionally, the time required to process and analyze LiDAR data is extensive. Processing does not end with the collected data reaching its intended client, either. Large data files—including point mapping—must be sifted through and interpreted. So, even after waiting months for information, answers about next steps are not straightforward.

While these remote-sensing methods may seem like a step in the right direction for the UVM industry, they lack the speed and efficiency to help prevent accidents and disasters in utility corridors. By the time a tree leaning toward powerlines has images captured, its coordinates and height determined, and maintenance scheduled, the tree could have fallen onto those lines and knocked out power or sparked a major fire before UVM crews could ever reach the tree. Disasters have happened in the UVM world when data did not make it to the right hands in a timely manner.

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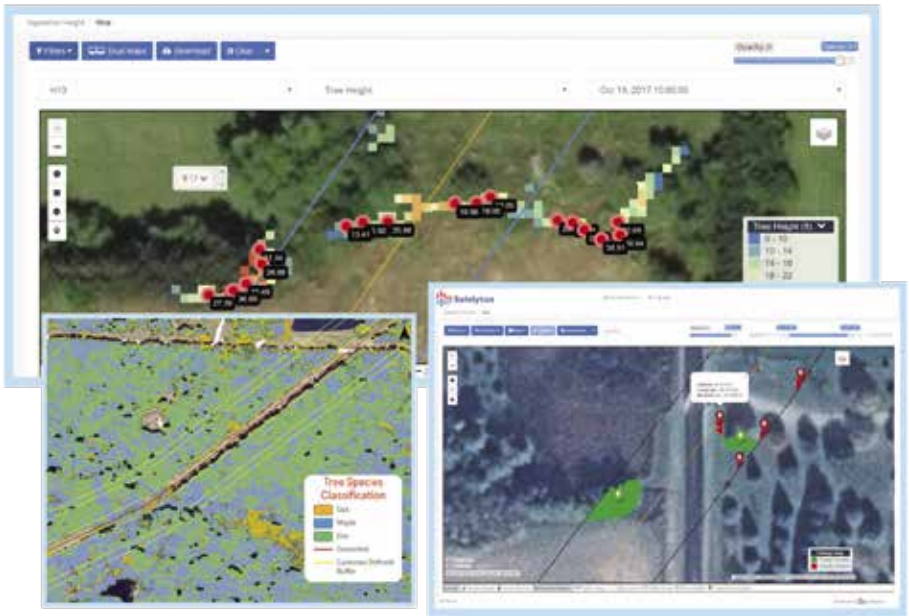

With geospatial analytics, the data and imagery are analyzed within hours of data capture, run through artificial-intelligence-powered algorithms, and rendered into interactive displays, visualizations, and even alerts for easy and simple digestion.

NOT OUT OF THE WOODS YET

The challenges don't end once areas in need of maintenance are identified. Problem spots must be tagged and documented before remediation planning. Photos and GPS coordinates are recorded by UVM crews and uploaded to their platform of choice for the utility client to view. If that platform is not well integrated, information retrieval becomes an unnecessary hurdle for utilities and the information, presenting additional roadblocks to remediation.

On the other end of remediation, similar issues occur when documenting remedial actions, making important information inaccurate or inaccessible. Further, with the transmission of large volumes of documentation detailing work completed (and not completed), utilities are presented with an overwhelming amount of information to catalog and digest. With such mass quantities of data, it is easy to miss vital details. It also can lead to data misinterpretation and general misunderstanding.

GEOSPATIAL ANALYTICS REVEALS ACTIONABLE INFORMATION

With so many barriers for efficient, timely data capture and risk mitigation for utilities, how can the power-generation industry and its utility partners ever hope to make meaningful progress? One solution already in use in several utilities across the country is geospatial analytics—a method for capturing and analyzing the imagery utilities and their partners need to make more informed and proactive decisions.

The most common image-capturing platforms employed in geospatial analytics are satellites, which reduce the risks of sending employees to the field to obtain data. Visible light and other portions of the electromagnetic spectrum from the sun are reflected off objects and constituents on earth to a satellite or other image-capturing platform. These spaceborne and aerial sensors collect multispectral and hyperspectral data, imagery consisting of petabytes of data. These sensors detect specific bands—or parts—of the electromagnetic spectrum. Combinations of these bands make up spectral signatures, which are like special DNA or unique fingerprints for objects and phenomena.

All of this data and imagery is analyzed within hours of data capture, run through artificial-intelligence-powered algorithms (utilizing flavors of AI called machine learning and convolutional neural networks). Many complex algorithms can be run at the same time, isolating spectral signatures within the pixels of captured images. Detection algorithms then render this data into interactive displays, visualizations, and even alerts for easy and simple digestion.

