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Number 4

UTILITY ARBORIST NEWSLINE

FOCUS ON TECHNOLOGY AND INNOVATION

PROPELLING THE FUTURE OF UVM

AI-POWERED GEOSPATIAL
ANALYTICS



FROM DATA OVERLOAD TO DECISIVE ACTION

ANTICIPATE RISKS WITH THE
RIGHT DATA

BRIDGING FIELD WORK WITH SMART SOLUTIONS

A ROAD MAP TO ADOPTION AND
STRATEGIC PLANNING





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We are an organization of over 5,000 individuals with interest in, and a commitment to, the maintenance of trees and other vegetation for the purpose of ensuring the safe and reliable distribution of energy, including electric, oil, and gas, to business and residences.

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Correction: The Empowering Women in Vegetation Management: A Bold Step Forward article in the May/June 2025 UAN was written by Jodie Braskich (Chief Operating Officer, D2K Traffic Safety, Inc.) and Diana Neeser (Marketing and Client Relationship Manager, EDM International, Inc.)

This is a list of common industry terms and acronyms frequently used in this magazine.

Artificial Intelligence (AI)
Augmented Reality (AR)
Best Management Practices (BMPs)
Environmental, Social, and Governance (ESG)
Integrated Vegetation Management (IVM)
Geographic Information System (GIS)

Light Detection and Ranging (LiDAR)
Machine Learning (ML)
National Safety Council (NSC)
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Rights-of-Way (ROW)
Subject Matter Expert (SME)
Transmission and Distribution (T&D)
Utility Vegetation Management (UVM)
Vegetation Management (VM)
Virtual Reality (VR)

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Turn to **page 16** to read about the evolving role of drone technology in UVM.

Learn about volunteering for the Saluting Branches Day of Service on **page 22**.



Read about incorporating analytics into effective VM programs on **page 40**.

PRESIDENT'S MESSAGE



Matt Goff

Empowering Our Expertise: Technology and Innovation in Utility Vegetation Management

Technology and innovation are at the forefront of discussions across many industries today, for good reason. We should readily acknowledge common drivers of technology and innovation—cost-

effectiveness, enhanced safety, improved efficiency, and responsible stewardship—as key considerations in the field of UVM.

But technology doesn't diminish the need for specialized knowledge and practical skills. In fact, it often amplifies the demand for our professional expertise, providing us with advanced tools to enhance our capabilities and achieve even greater results.

In the realm of innovative technology, I want to focus on a perspective that resonates deeply within our community: the true power of technology lies in the hands of the skilled professionals who wield it.

It is the expertise of our arborists, foresters, tree workers, herbicide applicators, and all other dedicated professionals in our industry who make technological advancements innovative. You, our members, are the subject matter experts who tackle the daily complexities of enabling the safe and reliable operation of our energy infrastructure.

This brings us to a crucial point: the significant role of change management and communication strategies in effectively leveraging technology. If we, as an organization and industry, fail to clearly communicate how technology serves as an assistive tool for our members, we risk creating obstacles to progress.

As the influence of UVM expands, a growing need for new recruits and an increased investment in training and supporting the industry's current workers are necessary. While technology and innovation are undoubtedly important, they are not our sole top priority.

The UAA: Your Influential Voice

In my view, our paramount goal at the UAA is to ensure our industry has a strong and unified voice. The primary goal should be to evolve from a supporting organization into a truly influencing one. While supporting organizations plays a vital role in helping others achieve their goals, influential organizations actively shape the opinions of other groups and individuals.

Why is this shift in focus so critical? Because the UAA is uniquely positioned to champion the benefits of our essential work to a wider audience of stakeholders, to establish minimum standards of excellence for our industry, and to

educate decision-makers so policies and laws effectively support our members. How will the UAA achieve this pivotal goal? Through the active participation and vocal support of our membership.

Get Involved

Examples of your peers volunteering their time and talents to UAA committees to achieve its goals include the numerous, and growing, slate of regional and national events.

- The **Editorial Committee** is searching for a new co-chair. This committee works hard to produce our *Newsline* and to spread the word about our industry's importance.
- Our **Events Committee** plans the System Utility Vegetation Managers Summit, held May 13-15; eight regional meetings and/or safety summits across the country; the BNEAT Conference, August 12-14; and Trees & Utilities, September 9-11.
- The **Environmental Stewardship Committee** is searching for a co-chair and working on PSA video releases and avian protection BMPs.
- The **Safety Committee** welcomes their new co-chair, Liz Westburg, and is actively working on a PSA for hearing protection, standardizing icons used in the Energy Wheel, and partnering with the Events Committee to host various safety summits across the nation.
- The **Outreach Committee** is working on an interview series featuring NRECA; driver safety topics; an interview series promoting pollinators and sustainability; and analyzing our member survey data to better understand how to serve UAA members.
- The **Professional Development Committee** is reaching out to colleges and community programs to understand available training programs; researching ways to provide paths for field workers to obtain credentials needed to advance professionally; developing fact sheets to share with other stakeholders at your companies and in your communities; and requesting ideas and suggestions for webinars.
- The **PVVM Board of Governors** is conducting a market survey to help the program.
- The **Research Committee** is working with the Outreach Committee to understand member survey data and commission relevant projects to support issues important to our members.

I encourage you to consider how your skills and passion can contribute to the vital work of our committees. While technology offers powerful tools, it's your ability and dedication that drives innovation and makes a tangible impact on our communities and infrastructure. Thank you for your invaluable contributions and for being part of the UAA.

Matt Goff

Some environmental impacts are unavoidable for nature, but we make sure the risks to you are never overlooked.

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EXECUTIVE DIRECTOR MESSAGE



Dennis Fallon

Revisiting the Past to Strengthen the Future

“A good wound dressing must combine the best in wood preservatives without injury to live wood, with a viscosity that will permit convenient use the year round. An excellent dressing can be made by mixing linseed oil to the proper consistency with Bordeaux Mixture; the viscosity of this dressing varies but little over the entire year and ‘Bordo’ is also one of the best known fungicides. Asphaltic paints are also widely used for wound dressings but they have a tendency to become thick and difficult to use during cold weather.”

This quote comes directly off page 22 of the Northern States Power Company's Tree Trimming Manual. The page is complete with an engineering signature denoting approval—and is dated November 1958.

While I can say I have painted wounds during my career, I cannot say I used asphalt or

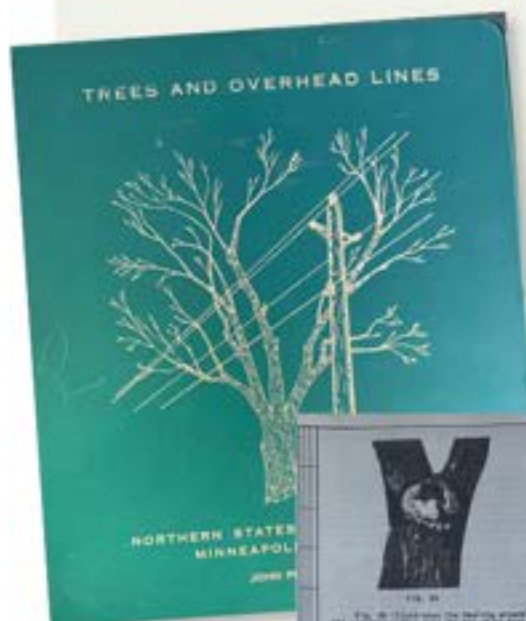
made my own mixtures. We have not always known what the best practice was or should have been, but we worked with the knowledge and experience available to us, then studied our impacts and evolved our knowledge base and experience. This issue of the UAN is dedicated to

technology and innovation in UVM. Many of the innovations in our industry came directly from the folks working in the industry looking for a better and more efficient way.

While we may not know if the research into the impacts of post-pruning wound dressings was driven by climbers' dislike of pitch-pots or if their observations of decay on treated pruning wounds prompted others to investigate a hypothesis that these dressings were causing more harm than good. But we do know through research that pruning paints should be reserved for specific conditions and wound dressings are not routinely found on tree trunks today.

The members of the UAA have been leveraging this community for 55 years to increase their understanding of the impacts our activities can have on the landscape. This year alone, the UAA will host eleven events for members to gather, share, and network. Take the opportunity to develop yourself and the industry by attending events near you. We still have plenty to research, discover, and advance. Get involved and keep challenging the norms. ■

Dennis Fallon



MARK YOUR CALENDAR: UAA ANNUAL MEETING

Official election results will be announced at the UAA Annual Meeting, currently slated for August 27, 2025 (or a later date, if necessary).



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TECHNOLOGY TRANSFER SUB-COMMITTEE UPDATE



Engage in Innovation

By Anand Persad (PhD, BCE) Terra Energy Sciences, and Shantanu Rajora, Design Engineer, AI Dash

In our industry today, we are all asked to do more in shorter time spans and utilize innovation as much as possible. The private sector response to providing technological tools has been vigorous. We are faced with emails in our inboxes, booths at UAA conferences, and mainstream media and social networks alike with a dazzling array of technological tools and products.

At the request from many quarters and the need within the UAA Research Committee to assist membership with advancing science and research, the Technology Transfer Sub-Committee (TTSC) of the UAA Research Committee was formed two years ago. The main purpose being to accommodate and vet while categorizing the high volume of technology products becoming available for the UAA membership. The TTSC focuses on technology that is pragmatic—solves an existing problem or fills a gap, and is scalable

and adaptable.

In addition to prioritizing emerging technology, the sub-committee identifies bodies of work that can be useful to the general membership, then seeks out published material and condenses it to a simplified format for easier consumption and understanding. Some of the more current works are forwarded to the *Newsline* writers' group within the Research Committee, and are reviewed and formatted for the *Newsline* publication. For example, the use of LiDAR, satellites, and digitalization of rights-of-way rely on machine learning and algorithms that, with the help of AI, should improve efficiency and accuracy as we address the nuances of today's UVM and IVM landscapes. This can only happen if the models that are being sold to us can evolve with data improvement.

The TTSC looks closely at peer-reviewed and other sources to help

our membership better engage in innovation in our space—which, these days, seem to be in continuous supply and ever increasing. Some of the results of our work were featured at the utility track of the ISA Annual National Conference in Atlanta in 2024.

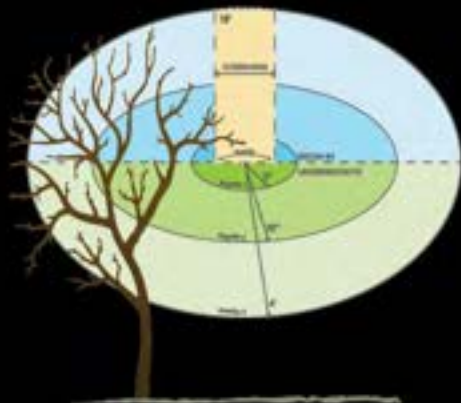
Our work continues and now includes, at the suggestions of several members, a review of conference proceedings and articles in industry media, such as *T&D World* magazine among others. Members can feel free to send a link or article abstract, or any other publication, to apersad@tesrc.tech if it is deemed of interest. Through this technology audit process, we hope to filter important information for our membership—about systems that provide meaningful and applied tools that, when implemented, can assist in problem-solving as we navigate the technology of our time and help demystify innovation in our space. ■



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OUTREACH COMMITTEE UPDATE

Transforming Corridors Into Conservation: An Interview with the Rights-of-Way as Habitat Working Group

By Mariana Rodriguez, Program Manager, Wright Tree Service

As utility vegetation management continues to evolve in response to growing environmental and regulatory challenges, industry leaders are increasingly exploring ways to integrate conservation and sustainability into their operations. The Rights-of-Way as Habitat Working Group, established by the University of Illinois Chicago's Energy Resources Center, is at the forefront of this effort, partnering with energy and transportation organizations to transform working lands into corridors of ecological value.

To learn more about their mission and approach to sustainable vegetation management, the UAA Outreach Committee interviewed Caroline Hernandez and Dan Salas of the UIC Sustainable Landscapes Program. Their responses, shared here, reveal how their organization is helping industry partners enhance biodiversity, manage risk, and include sustainability across working landscapes.

Creating Real-World Impact Through Collaboration

The Working Group serves as a hub for professionals interested in conservation near infrastructure. "The Working Group has provided a space for individuals and teams to connect with like-minded people also interested in conservation and sustainable land management near infrastructure," they shared.

One of the group's standout efforts is the Nationwide Candidate Conservation Agreement for Monarch Butterfly (Monarch CCAA), the first and only nationwide agreement of its kind. "As a result of that program's tracking and reporting, we were able to share that the program's 70-plus partners are now conserving over 12 million acres of monarch habitat across the 48 contiguous states of the U.S. That accounts for nearly 10% of all the monarch conservation happening nationwide," the Working Group shared. "It truly is an effort making a tangible difference out across the nation through on-the-ground habitat management, engagement with people, and partner collaborations."

