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2021–2022 OFFICERS

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CONTENTS

In the May.Jun 2022 issue of the *Newsline*, a photo was misplaced on the Davey ad on page 43. We apologize for this error.

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

Artificial Intelligence (AI)
Best Management Practices (BMPs)
Beyond Visual Line of Sight (BVLOS)
General Foreperson (GF)
Geographic Information Systems (GIS)
Internet of Things (IoT)
Integrated Vegetation Management (IVM)

Light Detection and Ranging (LiDAR)
Low-Volume Foliar (LVF)
Machine Learning (ML)
Multifactor Authentication (MFA)
Return-on-Investment (ROI)
Rights-of-Way (ROW)
Subject Matter Expert (SME)

Tree Care Industry Association (TCIA)
Tree Risk Assessment Qualification (TRAQ)
Unmanned Aerial Vehicles (UAV)
Utility Arborist Research Fund (UARF)
Utility Vegetation Management (UVM)
Vegetation Management (VM)
Voice over Internet Protocol (VoIP)

Geoff Kempter

I f you are older than 30, you remember when phones were wired to the wall and could do just one thing. Today, the phone I slip into my breast pocket is far more powerful than the computers used to guide the Apollo missions to the moon. More than just a telephone, it can communicate across the globe while it simultaneously photographs and identifies a tree, transmits my location to my wife, monitors news headlines, counts my steps, and so much more. My car now knows where it is and warns me when I make a mistake. These and many other technological advances have affected every aspect of our lives.

But there are moments that give me pause. A casual click on a website often results in a stream of advertisements from companies trying to capitalize on my interests. Cameras watch us wherever we go; some recognize our faces. Our devices provide great convenience, but they also track and report our every move.

Technology has reduced the paperwork necessary to run a company. No longer are timesheets recorded in triplicate with copies kept in an accordion folder in the supervisor's truck. Data from field operations is entered and uploaded, negating the need to mail physical forms. Records are stored in the cloud. Emails have replaced memos and letters. Bills and payments are electronic.

All of this is made possible by a vast network of physical and virtual connections: fiber-optic cables, nodes, satellite links, Bluetooth and Wi-Fi, which is all powered by software and all vulnerable to attacks.

In May of 2021, Colonial Pipeline—a supplier of gasoline and jet fuel to the eastern U.S.—was attacked with ransomware resulting in shortages and panic buying. With their financial operations severely hampered, the company agreed to pay a $4.3 million ransom, some of which was later recovered.

> " **What these technologies cannot do—at least not yet—is replace the eyes and judgment of the arborist.** "

©ISTOCK/PETMAL

The vulnerability demonstrated by this attack is why cybersecurity has become a paramount concern for critical service providers like electric utilities and their suppliers, and why so many companies have taken extensive steps to harden their defenses, educate employees, and create awareness of the threat from cybercriminals.

On the operations side, various remote sensing technologies have been deployed to monitor and measure vegetation near power lines. LiDAR and satellite imagery can identify areas where vegetation is encroaching. Computer models forecast tree growth rates and storm vulnerability. Some providers promise that applying these technologies will reduce the cost of VM. More realistically, this information can be used to improve the effectiveness of VM by focusing efforts on areas that pose the greatest risk.

What these technologies cannot do—at least not yet—is replace the eyes and judgment of the arborist on the ground, in the tree, flying the bucket, assessing the risk, talking to customers, and making decisions about which trees and branches to remove. This is professional expertise that can only be acquired through training and experience.

Technological innovations will continue to affect how utility arborists do their jobs. The challenge is to ensure that the technology is secure and leveraged to focus the effort where it is needed most: on the trees and branches that pose the greatest risk to utility facilities. Considering the number of trees in proximity to power lines across North America, there will be no shortage of work for the foreseeable future. ⚘

VEGETATION MANAGEMENT
AND
ASSET MANAGEMENT
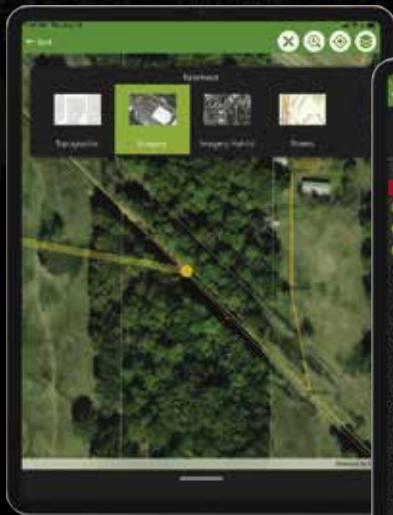
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Executive Director Message

Dennis Fallon

"The reality is that we work around critical infrastructure and information that needs to be protected."