With this mix of science and technology, algorithms can detect and often quantify specific constituents, as well as observe changes in conditions and encroachments. From satellite imagery, plant speciation can be ascertained, and tree height and density can be measured and assessed. Geospatial analytics also makes remote land use classification possible, in addition to measuring land movement and identifying encroachments and corridor changes. All of this can be achieved simultaneously from a single set of data in a timely manner and without human error or safety risks.

EMPOWERING UTILITY VEGETATION MANAGEMENT

Utilizing geospatial analytics in UVM efforts helps mitigate safety hazards, reduce risk, and narrow and identify work zones faster. Crews are immediately directed to problem spots, regardless of the size of the area of interest (AOI) being monitored. Field crews do not need to search for the proverbial needle in the haystack. Instead, crews are deployed only to specific problem spots when their expertise is needed to address the problem. Thus, these crews are prepared for specific conditions and can be further kept out of harm's way. Vegetation concerns are investigated quicker, preventing or minimizing more disastrous events—such as forest fires—and restoring services more quickly after an event.

The documentation process is equally streamlined, with prompt alerts and comprehensive maps and details. The data included in the documentation is the specific problem, location, and magnitude, along with additional qualitative information. Raw imagery, maps, charts, and graphs can be viewed. Audit

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Crews are dispatched immediately and use their expertise to address vegetation concerns before disastrous events occur.

trail information can be recorded. Past data and imagery are available and can be compared with current data and side-by-side dual maps. This comparison feature allows the progress of remediation efforts to be checked, tracked, and confirmed, all while having records of every stage along the way.

Geospatial analytics continues to give customers advantages long after remediation. The documentation process of geospatial analytics is certainly beneficial to work performed by UVM crews, but it also is an asset to those in the company who handle insurance, regulation, and litigation inquiries. An ongoing audit trail provides valuable proof that potential threats are being remedied before they become disasters. Insurers offer lower premiums when advanced technology like this demonstrates reduced risk. If utilities find themselves being questioned by regulators or facing legal repercussions, they will have dated, documented proof of actions taken and their effects.

With recent events, increased industry regulation, and even the pandemic necessitating greater and faster insights into VM programs, ACRT Services and Satelytics, Inc. have partnered to explore geospatial analytics for the utility industry. Already in use at several organizations across the country, geospatial analytics have been helping to make UVM efforts more proactive, enhancing their visibility and ensuring utilities are able to continue delivering uninterrupted electricity, water, and gas. The results are undeniably favorable, and we look forward to reporting more in the future.

Author Bio

Sean Donegan is the President and CEO of Satelytics, Inc., a geospatial analytics software company headquartered in Northwest Ohio. Troy Ross is the Executive Vice President of Operations for ACRT Services, an independent UVM consulting firm located in Northeast Ohio. ■

SPONSOR SPOTLIGHT

SILVER LEVEL

DENNIS BROWN PROMOTED TO PRESIDENT, CHIEF OPERATING OFFICER

The Lewis family of companies has announced the promotion of Dennis Brown from Senior Vice President, Chief Operating Officer (COO) to President, COO.

Brown began his career with Lewis in 1991 as a crew leader. During his 30-year career with Lewis, he has subsequently held the positions of General Foreman, Area Manager, Division Manager, Regional Vice President, and Senior Vice President, COO.

"Dennis is a seasoned and trusted leader who consistently delivers outstanding results. He is highly respected among our employee owners, board members, and customers alike," said Thomas Rogers, Chief Executive Officer. "This is a well-deserved promotion. From Lewis' heightened operational performance to the considerable growth of our business, there are truly too many accomplishments to name. I am confident that Dennis will excel in his new role."

"I am deeply grateful to expand my leadership role in such a well-respected company," added Brown. "Beyond vegetation management, delivering a safe, professional, hassle-free customer experience is what makes Lewis a truly exceptional company. I am proud to serve alongside my fellow employee-owners, all of whom relentlessly pursue the success of our customers and one another. We have the right talent and an empowered, team-based culture to ensure success well into the future." ■

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Ever since he was young, Huntley gravitated towards technology. From writing code in the 5th grade, to today, being the VP of Information Technology at Lewis. He is passionate about serving our employees and customers through technology.

At Lewis, we are improvement minded. It’s one of our operating principles we live by and how we measure success. Technology has become critical in the success of a business and being improvement minded has allowed us to continually grow, adapt, and overcome business challenges.

Learn more about Huntley’s story at https://bit.ly/3zKqjQm or scan the QR code.

NO MEMBER LEFT BEHIND.
NO TREE LEFT BEHIND.

By Christi Mooring, GIS/QA Analyst/Project Manager, Middle Tennessee Electric

Like the 850+ electric co-ops nationwide that are dedicated to serving local communities and focused on controlling the cost of electricity, Middle Tennessee Electric (MTE) is always looking for better ways to serve our members. Our vegetation management program (VM) is no exception. Over the past decade, we have made significant improvements to our tree trimming operations and appreciate this opportunity to share best practices and lessons learned with others who may be seeking to offer their members greater affordability, reliability, and outstanding member service.