Integrated Vegetation Management as a Nature-Based Solution

The team emphasized the growing focus on nature in sustainability discussions. "Sustainability, especially the nature-based aspects of it, is increasingly of interest to our Working Group partners," they explained. "Whether a company is required to formally disclose its nature impacts or voluntarily communicate their positive actions, there is growing interest from customers, shareholders, and employees."

Integrated vegetation management is a key strategy. "IVM can be used to reduce the spread of invasive species and support the establishment of native vegetation within degraded lands," they said. "All that biomass from invasive species contributes to greater and more frequent fire hazards by increasing fuel loads."

Participation in programs like the Monarch CCAA offers

practical benefits, including third-party reporting. "UIC reports on the conservation delivered through the program and its partners to the U.S. Fish and Wildlife Service," they noted. "This creates a third-party verification structure that is scientifically defensible and simple to implement."

Companies such as NiSource, Duke Energy, Phillips 66, and TC Energy "leverage their participation in the monarch agreement in their sustainability reporting."

Empowering Field Teams with Tools for Habitat Creation

The Working Group provides field teams and contractors with resources to implement sustainable practices. "The Working Group has worked on a number of initiatives, resources, and tools that support contractors and vegetation managers in habitat creation on ROW," they said. Examples include a Pesticide Safety Education Plan for Nebraska, an updated Pest Management Strategic Plan, and a business case tool kit for IVM. They also collaborated on the companion guide titled "Managing Compatible Vegetation for Targeted Species and Biodiversity."

Digital tools developed by the team include "a Pollinator Habitat Scorecard, a seed selection tool and native seed availability map, as well as an implementation manual for creating habitat on large-scale solar installations."

To bring their network together, the team is organizing the Biodiversity + Nature in Energy and Transportation (BNEAT) conference in August 2025. "This conference connects corporate sustainability, environmental, and vegetation managers to improve how vegetation management for infrastructure contributes to biodiversity, nature resiliency, and sustainability," they said. "Our hope is that the insights and lessons learned can be adopted and shared more widely across crews to build support for their work and bridge connections with other company strategic goals."

Shaping the Future of UVM

As biodiversity loss accelerates, the risks to infrastructure are becoming clearer. "Nature and biodiversity loss pose a significant threat to ecosystems and human well-being," they emphasized. These losses "disrupt ecosystem services vital for infrastructure protection and maintenance, resource availability, climate regulation, and pest or disease control."

The team sees a shift in industry thinking. "There is an evolution of thinking moving from single demonstration or pilot efforts to a more comprehensive view of how businesses depend on nature, impact it, and incorporate those considerations into their risk management."

They expect more companies to align with national conservation programs. "We anticipate companies investing more heavily in and engaging with existing conservation groups and programs," they said, including "partnering with local organizations, participating in



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habitat restoration projects, and adopting programs like the Monarch CCAA and Bumble Bee CBA.”

How to Learn More and Get Involved

All of the resources, tools, and materials the team create are open-source and available on their website: <https://rightofway.ercu.edu>. People can also follow the Rights-of-Way as Habitat Working Group and UIC Sustainable Landscapes team on LinkedIn at <https://tinyurl.com/ROWHWGandUIC>.

“As the University of Illinois Chicago, our goal is to make conservation easy and accessible for anyone interested in it.” The team regularly speaks at conferences, contributes to collaborative research, and joins multi-sector initiatives. “We encourage you to keep an eye out for us and to email us with any questions, ideas, or thoughts through the Contact Us form on our webpage, or the Meet the Team page with our individual email addresses.”

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UVM AND THE LAW

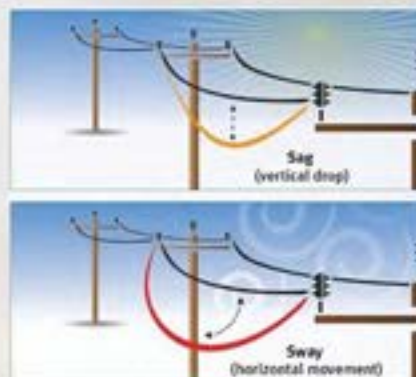
Burnt Ends and Bitter Aftermaths: What's Good for Your Belly Is a Danger for Vegetation

By Jacob Roschmann, Associate, King & Spalding LLP

If you observe burnt ends of Texas barbecued beef on your dinner plate, that's a sign of good times ahead. But if you observe burnt ends of vegetation near powerlines, it's another story altogether. This is potentially an indication that the line's sag and sway has extended to the point where nearby trees are being singed from the electricity's heat. Under hot, dry, and windy conditions, a wildfire could develop from this very scenario.

The "sag" of a powerline is the vertical distance a line droops as a result of the impact of gravity and other factors. The "sway" of a powerline is the horizontal distance a line can swing as a result of wind or other similar factors. Sag and sway are typically greatest at the middle of the span. Generally, the sag and sway are calculated at construction, and utility vegetation management becomes the tool by which vegetation is kept from interfering with the line.

Over time, however, events occur that have the potential to change the sag and sway. For example, broken powerlines are often thereafter spliced using a device that links the two broken parts together. While, in theory, the sag and sway are considered when such repairs are performed, there are times when this is not done, such as in emergencies following a storm



event when the main task is swiftly re-establishing power.

Powerlines, like most materials, will expand and contract with temperature, which means that there will be some variation in sag and sway depending on ambient temperature and the effect of the heat from the load passing through the wire. On hot days when there is very heavy load, the lines will sag more, and when wind is added, sway will also increase.

What is ignored all too often, though, is the impact of ice. In many places, cold weather was historically a rarity and engineers might not have considered the problem of ice load on powerlines when the system was constructed. Now, however, we have been experiencing an increased number of colder days,

and icing of powerlines occurs more frequently. The impact of ice can be substantial—a mere quarter inch of ice on a span of line can weigh 500 pounds, and this can cause substantial stretching (and possibly breakage) of a powerline.

When lines are stretched by a physical force like ice, they don't naturally return to their original length when the weather warms, meaning that the sag and sway are, essentially, permanently extended. It may be challenging for people to notice the increased length of the powerlines following such events. Burnt ends on nearby vegetation, though, are a telltale sign that something may be amiss and arborists should report this to utilities.

Utility vegetation management inspectors now have a new tool that can help with this problem. LiDAR uses lasers to take precise measurements and is now available in a wide variety of different formats. They can be found on the underside of aircraft (both planes and helicopters, as well as drones), on trucks, and even on backpacks. Utilities and their inspectors—particularly after an ice event in jurisdictions that don't typically have ice—should strongly consider using LiDAR as a tool to measure sag and sway. From there, the utility may determine that adjustments

to the infrastructure itself, or possibly the manner in which UVM is being performed, might require change.

Failure to adjust to changes, such as these, to the sag and sway of utility powerlines has been cited as a potential contributing factor in several recent wildfires which resulted in loss of life and millions of dollars in damage, including the 2020 Archie Creek Fire in Douglas County, Oregon, and the 2022 Fairview Fire in Hemet, California.

As advanced technologies like LIDAR, satellite monitoring, and real-time line sensor systems become more widely accessible and proven effective, courts may increasingly view their non-use as a breach of industry standards or negligence. If it can be shown that a utility ignored cost-effective or readily deployable tools capable of detecting dangerous line movement or encroachment into vegetation, the utility could face heightened liability in tort claims or regulatory enforcement actions. For example, in the 2019 case

Tyus v. Indianapolis Power & Light Co., the court held that the Indiana Utility Regulatory Commission acted unlawfully in granting the utility immunity from personal injury and property damage claims arising from the utility's own negligence. In particular, the court determined that utilities cannot be shielded from liability when their failure to implement reasonable safety measures led to harm.

Moreover, in jurisdictions where utilities operate under public trust obligations or are subject to performance-based oversight by public utility commissions, the failure to adopt such technologies may result in administrative penalties, cost disallowances, or revocation of operational licenses. For example, the New Jersey Board of Public Utilities issued administrative actions and penalties against Jersey Central Power & Light and New Jersey Natural Gas for failure to implement available technologies and practices that could

have mitigated service disruptions and enhanced public safety in the face of Superstorm Sandy.

ABOUT THE AUTHOR

An associate at King & Spalding LLP and a member of the Texas Bar, **Jacob Roschmann** received his Juris Doctor from Tulane Law School in 2023, his Bachelor of Science in civil engineering from the University of Texas at Austin's Cockrell School of Engineering in 2020, a Business Foundations Certificate in 2018 from the University of Texas at Austin's McCombs School of Business, and he is a member of the American Society of Civil Engineers. At Tulane, he was a member of the *Tulane Journal of Technology and Intellectual Property* as well as a member of the Technology and IP Society. He also provided pro bono legal services at Tulane Law School's Patent Prosecution Lab, and was a 2023 UVMI Scholar who presented his work on sag, sway, and satellites at ISA's Texas Trees Conference at Waco in 2023. ■



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The Evolving Role of Drone Technology in Utility Vegetation Management

By Erik Terwey, General Foreperson, Wright Tree Service, and Brad Weidenfeller, Program Manager, Xcel Energy



ALL PHOTOS COURTESY OF WRIGHT TREE SERVICE

In recent years, drone technology has revolutionized various industries, including utility vegetation management. This emerging technology provides innovative solutions that improve efficiency, safety, environmental impact, and cost reduction for operations. As utilities strive to efficiently maintain service, reliability, safety, and regulatory compliance, the commercial use of drones, or unmanned aerial vehicles (UAVs), has emerged as a game-changer.

The Federal Aviation Administration (FAA) issued the first permit for commercial UAV use in 2006. The technology has evolved at an increasing pace over the last two decades. Large drones are being fitted with accessories to facilitate aerial herbicide treatments that are site specific and can target precise areas or vegetation. Drones fitted with LIDAR are being used to collect vast amounts of data in a fraction of the time it takes to collect the same data sets via traditional methods—and with only a single operator.

Drones used specifically for visual data collection are getting smaller, while the attached cameras are higher definition with better resolution than ever before. Battery life is increasing and improved range is allowing for longer flights. The controls are becoming more user-friendly and intuitive, including larger viewing screens and virtual flight goggles. These new innovations are driving our field forward at a blistering pace.

THE CHALLENGES OF TRADITIONAL UVM

We know that vegetation management is a critical aspect of supporting utility infrastructure. Overgrown trees and plants can interfere with powerlines. Trees and vegetation in proximity to powerlines may change from one year to the next, creating hazards in remote locations that may go unseen for extended

periods of time. Traditionally, utilities have relied on ground crews and either fixed- or rotary-wing aircraft to monitor and manage vegetation. This approach can be costly and often involves deploying personnel to remote or difficult terrains, which increases both cost and risk. Moreover, manual inspection of vast swathes of land is time-consuming and susceptible to human error.

Managing vegetation effectively helps prevent blackouts, reduces fire risks, increases public safety, and ensures compliance with regulatory standards. Traditional methods often fall short in providing real-time, comprehensive data. This data gap leaves contractors and utilities searching for safer, more efficient, and cost-effective solutions to incorporate into their UVM programs.

HOW DRONES ARE REVOLUTIONIZING UVM

Enhanced Inspection Capabilities

Today's drones are equipped with high-resolution cameras that can capture both still images and video in 8K. They can also be equipped with LIDAR sensors that can capture detailed images of vegetation near powerlines. This aerial perspective allows us to spot potential risks from a safe distance, using zoom capabilities to get a more detailed look at what the naked eye may miss.

Increased Efficiency and Cost Reduction

Drones can be deployed quickly and cover large areas rapidly, reducing the time required for inspections of powerlines from days or weeks, in some cases, to mere hours, with one person. This efficiency not only cuts labor and equipment costs but also allows for more frequent inspections, helping to identify and

address potential issues before they lead to outages, fires, safety concerns, or non-compliance with UVM guidelines.

Safety Enhancements

Safety is a core value for Wright Tree Service and its customers. Drone usage significantly enhances safety by reducing the need for personnel to access difficult or dangerous terrains, or areas affected by natural disasters. By removing the need for personnel to navigate rugged landscapes, fly in helicopters, or climb trees, drones minimize the risks of accidents and injuries associated with traditional powerline inspection methods.

Moreover, today's drones are equipped with a myriad of safety features, including anti-collision sensors that will keep them from getting too close to trees or utility structures and hardware, making a collision that could cause potential damage to utilities almost impossible.

Environmental Benefits

Drones contribute to more sustainable and environmentally friendly vegetation management practices. Traditional methods often involve light to heavy machinery which can have adverse effects on ecosystems. Drones, on the other hand, have a minimal environmental footprint and can help VM companies and utilities implement more targeted and precise vegetation control measures.