Technology has made our lives easier. Remote connectivity has (and is) advancing quickly in the UVM space. Being able to see aerial images from the field to identify access points while patrolling after a storm makes the job easier when working in new areas. Being able to dispatch work from the field to teams—without having to return to a centralized location to share paperwork, or call into a staffed call center where others relay the work details—saves an incredible amount of valuable response time, particularly during storm-restoration situations.

Utilizing remote communications, work planning, and work execution monitoring technology in the UVM industry seems to move slower than in others. For example, ordering a ride, knowing where that ride is, who is driving the vehicle, what type of vehicle it is, and paying in advance are common occurrences. Knowing when a package was delivered or receiving a notification on your smartphone that someone rang your doorbell are just a few of the technological advances that have become second nature to us. It can feel easier to do these things than to try sharing information at the workplace. Sometimes it can feel like it *should* be easier to share information at work with the folks who need the information.

In March of 2007, engineers gathered at a national laboratory in Idaho to test a theory that malicious computer code could be used to physically damage equipment attached to the power grid. With about 140 kilobytes (KB) of data, protective relays were reprogrammed to operate when they shouldn't have during a test known as the "Aurora Generator Test." A 27-ton,

2.25 MW generator came online out of phase several times until the generator began to smoke and internal damage had occurred. According to an article in *Wired*, 140 KB is smaller than the average GIF shared on Twitter, and this test demonstrated that it does not take much malicious code to cause significant damage. This helps explain why our IT departments are so forward about limiting risk by minimizing exposure to risk through strong firewalls and emphasizing cyber hygiene.

While the Aurora test was conducted in a controlled setting, there are real-world examples of malicious code being used in the wild to impact the energy sector, and it does not appear that cyber threats will go away anytime soon. Work planning and management systems often need to transfer sensitive information in, out, and back again through firewalls designed to keep sensitive information in and malicious information out. These systems do this work without human intervention and need complex programming to allow valid data to move about while stopping malicious data.

Beyond complex programming, when using the systems, we need to be vigilant about cyber hygiene. Multifactor authentication, strong passwords, not sharing email addresses or passwords, and logging off/on to access systems are all examples of practices everyone involved with UVM should know and practice often. The reality is that we work around critical infrastructure and information that needs to be protected.

In a March 2022, the FBI released a film on YouTube titled, "Made in Beijing: The Plan for Global Market Domination." It outlines several accounts of intellectual property theft, forced technology transfers, and industrial espionage. In the film, a few of the victim accounts come from companies that have supported the UAA and its membership over the years and some come from the energy sector. The stakes are significantly higher than many folks want to believe and go beyond disrupting or inconveniencing our daily lives. The FBI film outlines 15 areas of interest for bad actors. A few of these areas should sound familiar: environmental governance, satellite broadband mobile communications, clean coal, seed-industry innovation, and AI. These are areas that may overlap with UVM technologies.

While our work may seem routine and simplistic, the access many of us carry into the systems of companies we work for, with, or alongside may be of external value beyond what we might think. Intellectual property, trade secrets, research, and critical systems need to be protected. Think about it as digital safety and take your responsibility to mange it as seriously as managing safety during storm restoration efforts.

Stay informed on potential threats, learn rock-solid cyber hygiene, and use technology responsibly. Our work innovations and the access they come with is often more complex than one may think. ⚘

ISA
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EARLY BIRD
REGISTRATION IS OPEN!

ISA is excited to return to in-person events in 2022 with the ISA Annual International Conference being hosted in Malmö, Sweden 12-14 September.

The event offers a forum for participants to learn and network with others in the arboricultural profession. Experience a lineup of keynote speakers and educational breakout sessions led by industry leaders from around the globe, sharing their thoughts and views about research, practice, and technology. All sessions presented in English.

The conference will be held at Clarion Hotel & Congress Malmö Live. The venue is in the very heart of Malmö, five minutes' walk from the central station and with plenty of restaurants, bars and shopping nearby!

The event is hosted by ISA in partnership with the Swedish ISA Chapter and their Scandinavian colleagues in Denmark and Norway.