NO MEMBER LEFT BEHIND

Based in Murfreesboro, "the heart of Tennessee," and situated approximately 35 miles from downtown Nashville, MTE is the largest electric cooperative in the Tennessee Valley Authority (TVA) region and the second largest in the U.S. We serve more than 600,000 Tennesseans via 310,000+ accounts covering nearly 2,200 square miles in 11 Middle Tennessee counties, primarily Rutherford, Cannon, Williamson, and Wilson. Municipalities served include Murfreesboro, Franklin, Brentwood, Smyrna, Lavergne, Lebanon, and Mt. Juliet. MTE employs 510 people in seven local offices and its Murfreesboro corporate headquarters.

With a multitude of member tree trimming requests, our VM and GIS teams realized that there must be a better way to manage our work through automation. We had reached our limit on effectiveness and quality control and needed to move away from paper-based processes. So, we took the plunge and went digital.

Today, our data, information, and history are right at our fingertips. With such a high need for superior member service, the ability to store all member requests in one system is immeasurable. We can enter notes, capture unique member needs, and sort and retrieve information without losing any critical details. After going digital, we no longer lose maps or manifests that might otherwise be floating around in someone's truck. No member gets left behind.

When COVID-19 forced us all into lockdown, we didn't skip a beat. Because we had already moved to a digital platform and did not have to hand paperwork to our contractors, our work processes continued seamlessly.

NO TREE LEFT BEHIND

From a business perspective, efficiency was another primary reason for our investment in technology. While the front end of the process is slightly more labor intensive for our utility foresters, the overall improvements made to the process have been priceless. With crews working on iPads and marking tasks as complete, we know exactly when a crew has

been on a piece of property, when the work was done, the number of prescriptions completed each day, when they were inspected, and more. And it's all time stamped. Not only is the information helpful for MTE, but it also saves our contractors money on repairing damage that they didn't cause. We have proof if they've been to a specific location or not.

Importantly, we have 100% quality control. We look at every tree as it's entered into the system as a prescription. After we complete each section of work, we filter through the tables to make sure that the trees are all "audit complete." If there are some in the "planning complete" or "audit in progress" stages, we go back and check on them. No tree gets left behind.

PRESCRIPTION VEGETATION MANAGEMENT

We've broken the counties that we serve into six regions and operate on a six-year cycle—trimming one region per year. For each cycle, we perform a full 40-foot ground-to-sky cut on our

With crews working on iPads and marking tasks as complete, we know exactly when a crew has been on a piece of property, when the work was done, the number of prescriptions completed each day, when they were inspected, and more. Photo courtesy of Middle Tennessee Electric Vegetation Management.

system. Currently, we're migrating from a two-year to a three-year, mid-cycle trim to address any clearances on our yard trees as well. Our program is prescription-based using a lateral pruning method, and we've incorporated tree growth regulators. For reference, our rural rights-of-way (ROW) are 20 feet on either side of the pole, and our yard trees are 15 feet horizontally and 10 feet below our neutral.

We have six contract utility foresters who go out ahead of our crews to knock on doors and coordinate the work. They enter all their data into our Clearion work management system—exactly the type of work to be done on the prescription along with any homeowner-related notes. The crew then arrives two to four weeks later to perform the work. They use their tablet to view the prescribed work and select the appropriate icons when the work is done. The system is updated daily with completed projects.

The historical data is then used to inform our budgeting process—for tree replacements, tree growth regulators, and stump grinding—and determine the number of crews needed. We track our data, review what was addressed during the last cycle, and provide accurate information to the contractors.

RIGHT TREE. RIGHT PLACE.

From November 15 through April 15 of every year, we plant replacement trees—approximately five to six thousand per year. If we remove a tree, we replace it. We provide a replacement for any tree that's in a lawn or maintained property and offer more than 10 different species of understory trees. Many utilities offer vouchers or will deliver trees to property owners, but we utilize a contractor who puts the trees in the ground to make sure they're planted in the right place and offset approximately 10–15 feet from the line.

Because we utilize tree industry best practices, we received accreditation through the National Arbor Day Foundation in 2018 and have been recertified each year. This third-party acknowledgment indicates that MTE has met certain industry criteria and performs quality work that meets high standards. Beyond

pruning, we are reviewed on our level of community involvement, environmental conservation, and member education. The state forester performs an inspection to ensure we're taking the sensitivity of the environment and health of the tree into account when performing cuts while maintaining the proper clearance between trees and powerlines.