By using drones to monitor vegetation health, companies like us can identify areas where natural, desired growth can be preserved, contributing to biodiversity and ecosystem stability within ROWs. This balance between infrastructure and maintenance and environmental preservation aligns with the growing emphasis on sustainability between the public and utilities.

OUR SUCCESSFUL DRONE IMPLEMENTATION

We first considered leveraging this technology for inspecting powerlines that were difficult or costly to reach back in mid-2017. Drones were incorporated into our UVM program at the beginning of 2018—and we recognized results immediately. The drones safely collected detailed data that allowed us to prioritize areas for maintenance and ensure regulatory compliance more effectively.

From our perspective, it's clear that having visual references helps us make more informed decisions. We utilize the drone to view inaccessible sites quickly and without having to shift significant resources. We can view structures up close and capture images for future review or reporting. This type of prep work can confirm or eliminate the need to coordinate specialized equipment for further inspection—which is particularly useful in areas that have limited access or require specialized permits.

CHALLENGES AND CONSIDERATIONS

Regulatory Compliance

Drone operation, especially in proximity to powerlines and populated areas, requires adherence to strict regulatory guidelines. Licensed operators must comply with FAA regulations, which govern the use of drones in commercial settings. Airspace regulations can also limit where and how drones can be operated, particularly near airports or restricted airspace.

Training and Certifications

While drones provide a substantial leap in efficiency and cost savings, the startup and implementation phases require a significant investment of both time and resources. Each pilot must complete initial training and pass a certification exam from the FAA to become a UAS-certified remote pilot for commercial applications. Additional training time and practice flight time may be required to become proficient with new equipment and controls.

BEYOND THE HORIZON

Drones are revolutionizing UVM by providing an efficient, cost-effective, and safe alternative to traditional methods. As drone technology continues to advance, its role in ensuring the safety and reliability of utility infrastructure for the customers we serve will only become more critical. Companies that embrace this technology stand to gain competitive advantages, offering more reliable services while reducing operational costs.

In a world where the demand for reliable energy continues to grow, drones offer a promising solution to one of our industry's most persistent challenges. 🌱



WOMEN IN VM



Lindsey Boyle and her children, Riley and Rowan

I graduated from Cal Poly in 2009 with a degree in landscape architecture, after the economy crashed. Entry-level positions evaporated and I found myself overqualified and directionless, with no desire to go back to school. I was newly married to a Marine and relocated to Camp Pendleton in San Diego, where I got part-time gig filing paperwork at an Allstate agency. What began as two days a week turned into phone work, an insurance license, and eventually, office management for three years—but I never loved it.

After relocating to Northern California, I tried continuing my insurance career but had no interest. So, I quit with no backup plan. That led me to Grass Valley, where a PG&E contractor job for UVM patrol work caught my eye. I thought the interview went *terribly*. I didn't understand their terminology—what “regrowth” or “epicormic shoots” meant for utilities. I knew trees from a design perspective, but not their reactions to pruning or utility infrastructure. But I got the job and started patrolling, walking the lines, identifying powerline conflicts, and talking to customers about upcoming work.

Grass Valley is a challenging, dense tree region, so it was a huge learning curve. But my Allstate skills were used every day—how to calmly explain tough topics. Having to trim or remove trees is emotional for a lot of people. But thankfully, I could navigate difficult conversations. It certainly wasn't the path I planned, but it taught me so much.

When that position ended, I transitioned to PG&E's Pipeline Pathways program, focused on

Lindsey Boyle

A Journey of Unexpected Turns

By Lindsey Boyle, Supervisor for Land Rights-Property Management, Pacific Gas and Electric Company

reclaiming ROW near transmission pipelines after the San Bruno gas pipeline explosion. My background in landscape design was valuable for restoring these areas since they were often residential. Eventually, I had a full-time position with PG&E's Natural Resource Management group, managing utility-owned land and easements where trees, access, restoration, and environmental compliance intersected. I stayed nearly a decade, using my certified arborist, utility specialist, and TRAQ credentials.

Being a woman in a male-dominated field is challenging. You get second-guessed, usually subtly: being talked over, dismissed, or repeating yourself before your idea is heard. You have to prove yourself when you're the only woman. But I've learned to navigate it with strength, grace, and confidence, thanks to my early experiences—working at restaurants and selling insurance. Those jobs mattered, even when I didn't like them. When I became a supervisor for the Land Rights team, I felt truly seen. Now, I'm not the only woman, and that representation makes a difference, and I hope those numbers grow. It shifts the energy in the room—something I didn't realize I needed until I experienced it.

My current mentor, such a valuable part of my professional journey, gives me access to years of experience—if I have a new problem, chances are, it's not new to them. It's a shared, reciprocal relationship where we can bounce ideas, frustrations, and questions around without needing to overexplain things, which is so important—especially in an environment where acronyms, policies, and historical nuances can be overwhelming. Sometimes, I just

need to talk things out with someone I know will understand the context, which is game-changing. I encourage openness with my team—to help them see their value, navigate their path, and feel less alone in it all—even if I'm not fully in a mentorship role yet.

Diversity is the future of UVM. The truth is, not every job fits every stage of life, and that's okay. But we do have to think critically about how roles are structured and who they're accessible to. For example, roles like consulting utility foresters often require early mornings, long days, and travel. Those demands are difficult to balance if you have young children. And for many women—particularly mothers—that reality becomes a limiting factor, even if they're otherwise qualified or passionate about the work.

If we want to expand representation, we need to acknowledge those barriers without judgement. That's how we create meaningful support—not by lowering expectations but by offering flexibility, mentorship, and alternative pathways for growth. Entering this field looks different for everyone. So, continue supporting diversity—of thought, background, life experience, and personal circumstances. It's not about politics; it's about people. The more perspectives we include, the stronger this industry becomes.

Recently, we've seen progress within the UAA and industry overall. Initiatives like “Women in Vegetation Management” have helped start critical conversations and build supportive networks. The challenge now is to keep it moving—inviting people in, building seats at the table, learning different stories, strengths, and leadership styles. That's how we ensure this field stays vibrant and future-ready. ■

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BUSTING THE MYTHS

Behind the Scenes of PG&E's Natural Resource Management Teams

By Matt Waverly, Supervisor-Natural Resource Management, Pacific Gas & Electric

PGE's Natural Resource Management Department (NRM) began with the hiring of its first forester in 1947. During the post-WWII logging boom, PG&E recognized the need to inventory their timberland portfolio, and from that inventory stemmed a program focused on responsible timberland management. NRM evolved from an early program that was focused solely on timberland management to also supporting other departments within PG&E. Today, the NRM Department is made up of Timber Hydro and the

Crews utilizing fall protection to clean vegetation off of a dam wing wall.



Systemwide Defensible Space (SWDS) programs, which reside under PG&E's Land Management Department.

The Timber Hydro group in NRM is comprised of six California Registered Professional Foresters (RPFs), five of which are ISA Certified Arborists. This group manages approximately 33,000 acres of PG&E-owned timberland and supports PG&E's Hydro operations with vegetation management needs. The partnership between NRM and Hydro operations was born out of the fact that the timberlands are intertwined with Hydro operations. The management of timberlands has focused on fuel breaks and post-fire restoration in recent years. PG&E works collaboratively with local stakeholders, including fire safe councils, government

agencies, and other landowners to help protect California timberlands and communities from catastrophic wildfires.

In Shasta County, the NRM team has partnered to create a landscape-scale fuel break with adjacent industrial timberland owners to protect the nearby community of Shingletown. This work included the cutting of small trees and brush, then chipping that material along roads and prominent ridges. Other landowners in the area were doing similar work for the purpose of creating a large-scale, multi-landowner fuel break that firefighting agencies can use to fight a fire. These fuel breaks require extensive planning to find the optimum placement and to maximize adjacent landowner participation. Maintaining the fuel breaks after the original creation is also imperative to ensure long-term effectiveness. This dedication demonstrates good land stewardship and a responsibility to the adjacent communities.

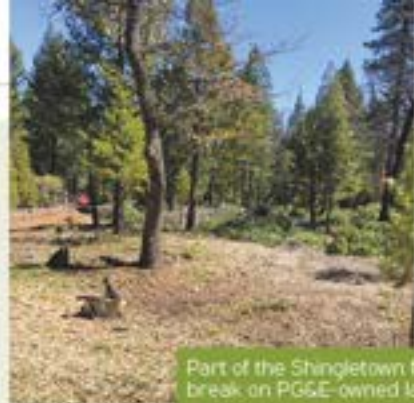
PG&E's Hydro operations in California's Sierra and Cascade Mountain ranges offer a stunning work environment. The job involves managing hazard trees near water conveyance systems, reservoirs, dams, buildings, roads, and recreational areas. The program also includes brushing and herbicide application for safe access and inspection visibility. One unique project is clearing vegetation from concrete dam faces, which requires our contractors' expertise in repelling and fall protection.

The SWDS program began in the early 2000s with 140 sites and

increased to 1,000 sites following the initial pilot year. Now, the program services about 2,700 sites (190 million square feet), including electric and gas substations, telecom locations, corporate real estate, remote grid power stations, and non-hydro power generating stations. Managed by five land program managers, four of whom are ISA Certified Arborists, this program primarily uses herbicide treatments to maintain vegetation-free facilities. Additional scopes of work managed by this team include mechanical weed abatement for code compliance, hazard tree removal, tree trimming, landscape installation and maintenance, and pest control.

Tree work around substations is usually done to reduce fire risks and ensure electric reliability, but sometimes trees pose security risks. In San Francisco's Tenderloin neighborhood, PG&E had to remove a neighbor's avocado tree to prevent it from being used to access the substation roof. Access to the backyard was difficult, so wood and debris were removed using a rooftop hoist to haul materials into a parking garage, where they were processed. Removing the two trees took over a week due to the complex procedure.

The Timber Hydro and SWDS programs manage defensible space as part of PG&E's Wildfire Mitigation Plan, covering over 200 sites in California Public Utilities Commission-designated High Fire Threat Districts (HFTD). The program creates and maintains fuel breaks around electric substations and power-generation switchyards by removing hazard trees, thinning and pruning trees, mowing, and applying herbicides. Success stories include the Electra Fire in 2022, where defensible space work allowed members of the public and emergency responders to safely shelter near Electra Powerhouse during an arson incident. 🌲



Part of the Shingletown fuel break on PG&E-owned land



PG&E powerhouse post-fire where defensible space helped protect the facility from an incoming fire and was utilized to shelter the public during this emergency

Technology and Innovation's Growing Role in Utility Vegetation Management

The demand on utility vegetation management programs has never been higher. As climate change increases the frequency and severity of storms, and as infrastructure ages, utilities are under pressure to improve their reliability while controlling costs. These challenges are reshaping how vegetation work is planned, executed, and monitored—and technology stands at the epicenter of that transformation.

Traditionally, vegetation management practices relied heavily on manual processes. UVM professionals would use handwritten notes, paper maps, and reactive cycles of maintenance. With technology, utilities can implement a more proactive and data-driven approach. Utilities are incorporating geographic information systems (GIS), mobile data collection, and remote sensing tools to make enhanced decisions and improve efficiency across

the board.

One major shift has been the move toward real-time data collection. Field crews using mobile devices can quickly gather accurate, updated information during their inspections. This speeds up analysis and helps UVM teams adjust priorities and response plans in real time.

Predictive maintenance is also reshaping UVM. By analyzing outage history, species types, and environmental data, utilities can proactively identify risk areas and prevent outages before they even happen. Centralized systems like GSI Forester support these efforts by combining mobile work planning, GIS integration, and streamlined reports across the utility.

Overall, technology has continued to play a critical role in regulatory compliance. Utilities must document their inspections, completed work, and system conditions to meet growing report

requirements. Centralized, organized data is essential for transparency and risk mitigation.

As tools continue to evolve, the core goal for UVM programs remains unchanged: support crews, protect infrastructure, and deliver reliable service. Technology is helping UVM programs to meet today's challenges and prepare for tomorrow's. ■



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Fort Snelling National Cemetery in Minneapolis, Minnesota

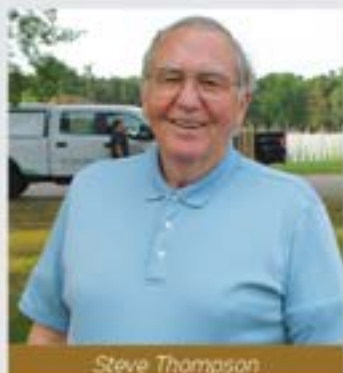
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The Saluting Branches Proclamation: Setting the Foundation for Service

By Frank Keenan, Communications Committee Member, Saluting Branches

“ Whatever task assigned to our Veterans, whether across the country or across the world, they went and they served. They left their homes. They left their jobs. They left their families. Many times, at great peril. These men and women took on the fears, the risks, and the challenges of their times. They gave everything they had to give. Some of them were lost in battle and never came home. Others are resting in cemeteries such as this one today. Through Saluting Branches, we embrace this chance to give back in a small but very special way, to demonstrate our gratitude and appreciation for all that they and their families had to endure. ”

Volunteers at the first Saluting Branches Day of Service at Fort Snelling National Cemetery, where Thompson first delivered the proclamation



Steve Thompson

If you've ever volunteered for Saluting Branches' National Day of Service, you'll likely recognize the words quoted. They come from the Saluting Branches proclamation—a heartfelt statement that captures the essence of Saluting Branches' mission, which is to honor American service men and women by organizing volunteer tree and landscape care for the properties

dedicated to our veterans. Since 2015, the proclamation has been read on the Day of Service each year at every volunteer site—nearly 100 of them in 2024.

While no two sites are the same and each service day offers its own unique experience, they all start the same way: with the reading of the proclamation. It sets the tone, offering an important reminder of what brought us to the service site that morning, and who we are remembering and honoring through our actions on that day. The reading of the proclamation comes and goes in just a few minutes, but the spirit of its message lays the foundation for the entire day.

The proclamation was created by Steve Thompson, who was part of the original team at Rainbow Treecare that worked with the United States Department of Veterans Affairs (VA) and its National Cemetery Association (NCA) to bring Saluting Branches to life. Coming from a family of service members, Thompson holds a deep understanding of the dedication, commitment, and selflessness of our service men and women.

"My father was in the Navy, serving stretches in both World War II and the Korean War," Thompson explained. "And my brothers and I all followed in his footsteps." Thompson served in the U.S. Navy, and his five brothers all served in the U.S. Armed Forces as well—Dan (Army), Chris (Marine Corps), Joe (Naval Academy), Pat (Air Force), and Matt (Air Force).

In addition to dedication, commitment, and selflessness, service also requires sacrifice, and Thompson has experienced that up close. While serving a five-year hitch in the Navy, he received word that his brother, Dan, who was fighting in the Vietnam War, had been seriously injured by a land mine explosion. Around that same time, their father unexpectedly died of a stroke. With these two tragic events happening so close to one another, Thompson received a hardship discharge so he could return home and help his mother care for his injured brother and the rest of the family. It was a difficult time for the Thompsons, and unfortunately, it is a relatable experience for many service families.

Now retired, Thompson had a diverse and fulfilling post-military career, enjoying roles ranging from teacher (and coach) to 25 years in the agriculture industry, before finding a home with Rainbow Treecare. Even as he became further removed from his service time, Thompson's passion and support for our service members and veterans never diminished. The outsize role U.S. military service had on his family is what drove Thompson to be so heavily involved in the forming of Saluting Branches—and it's what inspired the genuine and moving words that form the proclamation.

When he sat down to write the proclamation, Thompson reflected on the history of the major wars, his father's stories

from the USS Wisconsin, and the great loss and sacrifice of so many service members and their families. "I wrote it with feeling," Thompson recalled. "I thought of my own family's experiences, but also of the families putting flowers on the graves of those lost in battle." Having written the proclamation, it was only fitting that Thompson was also the one to deliver the proclamation at the very first Saluting Branches Day of Service in 2015 at the historic Fort Snelling National Cemetery.

Last September, everything came full circle when Thompson once again kicked off the Day of Service at Fort Snelling by reading the proclamation. Only this time, thanks to the hard work of Thompson and countless others over the past ten years, Saluting Branches was celebrating a Decade of Dedication, and the proclamation was also being read at nearly 100 veteran-dedicated properties across the United States, Puerto Rico, and Mexico.

While Thompson is proud of his involvement with Saluting Branches and what the 501(c)(3) nonprofit organization has accomplished over the past decade, he's even more excited about Saluting Branches' future. He's looking forward to seeing how it grows with a new generation of volunteers getting involved. Thompson even sees an opportunity for the proclamation to evolve and change over time. "This is what we've been saying, but I'm open to what works with the up-and-coming generation," Thompson shared. "How can we improve it to better inspire the next decade of Saluting Branches volunteers?" ■



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Volunteer For Saluting Branches' 11th Annual Day of Service

The 2025 Saluting Branches Day of Service will be held on Wednesday, September 17, 2025. Join us in honoring our veterans by volunteering at a location near you. Go to salutingbranches.org/volunteer to register. We look forward to seeing you in September!

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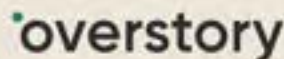
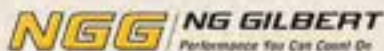
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We want to take this time to congratulate and thank our 2023 PinE Award Recipients.

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PLATINUM AWARD



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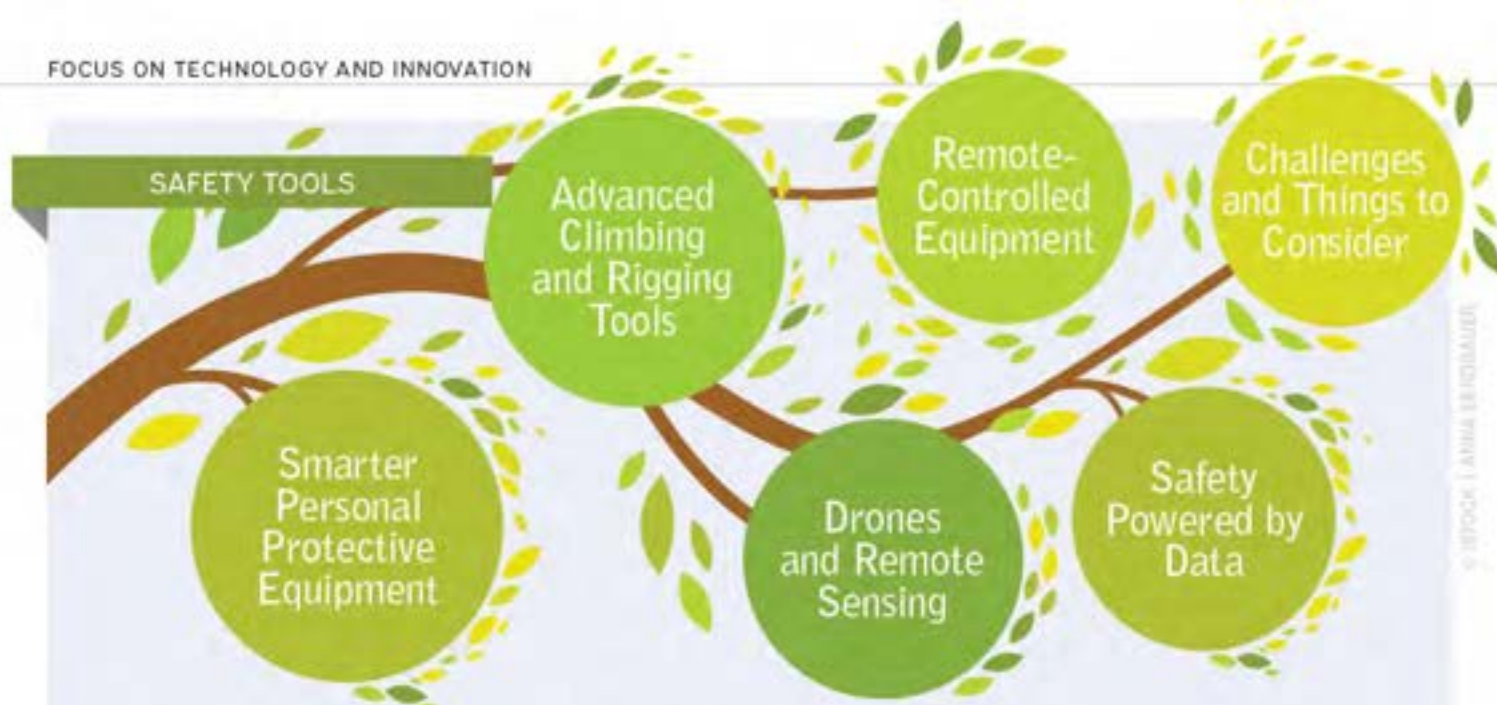


SILVER AWARD



BRONZE AWARD





Branching into the Future: How Safety Technology Is Transforming Tree Work

By Korey Conry, Field Safety Supervisor and Trainer, Mountain F. Enterprises Inc.

Tree work has always been one of the most dangerous jobs.

Arborists face risks like falling from trees, getting cut by chain saws, being electrocuted by powerlines, and dealing with whatever bad weather system is on the jobsite. However, as technology has improved, it has helped make this vital work safer and more efficient. Today, arborists use many new tools and safety systems that are changing how they do their jobs—from the ground up to the trees.

Smarter Personal Protective Equipment

One of the most significant changes in the tree care industry is the dramatic improvement in personal protective equipment. The days of heavy and uncomfortable chain saw pants and chaps are behind us. Thanks to advancements in materials, essential safety gear is now significantly lighter and more breathable yet still provides the necessary protection when worn correctly. Helmets with added technology, such as built-in radios and noise-cancelling ear protection, are also becoming more common, providing arborists with a sense of relief and comfort in their work.

Eye and ear protection have also significantly improved. Some safety glasses now have Bluetooth and anti-

fog features. New types of hearing protection make it easier to talk and block out loud noises, which makes it easier to work in areas with loud or excessive noises.

Advanced Climbing and Rigging Tools

In tree work, tree climbers rely heavily on ropes and harnesses, and new technology has improved these tools. Modern climbing gear, like mechanical ascenders and descenders, helps reduce the stress on a climber's body and gives them more control and efficiency in the energy spent climbing. Today's ropes are made using technology from super-strong materials like Dyneema, which is added to ropes that are lighter and tougher than older ropes with very low stretch.

New digital tools for rigging include Bluetooth load cells that can show the weight or kilonewton (kN) and tension of branches as they're being lowered. This information helps crews make safer choices when cutting and moving tree parts, helping to prevent incidents.

Drones and Remote Sensing

Drones are revolutionizing the way arborists approach tree work. In the past, climbing trees for inspection was often the only option. Now, drones

empower arborists to inspect a tree's canopy from the ground, giving them a more comprehensive view and greater control. They can use drones to identify dead or broken branches, assess proximity to powerlines, and spot other safety hazards. Advanced drones even come equipped with thermal imaging cameras, enabling arborists to detect hidden problems like internal decay or pest infestations. This technology saves time and significantly enhances safety, allowing arborists to identify potential risks without harming themselves. It helps arborists feel more in control and efficient in their work.

Using drones helps arborists plan jobs more safely and accurately. They can see a tree's complete condition before anyone climbs it, lowering the risk of injury. Drones are also helpful for checking tree health across large properties, which helps crews figure out which trees need pruning, removal, or other care. In arboriculture, this technology saves time, improves safety, and helps professionals make more intelligent decisions about tree maintenance.

Remote-Controlled Equipment

Remote-controlled machines are making some of the most complex tree work jobs safer. One example is



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SAFETY TOOLS

that arborists can now operate stump grinders and lift platforms from a distance. This means that arborists don't have to stand near the heavy equipment while it's running, which helps prevent incidents.

Safety Powered by Data

One of the most significant and modern changes in safety tech is using real-time data, such as wearable devices that can now track things like heart rate and tiredness on our smartwatches. If an arborist is getting too exhausted, the device can alert them or their supervisor, which helps prevent incidents caused by someone overworking. Some apps help crews fill out safety checklists and job hazard reports on their phones. These reports can be saved and shared online, making it easy to keep track of safety on the job.

Training in the tree care industry has taken a significant leap forward

by introducing virtual reality headsets and augmented reality interventions. These tools create realistic 3D simulations of complex situations, allowing arborists to practice handling emergencies and learning new skills in a safe environment before facing them in the field. This advanced training instills a sense of preparedness and confidence in arborists, making them feel more competent and ready for the challenges ahead.

Challenges and Things to Consider

Even though these new technologies are neat and helpful, we still face some hurdles. The cost is usually the most significant issue, especially for tree companies that are smaller and don't have extra money to spend on some of these new advancements. Some of the latest equipment requires training from an in-person trainer, and it can also be hard to get some

crew members on board by changing the way things have always been done. No matter how we develop the tech, it must still be used with skill, experience, and techniques to perform correctly.