MTE also participates in Arbor Day events and distributes about 8,500 seedlings each year. Typically, we go to schools and hand out seedlings, but the program looked a little different this year. The Williamson County Government utilized its video production team to capture an outdoor event as we presented trees to a local school. We uploaded it to YouTube, and area teachers showed it to their classes before giving out the trees.

"The state forester performs an inspection to ensure we're taking the sensitivity of the environment and health of the tree into account when performing cuts while maintaining the proper clearance between trees and powerlines."

THE TECHNOLOGY NUTS AND BOLTS

When we started down the digital path, we were strictly using Clearion Work Manager and Clearion Mobile. Initially, we spent a healthy amount of time with Clearion's implementation team on organizing our paper manifests and designing new workflows. From there, we eliminated all paper handling and provided iPads with ArcGIS Collector to the trim crews. For MTE, the Collector app is live. Changes made in Clearion sync automatically, and the crews in the field see it within a couple of minutes.

Due to the thoroughness of our implementation and ease of use, we've been enjoying several years of stability without a need to make many tweaks to our system. Over the years, we have assessed numerous products, but we always come back to Clearion Mobile. While Clearion Mobile is the foundation of our technology, Collector is what makes it easy to use in the field. We cannot use one without the other. Our tree-planting and stump-grinding contractors also now work from iPads with Clearion and Collector.

SECURITY

Cybersecurity protection and protocols are provided to us through Clearion. We use multifactor authentication and have encryption software on our field devices. MTE also utilizes a product called MaaS360 on the iPads that locks the devices down, including internet apps, and only allows crews to use them for work-related purposes, like Google Maps or the calculator.

With the thorough digital platform, crews can route their own work without worrying about missing anything like they might have with a paper manifest. Photo courtesy of Middle Tennessee Electric Vegetation Management.

FIELD TRAINING

When we first implemented the iPads, we set aside half a day to train different sets of contractors. Within an hour and a half, they were all ready to go. Now, when we set up the field computers and iPads for the users, we conduct a "101 session" to demonstrate the Clearion system. We go through each button and discuss how everything works, which takes an hour at most and is followed by field mentoring where crews are riding with a specialist.

Most of our foresters have GIS backgrounds or experience with mapping systems, making the process intuitive for them. One of our biggest hesitations about giving iPads to tree workers was not knowing how well they would accept or adapt to them. At this point, everyone knows how to use a smartphone, which automatically makes them familiar with their iPads. If someone is not well-versed in computers or ArcGIS, they can still use Collector and know how to check off their work. When used in conjunction, both of these tools have been a perfect fit for MTE.

Now that our users are over their initial fear of going digital, they don't want their devices taken from them! One of the main reasons for this attachment is that each iPad has a GPS feature that has proved helpful when driving. Crews can route their own work, and they're no longer doubling back (i.e., looking at a paper manifest and going to the same area multiple times because they missed something or didn't know they had more work to do there). It makes them more efficient and effective, which positively impacts member costs and affordability.

IN CLOSING

If you're concerned about using iPads in the field, do not hesitate. We've proven that it's not a problem to integrate them into the process. Moving from paper-based processes to digital is a worthwhile investment and a win all around for your co-op, contractors, and members. If you decide to go down this road, we caution you to not look back. You must be fully committed and avoid running a parallel path with paper maps. The upfront investment will pay dividends for years to come. ■

Environmental Consultants

DIGITAL CORRIDOR MANAGEMENT:

THE MODERN SOLUTION TO REMOTELY IDENTIFYING ASSET AND VEGETATION ROW CONDITIONS

Using a unique combination of Digital and Field-based Inspections, ECI's three-part Digital Corridor Management (DCM) system leverages advanced remote sensing and software tools to remotely identify areas at risk of wildfires along with other threats to electric reliability and worker safety.

1. DCM: PLAN

- Creation of Digital Vegetation Management Work Plans Utilizing:
  - LiDAR-based Measurement and Identification
  - Oblique & Orthographic Imagery
  - Trained Digital and Field Validation Inspectors
  - Mobile Work Orders

2. DCM: INSPECT

- Creation of Digital Asset Health Work Plans Leveraging:
  - Digital Image Analysis to Accurately Identify Asset Defects like Broken Insulators, Missing Hardware, Structural Defects, Contamination
  - Mobile Work Orders
  - Integration With Enterprise Asset Health Applications

3. DCM: AUDIT

- Validation of Vegetation Management Work Completion Ensuring:
  - Regulatory and Utility Vegetation Compliance
  - Asset Maintenance/Construction Validation
  - Accurate and complete Digital Archive of ROW Conditions

eci-consulting.com/utility-solutions/digital-corridor-management-dcm/

Since 1972 ECI has helped hundreds of clients in North America realize dramatic improvements in public & employee safety, service reliability, cost savings, risk, regulatory compliance, and overall operational effectiveness while improving the public's perception of utility vegetation management.

Utility Arborist Newsline

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