A Safer Future for Tree Work

Tree work will always have its risks, but safety technology is helping us mitigate those risks. With better PPE, updated engineering controls on machines, and real-time data at the click of a mouse, we're heading towards a future where arborists are safer and better prepared for the task. It's important to note that these tools don't replace the value of experience and wisdom but complement and enhance them. They help the tree industry work smarter, safer, and more confidently—from the ground all the way to the canopy—while the knowledge and skills of experienced arborists remain invaluable. ■



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RESEARCH COMMITTEE UPDATE

By Cindy Musick, Champion, UAA Research Committee

In early 2025, the UAA Research Committee took a short break to review our goals and objectives. We leveraged the time to review the UAA directive and worked to realign with our mission: "To create and identify research opportunities to drive innovation into the UVM profession." In short, what are the problems that utility vegetation managers want to solve? What is the best way to publish that information into digestible, readable, actionable components? Furthermore, what should our goals and objectives be? What does success look like? We decided on the following constructs after committee leadership conducted discussions within the committee, as well as with the UAA Board and executive leadership levels:

1. SMART Goals (Specific, Measurable, Achievable, Relevant, and Time Bound)

are one straightforward way to structure any organization—including a volunteer-led committee. We will be working to produce SMART goals.

2. Awareness of our membership's needs. We will be reviewing two surveys that polled UAA membership on their most pressing needs. After reviewing, our goal is to address those needs by identifying information for dissemination and tailoring our outputs to address them.

3. Be the Hub: How do we get information to our members? To begin, we will leverage the *Newsline* by authoring short, half-page articles explaining each topic.

4. Research Committee Membership: Participants on the Research Committee should equate to 50% as utility vegetation managers, with the remaining membership consisting

of a mix of researchers, academia, and vendors—ecological, vegetation management, technology, and others.

How does this impact you? Well, we need interested volunteers to join the Research Committee! If you are currently employed at an electric utility or are in academia and are interested in helping move these ideas forward, please reach out to Cindy Musick (cmusick@myrec.coop). 🌱

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SPOTLIGHT ON THE ENVIRONMENT

The Electric Butterfly: Reconnecting with Nature on the Edges

By Ryan Meccage, Business Development Manager, ACRT Services

In an age dominated by smartphones, constant connectivity, and algorithm-driven content, we've never been more digitally immersed. Yet somehow, we've also never felt so far removed from the natural world beneath our feet. The urge to step away from screens and re-establish a deeper connection with nature feels more important than ever. That reconnection doesn't have to happen in remote national parks or the wilderness. Some of the most powerful moments with nature can occur in the spaces most people overlook—utility rights-of-way.

One afternoon, I walked a stretch of transmission ROW that sliced through a forest. The corridor was sunny, with milkweed and goldenrod growing along the sides. Dragonflies buzzed and birds chirped from the nearby brush. A worn path went up a small hill, with powerlines humming nearby.

Something caught my eye on a milkweed leaf. I crouched and saw a caterpillar making its slow, deliberate walk along the stem. I watched as it began spinning silk, preparing for its transformation. Beneath the steady current of electricity above, nature was performing its age-old process, slow and sure.

In that quiet moment, I found myself thinking about how disconnected we've become from this kind of natural transformation. The caterpillar knew exactly what to do—it followed instinct, not instruction. Meanwhile, humans seem to be amid our own metamorphosis—one driven not by biology but data.

Technology is reshaping how we live and think. In industries like

UVM, we now rely on AI to process huge amounts of data. The more we integrate it, the more it seems our progress depends on it.

But what exactly are we becoming? The caterpillar dissolves into something unrecognizable before emerging as a butterfly. Are we undergoing our own metaphoric breakdown and rebuilding? If so, what guides us? Is it instinct or code? Are we evolving or are we rushing forward without a clear destination?

The caterpillar didn't hesitate. It trusted the process. Transformation, no matter how uncertain, is simply part of what it was meant to do. And in many ways, our most advanced technologies mirror the natural world. Machine learning is modeled after the human brain. Swarm intelligence takes cues from bees. Soft robotics imitate octopuses. Nature is not separate from innovation—it's the foundation of it.

These walks tend to invite big questions. According to recent data from the National Electrical Manufacturers Association, electricity demand in the U.S. is expected to rise by about 2% each year, driven largely by data centers and electric transportation. By 2050, demand could increase by 50%. Will nuclear energy return to the forefront? Will trenchless plasma boring reduce the need for overhead powerlines and ease environmental impacts? It's hard to say. But one thing remains true: in both ecosystems and human systems, energy shapes growth.

My daughter's favorite book is *The Very Hungry Caterpillar* by Eric Carle. The little caterpillar eats more and

more, growing stronger with each meal until he finally transforms. That story feels more real to me now. We are constantly consuming information, energy, and technology, all in the name of growth. Maybe we're not so different from that hungry little caterpillar.

As I continued walking, the caterpillar stayed in my thoughts. I started to notice other things along the trail. There were clusters of fungi, a hawk circling above, and fox tracks in the mud. This corridor, often seen as disturbed or artificial, was full of life. Because it's mostly overlooked, animals move through it freely. Deer pass without much interference, pollinators are drawn to the open space, and sunlight allows plants to grow that might not survive in the shade of the forest.

We tend to search for nature in untouched places—mountains, forests, oceans. But there's something special about the edges, these in-between spaces, where real reconnection can happen. Nature doesn't require perfection. It only needs room. A gap in the canopy. A break in the routine.

Reconnecting with nature doesn't mean disappearing into the wild for days. Sometimes it just means walking a ROW, being present, and noticing what's already there. Sometimes, if you're lucky, you'll find a caterpillar on the verge of becoming something else. Something impossible. Something beautiful.

As we continue down the path of AI and innovation, maybe the goal isn't to fight transformation but to shape it with intention. To walk in both the digital and natural worlds. To evolve with awareness, not just acceleration. ■



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The Next Frontier in Remote Sensing: A Q&A with Camille Westlake

By Jamie McMillan, Associate Account Manager, NV5



Jamie McMillan



Camille Westlake

Because we work together, I benefit from access to Camille Westlake's smart, solution-creating brain, so I want to share a small glimpse into a chat I had with her. A solutions architect at NV5, Westlake helps create new solutions and provides technical support to the sales teams. She has been working in the remote sensing industry for sixteen years, and thirteen of those include working with utilities to help develop and grow their remote sensing programs.

Our conversation focused on the innovations in utility tech, particularly with advancements in LiDAR and remote sensing technology, and how utilities can harness these advances—and even use them together—to create better precision and better systems overall. Westlake also touched on her hopes for the future to help utilities big and small balance accuracy and cost.

Jamie McMillan: So, Camille, you've been around the industry for a while now, even as NERC [North American Electric Reliability Corporation] regulations on reliability standards were becoming important.

Camille Westlake: Yeah, I started working with remote sensing back in 2009. One of the very first projects I worked on was mapping the Oregon coastline to update tsunami evacuation maps and signs. When we were doing LiDAR back then, it was very ground-based. We were focusing on landslides, faults, and collecting through the vegetation to understand what was happening with the ground—that was the benefit of LiDAR.

When the NERC alert happened, that created a big shift in the LiDAR industry, because now there was a large push for identifying specific features above ground.

We had to figure out how to identify powerlines, buildings, and trees in an efficient way. This change really accelerated the remote sensing and LiDAR industry with trying to focus on that above-ground mapping to manage the miles of lines.

McMillan: LiDAR technology has been around since the 1960s, and you've seen it improve dramatically in the last two decades or so. What are some things that we lay people may not know about? What's changing about specific LiDAR technology improvements that can be used for vegetation management at a utility?

Westlake: Well, there's now a variety of different sensor types and different settings that can really help us specialize what we are trying to capture with the data. For example, we have been working on some settings that

allow us to capture wires while flying faster. These kinds of specializations are needed due to increased utility budget pressure and to stay innovative in this industry.

When remote sensing first started being used in utilities, it was for transmission, which had set regulations and programs with budgets for remote sensing. Now, we're seeing remote sensing really grow in the distribution side of things, and I like to say that's the Wild West of the utility world as far as regulations and programs go. We see a lot of differences between utilities, so that makes things interesting for the remote sensing side when each utility has a slightly different way of wanting to understand their system. There is a lot of room for innovation.

McMillan: That makes me think about how satellite imagery is being used in our industry within the last few years to observe vegetation around the lines. We all know that the accuracy of satellite imagery does not match the accuracy of LIDAR, but do you have an opinion on maybe where satellite imagery is going or what it should be used for alongside LIDAR?

Westlake: I'm very curious to see where satellite goes. I do think that satellite has a place, especially for utilities that LIDAR hasn't been accessible to due to budget constraints. LIDAR costs have been falling, so this specific barrier to entry could be reduced in the future. Satellite bridges this gap. It's a great place to get a high-level understanding of what's happening on your system. Understanding where your clear spans are, where they might be, and vegetation health issues are use cases that can benefit from satellite data.

The one concern I have with reliance on a satellite-only approach is that as we see more extreme weather, fire events, and aging infrastructure, the data needs to provide enough accuracy and information to act against. This is where incorporating LIDAR may make sense. There is a relationship between LIDAR and satellite where using both could really benefit a utility.

McMillan: I love that. As a tech person in the industry, are you excited when you get the opportunity to build projects using both types of technologies?

Westlake: I am excited! Using LIDAR and imagery gives you a full picture of the

system, and it gives you the best answers. This approach can give utilities a way to prioritize and manage their system in a concise manner that helps them use their budget effectively, which is what we're all driving for.

McMillan: I like that. Reliability is super important, and it sounds like you, as a technical expert in our industry, like having all the tools at your disposal. Any sneak peek into what could be next in the industry?

Westlake: One of the things I'm really trying to drive is an affordable LIDAR solution. I want co-ops, municipalities, and smaller IOUs to have access to this technology as well. It provides confidence in making decisions about these systems.

McMillan: We want all the information to make the best choices for our systems. We can have it all!

Westlake: Yeah, exactly that.

Thank you to Camille Westlake for taking the time to share your knowledge and expertise. As remote sensing technology continues to evolve, the LIDAR and satellite technology are opening new doors for smarter, more resilient systems. ■



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How Southside Electric Cooperative Is Bridging Fieldwork with Smart VM Solutions

ARCOS Vice President of Product Strategy Chris Kelly spoke with Vegetation Management Supervisor Matt Hall from Southside Electric Cooperative (SEC). Hall shared insights on SEC's current practices, the critical role of data, and how SEC is positioning itself to adopt tools like drones and satellite imagery to enhance reliability in a uniquely rugged service territory. His insights offer a valuable road map for other utilities navigating similar challenges, highlighting how thoughtful tech adoption and strategic planning can strengthen resilience across the industry.

Chris Kelly: Can you tell us about your role at Southside Electric Cooperative and how long you've been involved in vegetation management?

Matt Hall: I am the Vegetation Management Supervisor at SEC, and I have been working there for the last five years as a Utility Forester II and in my current position. Prior to utility vegetation management, I was in the forest management field working for the Virginia Department of Forestry for eight years.

As a VM supervisor, I help oversee all vegetation work that occurs at SEC—side trim operations, cost plus crews, brush control crews, etc. I also help procure all vegetation contracts as well as plan out all future vegetation work. I provide oversight into all member-related issues and monitor to ensure contractors are following the co-op's safety standards.

Kelly: What makes vegetation management particularly unique or challenging in SEC's service territory?

Hall: Southside Electric is a very rural electric cooperative. SEC contains a large

amount of cross-country rights-of-way on our infrastructure. Our terrain also varies greatly from the mountains in our western district to the swamps in our eastern district. Here, we average about 200 trees per line mile, which is about double the amount of the national average tree per line mile (961). With that being said, one of our biggest challenges in providing safe and reliable power is power interruptions from trees outside the ROW.

Kelly: What technologies has SEC adopted in recent years to improve vegetation management practices?

Hall: When I took over as Vegetation Management Supervisor, I had just completed a business case for SEC to utilize some sort of vegetation management software program. I felt it was very important to have this since technology is ever-changing in our industry. Our first goal was to give the contractors working on our system a functional program to use as a tool for their work. This program allows them to see our infrastructure, see the work



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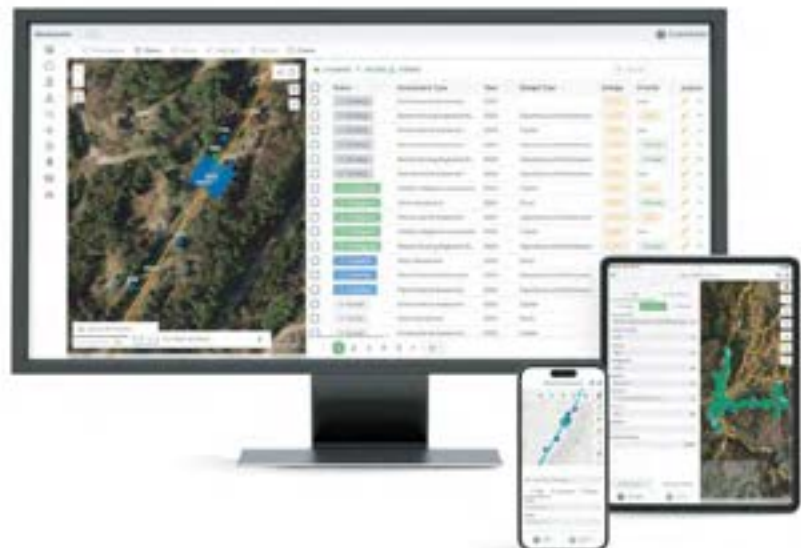
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ahead of them, and enter the work they complete—all with minimal effort on the contractor's part.

Anyone's vegetation software program is only as successful and accurate as the information the contractors enter. So, with the help of the development team, we fine-tuned it to make sure we would get buy-in from the contractors. We also use this tool as an assessment tool for storing our located hazard trees on our system and assigning them to our contractors. Our brush control contractors also have all of their work assigned to them through the software.

Kelly: How are tools like drones, LiDAR, or satellite imagery being used in your program today?

Hall: To date, we have not utilized any of this in our UVM program. But by having a good, usable software program, this has laid the groundwork for us to employ different technologies in the years to come. We felt this was important before we did anything else, because when inundated with information, a good program to store the data is a must. SEC has had conversations with different companies about utilizing new technology and are always open to new ideas to better our vegetation program. We are also exploring the idea of using drones in-house to patrol lines, and have created a committee to explore this opportunity.

Kelly: What role is data collection and analysis playing in how you build out your vegetation management strategy?

Hall: Reliability is very important to SEC. Part of our mission statement is to

Technology allows us to store this information and ensure all laws and regulations are followed. It gives not only our vegetation group a heads up but also our contractors.

provide our members with safe and reliable power. We keep records of all of our outages, which help us paint a picture of not only where vegetation is failing but also what the reason for failure was. We investigate the outages and look to see what correlation we can find.

Kelly: How do you train or support your team as new tools and systems are rolled out?

Hall: I am lucky to have good support from the vegetation team at SEC. Our foresters are very proficient with our software and have really taken ownership in ensuring that contractors are able to successfully use it. They are available and able to answer questions. Since we are a cooperative, we are able to work closely with our limited number of contractors.

Kelly: How is technology helping SEC better manage risk from weather events or fast-growing vegetation?

Hall: Southside Electric is a very rural cooperative, with lots of double-sided

vegetation ROW. Weather events cannot be prevented, and during a major event, generally the green trees are the ones causing power interruptions. Our system has a high number of Virginia pines, which makes storm hardening very difficult for us. Our hope in the near future is to be able to utilize drones for post-storm patrols to help us with storm damage assessments.

Kelly: What role does innovation play in maintaining compliance with environmental and regulatory standards?

Hall: Having good records of areas that need special attention or have environmental/regulatory standards is crucial. Technology allows us to store this information and ensure all laws and regulations are followed. It gives not only our vegetation group a heads up but also our contractors.

Kelly: What do you think the future of utility vegetation management looks like in rural co-op settings like yours?

Hall: The last 10-plus years have shown great growth in technology with UVM. The "boots-on-the-ground" work is a staple in our industry, but in the future, I see the ability of having access to real-time satellite imagery with high clarity, where we can locate trees outside of our ROW without leaving our office, giving us the ability to prevent power interruptions before they happen. With SEC having 200+ trees per line mile, our vegetation group has a large task in providing reliability, and I could see real-time satellite imagery being a game-changer for us. ■



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From Data Overload to Decisive Action: Finding

By Phil Chen, Solutions Consultant, Overstory

Vegetation management is no longer a low-resolution task. Today, most utilities have access to an overwhelming wealth of information: LIDAR scans, satellite imagery, remote sensing of tree health, historical maintenance records, fire risk overlays, and predictive encroachment models. For many, the promise of precision is real. With the right data, it's possible to anticipate risk, focus fieldwork, and prioritize where every dollar will matter most. And yet, despite this data-rich environment, many programs are still struggling with the same core question

Where Do We Begin?

This is the new paradox in vegetation management. Visibility has improved. Awareness has increased. But clarity—especially around action—often remains elusive. More data doesn't always lead to better decisions. In some cases, it leads to hesitation. With so many signals competing for attention, many teams find themselves trying to respond to everything at once. When everything is urgent, nothing is prioritized.

I've spoken with vegetation professionals who open their dashboards and see thousands of flagged issues: potential strikes, declining trees, overhanging limbs, asset proximity risks. Every alert represents something measurable. But what's often missing is guidance. Not more detection—more discernment. This is where the idea of leverage comes in.

In systems thinking, a leverage point is a well-chosen place within a complex system where a small shift can create large results. It's the fulcrum that moves the whole. In vegetation management, leverage might not always be intuitive. It rarely appears in the form of a single dataset. Instead, it emerges at the intersection—where different layers of information come together to reveal what matters most.

A map of potential strike trees is useful. A map of declining trees is also useful. But the most actionable risk may lie where those two datasets overlap. Add in asset criticality or wildfire ignition risk, and patterns begin to sharpen. You start to see which trees aren't just a threat in theory but a practical priority. The ability to identify and act on that small, high-

impact subset is the difference between effort and progress. And that progress doesn't require a massive overhaul to begin.

Start Small, Win Early

The most effective vegetation programs I've observed—especially those incorporating analytics for the first time—don't begin with sweeping change. They start with one circuit, one layer, one insight. Often, that first insight is something as straightforward as identifying the most visibly declining trees on a high-priority line. It's not high-tech for its own sake. It's simply the fastest route to a better decision.

That early success matters more than it seems. A small, clearly communicated win builds momentum. It earns buy-in. It shows that analytics aren't just a theoretical layer sitting on top of operations—they can lead to safer, faster, smarter fieldwork. When people see that data leads to action, they begin to trust the system that generated it.

These wins don't need to be dramatic to be meaningful. A basic prioritization report. A newly visualized stretch of line. A simplified map showing encroachment density. In each case, the point isn't scale—it's traction. These first steps show that insights can travel the full distance from screen to field, from identification to implementation.

This is especially true across different roles in the organization. Field supervisors want to know where their crews can make the biggest impact. Planners want to know what should move

to the top of the list. Leadership wants to know where an investment will reduce risk. The first insight doesn't need to solve everything. It just needs to connect the dots for someone.

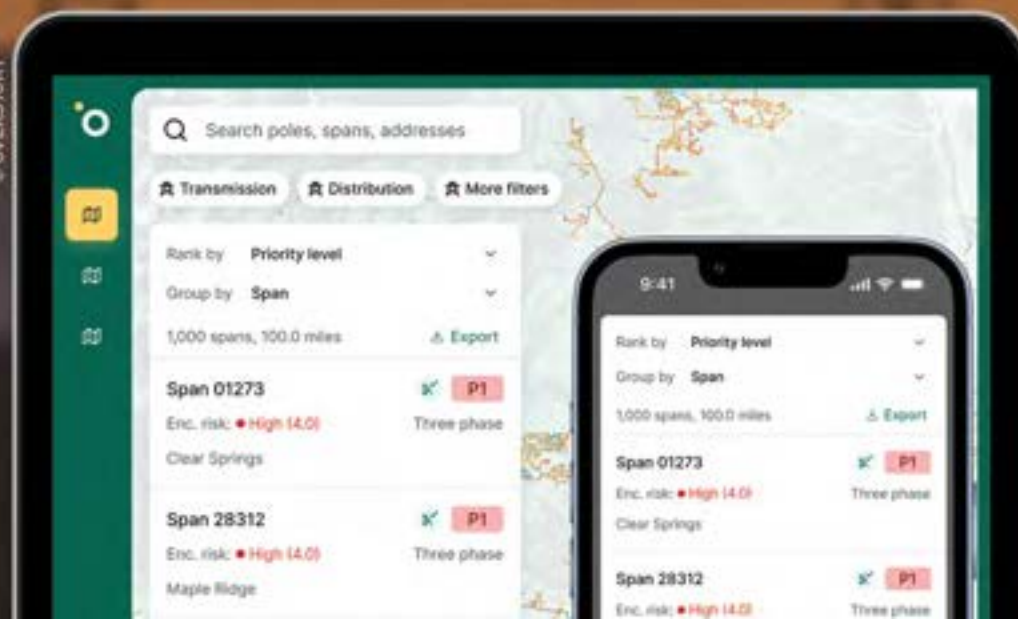
Over time, these incremental insights add up. A utility might begin with basic vegetation encroachment scores and gradually layer in more complete analytics. But these additions land best when they're built on a foundation of success. The most advanced programs aren't the ones that integrate the most data—they're the ones that act consistently on what their data reveals.

Because data alone is inert. It doesn't drive results on its own. It must be translated into clear priorities and manageable steps. Without this critical shift—from accumulation to application—utilities risk underutilizing powerful analytics and missing opportunities to enhance reliability, safety, and efficiency.

Analytics become valuable only when they become usable. That usability depends less on the number of layers and more on whether the right ones are being acted on at the right time. Although analytics require technology, they thrive in culture. The tools—dashboards, GIS platforms, mobile inspection apps—are necessary to translate complex information into something actionable. But technology alone doesn't determine whether that information gets used. That comes down to organizational behavior.

A program built around action looks different from one built around accumulation. You see it in how time is

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Leverage in Vegetation Management



The Power of Overlap:
Risk becomes visible when datasets converge, like declining trees intersecting with critical spans. Action begins where signals align.

Real-World Traction:
Field crews rely on clear, timely guidance—not more data. When insights translate to action, trust in the system grows.

spent, what gets prioritized, and how decisions get made. The conversations shift, not toward more data but toward what the current data makes clear. Less about coverage, more about consequence. Less about solving everything, more about knowing what to move first—and why.

Programs that embrace this mindset are often the most adaptable. They're not chasing complexity. They're using data as a way to simplify—to find structure within uncertainty. These teams aren't trying to do everything at once. They're making intentional choices and trusting a workflow that builds confidence over time.

In many ways, the shift is simple: stop asking for more data until the current data is being used effectively. Teams that build strong feedback loops between insight and field action see more consistent improvement—not because they're doing more but because they're doing the right things at the right time. **It's not about perfection. It's about momentum.** And momentum depends on a culture that values timely, focused movement over exhaustive preparation.

Don't Wait for Perfect

One of the most common pitfalls I see is waiting for the system to be fully ready—every data layer in place, every integration complete, every metric validated—before making a change. The reality is that the perfect moment never arrives. What matters most is the ability to begin with what you already have and

let each improvement support the next.

Start with clear questions: What data do we trust right now? What can we do with it? What would success look like? Then do that. And measure the result.

When the feedback is real, when crews see how their work fits the larger strategy, when planners see how prioritization improves outcomes, momentum follows. That momentum creates space for refinement, for iteration, for the next step. What starts as a narrow win becomes a broader shift. No program becomes data-driven overnight. But every program can become more focused today than it was yesterday.

Vegetation management is evolving—and quickly. With the rise of AI-powered risk models, real-time asset monitoring, and predictive inspection planning, the technical capabilities available to utilities will only grow. The pace of innovation is accelerating, and with it comes rising expectations—from regulators, stakeholders, and the public.

But the promise of those tools depends on a foundation that's already in place: the ability to prioritize, to focus, and to move from information to action. Without that grounding, even the most advanced analytics will struggle to gain traction.

The best-performing programs of the future will not necessarily be those with the most sophisticated data. They will be the ones with the clearest decisions. The ones that learn to move early, adjust often, and continuously sharpen their sense of where effort matters most.

Because, at its heart, vegetation management is still a human endeavor. Trees don't respond to models—they respond to crews, to plans, to timing. And while data can support that work, it can't replace the judgment, discipline, and strategy required to do it well.

The real opportunity in this era of data is not to do everything. It's to do the right thing, sooner. And it starts with a simple shift—from seeing everything to knowing where to begin. ■



Why AI-Powered Geospatial Analytics Is Propelling the Future of Utility Vegetation Management

By Sean Dogegan, President and CEO, SateLytics

Our nation's utility infrastructure, especially in rural areas, is vulnerable if the correct protections are not put into place. The slightest spark—say, a tree growing in the wrong location—can trigger power outages, wildfires, and infrastructure damage. This potential is far from a remote concern. According to the Federal Energy Regulatory Commission (FERC), vegetation is one of the leading causes of electric service outages. When vegetation around powerlines is not monitored, it can spell disaster for both businesses and surrounding communities.

It's not surprising, then, that utility vegetation management is projected to swell to a nearly \$40 billion industry by 2029. Few services are more urgently needed and have more of an impact on Americans' day-to-day lives. That urgency helps explain the drive towards innovation in the industry—with utility organizations working in concert with technology companies to marshal in cutting-edge technology to improve vegetation management efforts nationwide and ensure that communities are kept safe.

One notable example of this can be

seen in the recent work from SateLytics, a leader in cloud-based geospatial analytics. The company worked with a large energy company and used the latest AI and machine learning developments to apply algorithms designed to help its customer know where and when to cut down trees and vegetation encroaching on utility lines—with more granularity than ever before. This project, performed in and around Indianapolis, took into account several considerations including proximity to the corridor and wire zone, plus tree height, health, and speciation.

The results of this project were encouraging and provide a timely glimpse into the direction of the industry at large in the coming years.

The First Assessment: High-Level Analysis

The first assessment, conducted in October 2022, was tasked with determining whether any trees were growing into danger zones, which were divided into two categories—wire zones and strike zones.

The wire zone designates the area directly under the widest portion of

a transmission line. In this case, the wire zone was taken into account by measuring the distance between the pole and line. When trees grow into that wire zone, there is an increased risk of negative consequences, like loss of power and wildfires.

In addition to wire zones, a clearer picture of strike potential was needed—identifying trees that, while rooted outside the wire zone, still potentially posed a threat to electrical infrastructure. Heat and wind cause powerlines to sag and sway, bringing them outside the designated wire zone and potentially into contact with vegetation. As a result, line sag and sway are taken into consideration when calculating strike zones. Threats within the strike zone present the same increased risks posed by wire zone threats.

The First Results: Fall 2022

This initial analysis in Fall 2022 was staggering, producing 200,651 detections of trees that were within the two danger zones. These alerts were coupled with information on tree height and speciation—ascertaining whether the identified trees were evergreen or

A photograph of a worker in a yellow safety suit and hard hat operating a bucket truck to clear trees. The scene is set in a wooded area with autumn foliage. A large, dark green, stylized tree graphic is overlaid on the right side of the image.

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deciduous. While the issue of identifying trees that threatened electrical infrastructure was solved, the resulting number of alerts presented a new challenge: how to prioritize 200,651 alerts.

To address this problem, Satelitycs developed a heat map to pinpoint “hot spots.” On this heat map, areas with a high number of alerts were colored a bright red, whereas areas with a lower number of alerts were represented in blue. This allowed the customer to better allocate their resources and ensure that the most urgent threats were taken care of first.

The Second Analysis: Getting Granular

The first collaboration in 2022 looked at the big picture: identifying trees in designated danger zones that needed pruning. Effectively, the analysis highlighted the potentially problematic trees within those zones. The next collaboration between the organizations, which occurred in Summer 2023, brought a new degree of granularity, considering the influence of a tree’s species and noting changes in vegetation growth and health.

Tree speciation, health, and growth all influence the degree of risk a tree is to utilities. Some species of trees are more robust than others, able to weather blights and changes in climate. A hearty tree will not fall under normal circumstances, but one more susceptible can become a risk to adjacent electrical infrastructure. Likewise, tree growth over time can increase risk, such as trees outside of the previously mentioned danger zones growing into them, encroaching on infrastructure.

The Second Round of Results: Summer 2023

The first analysis was conducted after the leaves in Indianapolis had fallen, and the second was conducted while the trees had all their leaves. Both stages offer the chance to collect important data, but the benefit of analyzing trees with their leaves is that you can get a much more detailed sense of tree health.

Accordingly, the employed algorithms assessed all vegetation factors with unprecedented granularity. Through analyzing the spectral signatures of individual trees, the customer was able to receive specific data about individual trees—for example, not just “deciduous” or “evergreen” but, for instance, “This is an unhealthy, 49-foot silver maple tree.”

This time, the analysis resulted in 49,505 alerts, which were also prioritized to optimize field crew intervention. This process was significantly aided by developing a “circuit risk” product for an optimized, rotating schedule of tree-cutting, ensuring the highest-risk circuits would be worked on first. These analyses enabled the companies to grade the risk level of each circuit, factoring in the percentage of stressed versus healthy trees, which allowed crews to direct their attention to those trees that posed the biggest threat to electrical infrastructure.

Why UVM Matters

The kinds of problems identified by the results of these analyses would have been impossible without the use of AI and ML algorithms. Inevitably, traditional methods are limited by available manpower. Even the most lavishly resourced utility companies cannot



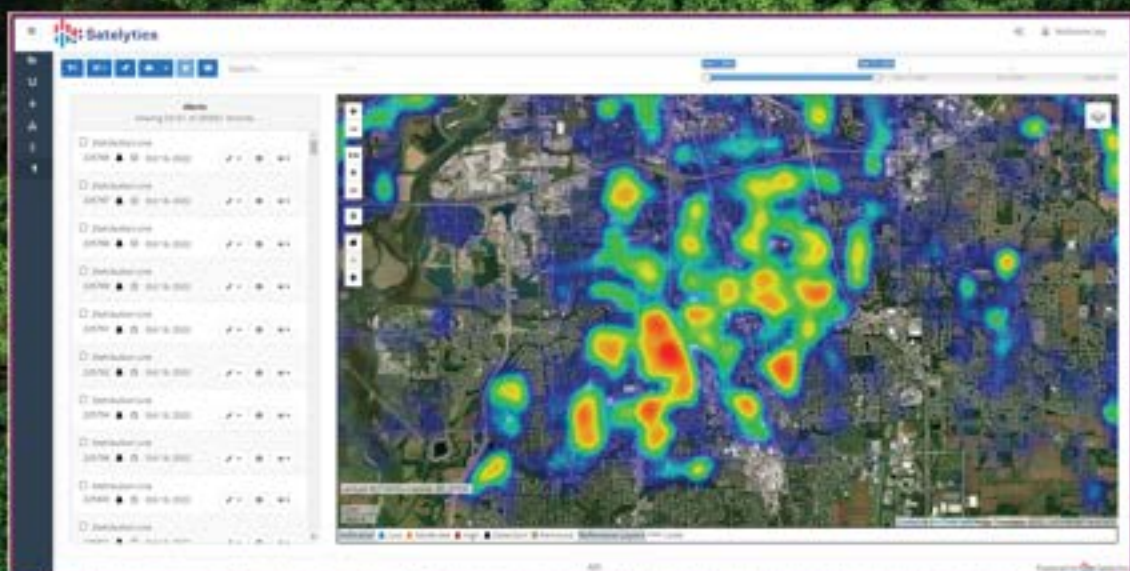
afford to spend the billions it would require to hire and maintain a staff large enough to identify every problematic tree in a given area.

The success of this joint initiative is an affirmation of the motto, “The more data, the better.” By gathering and instantaneously analyzing vast quantities of data, AI- and ML-enhanced UVM initiatives can provide a level of clarity that was inconceivable just a few short years ago.

The damage caused by untended vegetation is incalculable; a single neglected tree can cause consequences that not only damage surrounding homes but claim lives. The cost to communities—not to mention the cost to liable businesses—is too high for utility companies not to embrace the latest in UVM technology.

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Honoring a Legacy

Reflections from Will Nutter Silver Shield Award Recipients

By Bob Urban, Senior Manager, ACRT Services

In an industry where the stakes are high and every decision can have life-altering consequences, leadership in utility arboriculture isn't just a managerial function—it's a calling. Nowhere is this more evident than in the recipients of the Will Nutter Silver Shield Award, a recognition that honors frontline safety champions who go above and beyond in protecting the people they serve and lead.

Created in 2016 by the Utility Arborist Association, the Silver Shield Award originated from a proposal by Will Nutter, then Chair of the UAA Safety Committee. Will recognized the need for a distinction that celebrated those who may not always sit in corner offices or hold executive titles but who wield enormous influence over safety culture on the ground. These are the crew leads, forepersons, trainers, and quiet influencers who turn "safety" from a policy into a practice, day in and day out.

Will's passion for safety was palpable. He believed in collaboration over competition and worked tirelessly to bring the industry together, especially through the development of UAA Safety Summits. These gatherings emphasize education, best practices, and proactive conversations—all to reduce risk and save lives.

Tragically, on September 16, 2021, Will passed away following a motorcycle accident. Just days later, the UAA Board of Directors unanimously voted to rename the award in his honor. It was a fitting tribute to a man whose dedication to safety transcended job titles and whose vision continues to shape the industry.

Nearly a decade since its inception, the Will Nutter Silver Shield Award serves as a standard for what safety leadership should look like. As someone who was honored as a 2021 recipient, I have experienced firsthand how powerful and humbling this recognition can be. When I was informed I had been selected, my first reaction was that I felt undeserving. The award, to my knowledge, is a true peer recognition, offered by others in the industry who took note of what I was doing. That awareness struck me deeply.

I wear my Shield sparingly, only during key presentations or at special industry events. It's not a trophy to show off but rather

a reminder. For me, it symbolizes the responsibility to act in ways that reflect the values behind it. My actions, attitudes, and leadership around safety should speak for themselves. The Shield reminds me to use my life and career experience to help others return home safely each day, and to ensure I do the same.



Jerry Staton, 2023 Recipient

A SHIFT TOWARD ROOT-CAUSE THINKING

Reflections from Jerry Staton, Senior Operations Manager, ACRT (2023 Recipient)

When Jerry Staton was honored with the Silver Shield Award, he saw it as a call to action. In his words, "This isn't just recognition, it's a responsibility to keep raising the bar."

Jerry notes a profound shift in the way safety incidents are

approached. "Years ago, we'd zero in on the immediate cause. If someone got into a fender bender, we'd talk about distracted driving," he recalled. "But now, we're asking deeper questions. Why did they feel the need to check their phone? Was there pressure? Were they distracted by something at home?"

This evolution toward human performance thinking allows organizations to understand the broader context around safety events. "Digging into root causes helps us train better, respond better, and support our people better," Jerry said. "It also builds trust. When workers know you're not just looking to punish them but to understand and help, they're far more likely to speak up and engage."

For Jerry, the change isn't just procedural—it's cultural. "Safety has to be part of how we talk, think, and lead. It's not a department. It's a mindset."



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Kevin Myers, 2016 Recipient

PRODUCTION PRESSURE: THE ELEPHANT IN THE BUCKET TRUCK

Insights from Kevin Myers,
Training Supervisor, ACRT
Arborist Training (2016
Recipient)

Kevin Myers doesn't mince words when it comes to the challenges facing the industry. "The biggest threat to safety? Production pressure," he said flatly. "Everyone, from utilities to contractors, is trying to do more with less. That pressure

trickles down, and it puts crews in harm's way."

He describes an industry landscape where companies often underbid each other to win contracts, leading to cuts in training, oversight, and equipment. "It's an unsustainable model. And it's dangerous," Kevin warned.

His proposed solutions are both bold and pragmatic. First, he wants to see arboriculture recognized legally as a skilled trade. "We don't let just anyone wire a house. Why should someone with no formal training be allowed to operate a chain saw next to live wires?"

Second, he believes insurance companies have a role to play. "If insurers audited safety programs and adjusted premiums accordingly, you'd see a real incentive for companies to invest in doing things the right way."

Despite the challenges, Kevin remains hopeful. "We know what needs to be done. We just need the willpower—no pun intended—to make it happen."



Adrienne Jones, 2023 Recipient

LEADING WITH EMPATHY, EMPOWERING WITH TECHNOLOGY

Thoughts from Adrienne
Jones, Safety Manager,
ACRT (2023 Recipient)

Adrienne Jones brings a holistic lens to the conversation, one that includes not only physical safety but mental wellness, communication, and culture. "Mental health is safety," she said. "If someone is distracted, anxious, or burned out, their

judgment suffers. Their awareness suffers. That can be the difference between going home safe or not."

Adrienne has been instrumental in integrating wellness and support systems into safety programs. "We now treat mental health with the same seriousness as PPE or hazard assessments," she said. "And it's making a difference. People are speaking up more. Teams are more connected."

Her leadership philosophy is grounded in empathy and trust. "I've shifted from just giving instructions to building relationships. I check in regularly, I listen, and I create space for feedback.

That's how you build a safety culture that lasts."

Adrienne also highlights the role of technology in simplifying safety processes. "We've adopted apps that allow for real-time reporting of near misses, electronic job safety analyses, and field-based feedback. It's user-friendly and meets workers where they are—on their phones."

Her advice to others? "Don't overcomplicate it. Keep training relatable. Use real stories. And most of all, show your team that you genuinely care."

COMMON THREADS AND A SHARED PURPOSE

While each Silver Shield recipient has their own journey, a few key themes emerge across their stories:

- **Safety is human.** It's not about perfection, it's about people. Understanding the full context behind actions, both good and bad, leads to smarter decisions and better support.
- **Communication is key.** Whether through storytelling, technology, or open-door policies, leaders must create environments where safety is openly discussed, not feared.
- **Training must be practical.** Long, irrelevant modules don't engage workers. Real-world examples, mentorship, and peer-led discussions are far more impactful.
- **We must address systemic issues.** From contract models to certification standards, the industry needs structural changes to prioritize safety over production.
- **Empathy is a superpower.** More than rules or checklists, what often drives safe behavior is knowing someone has your back.

LOOKING FORWARD: CARRYING THE SHIELD

The Will Nutter Silver Shield Award does more than recognize excellence—it defines it. It's a call to lead with commitment, to elevate those around you, and to challenge the status quo when lives are on the line.

Honoring Will's legacy means continuing to uphold the values he championed: collaboration, care for others, and a steady focus on doing things the right way. These principles should guide how we work, how we lead, and how we look out for one another in the field.

In memory of Will and in celebration of all who carry his torch, let's continue the work. Because safety is not a destination. It's the path forward.



Bob Urban, 2021 Recipient

ABOUT THE AUTHOR

With nearly three decades of experience in the utility services industry, ACRT Services Senior Manager **Bob Urban** has built a wealth of expertise on everything from operations and sales to training and negotiation. He is an International Society of Arboriculture Certified Utility Arborist and the 2021 recipient of the UAA Will Nutter Silver Shield Award, a recognition given to a person

who is on the front line of safety. Urban attended Paul Smith's College in New York. #



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A ROAD LESS TRAVELED

From Firelines to Powerlines: Madison Stebbins

By Madison Stebbins, Account Executive and Wildfire Subject Matter Expert, Overstory

I never expected to end up working in utility vegetation management. I have always loved the outdoors and spent much of my life working or playing outside, but I never had a particular interest in trees. I worked as a wildland firefighter with the U.S. Forest Service for four years, two as a hotshot—when other fire resources are overwhelmed, a hotshot crew gets dispatched. I spent my springs, summers, and falls dispatched across the rural West digging firelines, running a chain saw, and putting fire onto landscapes as a part of controlled burns or burnout operations on large wildfires.

Working as a wildland firefighter, especially a hotshot, is an exercise in being surrounded by crisis. Humans don't have great tools to engage catastrophic wildfires once they've ignited, but we do have great tools to reduce the frequency and severity of catastrophic fires by reducing fire hazards and increasing communities' resilience to wildfires.

In the many hours I've spent stumbling around the Western U.S., either during fire seasons, in the off seasons, or when I lived in a Volkswagen van looking to ski and rock climb as much as possible, I often found myself wondering how to make effective change. I could have been the best firefighter known to humanity (I certainly wasn't), but I would have no measurable impact on the three factors that lead to the significant growth in harm to humans from wildfires over the last twenty years: a changing climate, populations moving into wildfire-prone landscapes (especially those without cultural or contextual relationships to wildfire), and a history of fire exclusion that has led to a massive buildup of available fuel (Barrett et al., 2024).

In 2022, I left firefighting and was looking for a job that would give me a larger positive impact on the world. I felt like I should be doing more beyond my immediate sphere—at that point, that wasn't much farther than a pulaski or the tip of a chain saw bar. An acquaintance suggested fire tech and connected me to Overstory. The company had built some effective tools for remotely sensing vegetation and its characteristics at scale. They could identify individual trees, detect dead or dying vegetation, and even categorize tree species by using AI and satellite imagery.

Overstory had also received some funding from a wildfire-focused venture capital fund, but the company was founded in Amsterdam and few people at the company knew anything about wildfires at the time. Given my educational background—I had studied geography, GIS, and cartographic design in college—and my work experience as a wildland firefighter, I was initially brought on as a wildfire subject matter expert.

Today, I support utility arborists and wildfire program managers with cutting-edge tools that provide detailed, at-scale information about their networks. The institutional knowledge in the UVM world is potent, and I believe that providing better intelligence helps these teams make more informed decisions about the landscapes they manage. From working in the wildfire realm, I believe that as a society we need to do a better job of emphasizing risk mitigation rather than nick-of-time avoidance—and UVM is an industry wholly focused on risk mitigation.

Over the past few years, I've been lucky to run discussion sessions around the future of wildfire mitigation alongside utility emergency managers, sit on a technology showcase panel at the Great Lakes Vegetation Management Conference, and run workshops to help utilities understand how they can use better vegetation data to build business cases.

I would never have imagined that I would end up working in or adjacent to the UVM world. I'm not an arborist and haven't worked for a utility (yet), but I love working in the utility industry. Perhaps it's having worked as a public servant in the past, but I appreciate that utilities provide a service to people. There's often a selflessness or altruism to folks who work at electric utilities. Utilities are highly connected to the spaces they operate in, especially UVM. I think both the structure of the industry and the nature of moving electricity across landscapes attract people who are well-rooted in their communities and who care about their surrounding landscapes.

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PHOTO COURTESY OF KEVIN BENEDICT

Advanced Technology for Real-World Work

The utility industry can leverage various developing technologies to identify and understand vegetation along rights-of-way, including LiDAR and digital imagery datasets, and how those datasets are obtained (satellites, UAVs, vehicles, and pedestrian-mounted). Utilities leveraging these new technologies are seeing an enormous influx of data and often face the challenge of finding ways to use it to build actionable vegetation management plans.

What the industry needs is a platform that can serve as a hub to operationalize ROW data investments using geospatial representations, budget tracking, reporting, and much more. This powerful tool can help a utility company make sense of its prized data.

Getting to Know Your Data

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Davey's workflow management software consists of ResourceKeeper Mobile and ResourceKeeper Insight. Mobile can capture data offline and allow communication between office locations and field teams. Insight is a centralized hub that aggregates information



from the Mobile tool for analysis and interpretation. When these industry-established and validated software programs are combined with Davey's team of data scientists, all forms of data can be put into action.

ResourceKeeper is continually evolving to keep up with the latest technological advancements, including LiDAR and remote sensing acquired datasets.

Invested in Innovation

As the utility industry continues to explore the possibilities of data-gathering and automation to meet compliance standards and provide safe, reliable service, energy companies need to do more than implement new technologies. ResourceKeeper represents a deeper commitment to combining advanced technology with integrated software tools that can create cost-effective, simple results for a utility's vegetation management plan. ■

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OPINION EDITORIAL

Condition-Based Vegetation Management Thoughts on a Rapidly Evolving, New Approach to Utility Vegetation Management

By Robert Vanderhoof (PhD), Research and Consulting SME, ArborMetrics Solutions

Utility vegetation managers have traditionally faced the challenge of determining the optimum frequency of maintenance activities for the control of woody vegetation growing near electrical conductors and other infrastructure. Despite some efforts (Browning and Wiant 1997), this theoretical "optimum frequency" has yet to be identified in any meaningful way. The reasons for this are many, not the least of which is the stochastic nature of woody tree growth across a myriad of growing conditions, coupled with highly variable weather events and a changing climate. The result of this reality has been the use of cycle-based maintenance, which is often based on little empirical evidence.

What is condition-based maintenance (CBM), and how can it be applied to UVM? CBM is not a new concept and has been practiced by engineers engaged in asset management for decades (Nowlan and Heap 1978; Singe et al. 2025). Condition-based management of critical infrastructure assets was necessitated by the fact that the majority of assets do not fail as a function of time. Data compiled by NASA and the U.S. Navy showed that 86% of assets, be they highly-machined aircraft parts or simple hand tools, did not fail as a result of age (NASA 2008). Therefore, these assets are monitored on a regular inspection cycle and replaced when certain action thresholds are met.

The implication is that there is no "optimal cycle" for replacement of these assets. Utilities take a similar approach to their own engineered assets. Insulators are not replaced on a five-year cycle in most utilities. They are periodically inspected and replaced when they show signs of failure. Hardware, like transformers and reclosers, are not

replaced on cycle. Ideally, they are periodically inspected and replaced when they show signs of age or are operating outside of specifications.

The "Optimal" Cycle Myth

Increasingly, CBM is being applied to UVM with good reason. If NASA cannot predict the failure of highly engineered aircraft parts as a function of time, how can UVM managers be expected to predict based on a fixed time cycle when a single tree in thousands of miles of line is going to contact the electrical facilities? The answer from an operational perspective is that we cannot.

The reality for most engineered assets is that no optimal time-based cycle exists. If that is true for engineered assets, we must seriously question how it could not be true for vegetation growing under a whole host of constantly changing conditions. For example, under the prevailing cycle-based system, Hauer and Miller (2021) found that among 71 North American utilities surveyed, 50 utilities reported an average of 21% of their trees in contact with distribution lines and 25% overhanging lines at the time of work. They also found that while the desired cycle length averaged 3.8 years, the realized cycle length was actually 4.5 years. Data collected by CNUC in 2020 found that among six major North American utilities metrics, like cost per tree, cost per mile, and workhours per tree, bore no relationship to the number of months since a particular circuit was last worked.

Henry Ford, founder of the Ford Motor Company, said it best when he stated, "If you always do what you've always done, you'll always get what you've always got." Continuing to rely on a cycle-based approach when there is little empirical basis for such actions is likely not the way forward.

A New Data-Driven Approach

As utility vegetation managers, we can take a page from the asset management playbook and rely more on continuous assessment and monitoring of vegetation conditions as opposed to fixed maintenance intervals. Why should we treat an out-of-spec vegetation condition differently than an out-of-spec insulator when the resultant consequences are similar?

Condition-based utility vegetation management (CBUVM) represents a data-driven, strategic approach aimed at maintaining the safety and reliability of utility services by managing the vegetation around utility infrastructure based on the actual condition and risk posed by that vegetation. In other words, while it may not be practical to predict based solely on time, vegetation growth along hundreds of miles



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OPINION EDITORIAL

of utility corridors traversing many habitats and ecotypes, it may be possible to approach the problem like we manage our engineered assets—monitor actual vegetation conditions more frequently, and rather than rely on time-based cycles to dictate our mitigation efforts, prune or remove the vegetation that is presenting the most risk at that time.

New technologies like drones, LiDAR, satellite imagery, and workflow management systems carry the potential to facilitate the more data-driven approach of CBUVM by reducing the cost of inspections. Being able to inspect more frequently and identify up-to-date vegetation conditions holds the promise of targeting mitigation efforts more strategically, thereby increasing reliability, reducing risk, and making more efficient use of personnel resources. Moreover, more up-to-date information on the utility forest can facilitate adaptive management and allow adjusting management practices based on changing environmental conditions, such as periods of drought, growth-rate fluctuations, and a changing climate.

These new remote sensing technologies also provide the type of information needed for a more holistic view of the utility forest—forward-looking metrics like site-specific species growth rates, vegetation encroachment patterns, and tree-related outage patterns. Managers should be empowered to visualize the utility forest as an asset to be managed rather than a pest to be controlled.

Understanding CBUVM also means understanding what it is not. Those unfamiliar with the approach claim it can devolve into reactive hotspotting. While not unjustified, this mischaracterization is born more out of fear of UVM chronic underfunding than any particular characteristic of CBUVM. The hallmark of an underfunded UVM program is reactive hotspotting. Chronic underfunding of any UVM program, regardless of the management system employed, will not only see increased reactive hotspot work but also result in increased storm response work, customer service requests, outages, fire risk, public outcry, and, ultimately, reputational damage.

CBUVM relies on comprehensive assessments, long-term planning, and data and analytics to cost-effectively monitor the health and growth patterns of vegetation in the utility forests across many distinct ecosystems and ecotones, involving many ecotypes. This knowledge of the utility forest facilitates identifying and targeting vegetation management activities to those areas which pose the most risk to the safety and reliability of the utility system before the risk is realized. The data-driven, strategic approach to UVM that CBUVM employs could be a partial remedy for the effects of chronic UVM underfunding by targeting limited resources to those areas that will mitigate the most risk.

CBUVM should not be viewed as a cost-cutting measure but as a competitive advantage. The old saying among UVM practitioners that “You can’t save money on vegetation management by saving money on vegetation management” is truer now than it has ever been. The U.S. Department of Energy estimates that outages currently cost \$150 billion

annually. North American utilities currently spend over \$8 billion dollars annually on UVM, and market analysis shows that UVM costs have been rising at a rate of 7% annually (Harris Williams 2022). Decarbonizing the United States electrical grid is estimated to cost between \$330–740 billion dollars (Denholm et al. 2022). Much of that investment will go to UVM providers to hire, plan, manage, and execute UVM work. Those who can exploit and utilize evolving technology effectively to deliver safety and reliability at a competitive price will have an existential advantage over those who cannot.

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About the Author



Robert Vanderhoof

Robert E. Vanderhoof earned his PhD from the College of Forest Resources at Mississippi State University in 1995. A veteran natural resource manager in wildlife and range management, Vanderhoof spent fifteen years as a Utility Vegetation Supervisor for PacifiCorp. Robert currently serves as Research and Consulting SME for ArborMetrics, President of Tall Tree Learning LLC, and teaches urban and community forestry at University of Wisconsin-Stevens Point. He also sits on the UAA Board of Directors, and heads up the Condition-Based Vegetation Management BMP working group. 🌿



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