Registration is limited to the first 1,000 attendees. Register today to enjoy early bird pricing!

isa-arbor.com/conference

PROTECTING YOUR ORGANIZATION FROM TODAY'S
INCREASING
CYBER RISKS

By Mark Shipp, Senior Executive Vice President
and Jennifer Cohen, Cyber and Governance Director, HUB International

No business is immune to cyber risks, and those in the arbor care and utility line clearance industry are no exception. Today, all businesses need to consider their cyber risk and take steps to protect their networks—not only to mitigate potential online exposures, but to secure adequate cyber insurance from under-writers, who have made it harder and more expensive to acquire coverage.

In 2021, the average cost of a data breach was $4.42 million, and in Q4 alone, the average ransomware demand was upwards of $320,000. Globally, ransom-ware claims rose more than 1,000% from 2020 and 2021. There was also a 65% spike in never-before-seen malware and a 167% jump in encrypted malware threats in the same year. In the U.S., the FBI recorded more than 800,000 com-plaints of cyberattacks in 2021, which is more than 2,300 new cyberattacks every single day. Year after year, California is the number-one targeted state. In 2021, businesses in the Golden State suffered cyber losses of more than $1.2 billion.

Hackers don't care if your business is small or large—nearly half of all data breaches involve small businesses. According to ransomware recovery firm Coveware, more than 82% of attacks occurred on businesses with fewer than 1,000 employees (44% had less than 100 employees) in the fourth quarter of 2021. Bad actors look for quick paydays and target the low-hanging fruit. Small to mid-sized companies tend to fit this profile as they typically have stretched IT budgets, outdated systems, insufficient IT security controls, or a lack of employee awareness training. This makes smaller businesses prime targets for network attacks.

Cybercriminals often infiltrate vendors to attack the network of a larger entity. These bad actors identify a vendor's network weaknesses, such as the network of a tree care company, and use it to penetrate the networks of their clients, including municipalities and utilities that work with the vendor.

In 2020, when SolarWinds sent its customers a software update, hackers installed malware code that was unknowingly installed on customers' systems. This gave cyber attackers unfettered access to several U.S. government agencies and Fortune 500 companies. Target suffered a similar data breach in 2013 caused by an HVAC contractor. The contractor provided an entry point into Target's systems, enabling cybercriminals to install credit-card-stealing software on the retailer's point-of-sale devices, which resulted in the compromise of 40,000,000 payment card accounts.

Due to heightened claims, rates are rising in the cyber insurance market. There is a higher demand for coverage, yet capacity is dwindling as insurers are rapidly adjusting their appetites and withdrawing from poorly performing sectors. Cyber insurance has become more challenging than ever to obtain, particularly as you move up the size spectrum. The conversation has shifted from what controls clients can adopt to obtain a better premium price to what they can implement to become an insurable risk in the first place. It is difficult for businesses to find adequate cyber coverage and impossible for those who have not implemented proper controls. While shoring up the security of your network and training employees may seem arduous, it is critical to obtain cyber insurance and protect your business. The following lists the minimum requirements for businesses:

· Multifactor authentication (MFA)
· Email filtering
· Data backups
· End-point protection solutions
· End-of-life system
· Patching programs
· Training

SCAN THE QR CODE FOR MORE INFORMATION FROM THE HUB ARBOR INSURANCE GROUP.

For larger companies, insurers want to see additional security controls, including:

· "Zero-Trust" architectures that restrict administration privileges to a select few
· Privileged access management to limit, control, and monitor admin privileges
· Intrusion detection systems (IDS) to identify network encroachment or violations of security policies
· Network segmentation to divide networks into subnets with traffic controls or firewalls between them to minimize the impact of a cyber event
· Annual penetration testing and vulnerability scans to evaluate the security of IT infrastructure by safely trying to exploit vulnerabilities
· Security information and event management (SIEM) to collect security data from network devices, servers, and domain controllers to aggregate and analyze activity across the entire IT infrastructure

Repeatedly test the effectiveness of your systems and your employee training. Routinely check to ensure backups are working; disaster, continuity, and incident response plans are ready; and employees refresh their phishing and social engineering training.

AUTHOR BIOS

Shipp is the practice leader of the HUB Arbor Insurance Group and has more than 30 years of experience serving the tree care and VM industry.

Cohen is director of cyber and governance at HUB International and is one of the many expert resources available as part of the HUB Arbor Insurance Group programs. ⚘
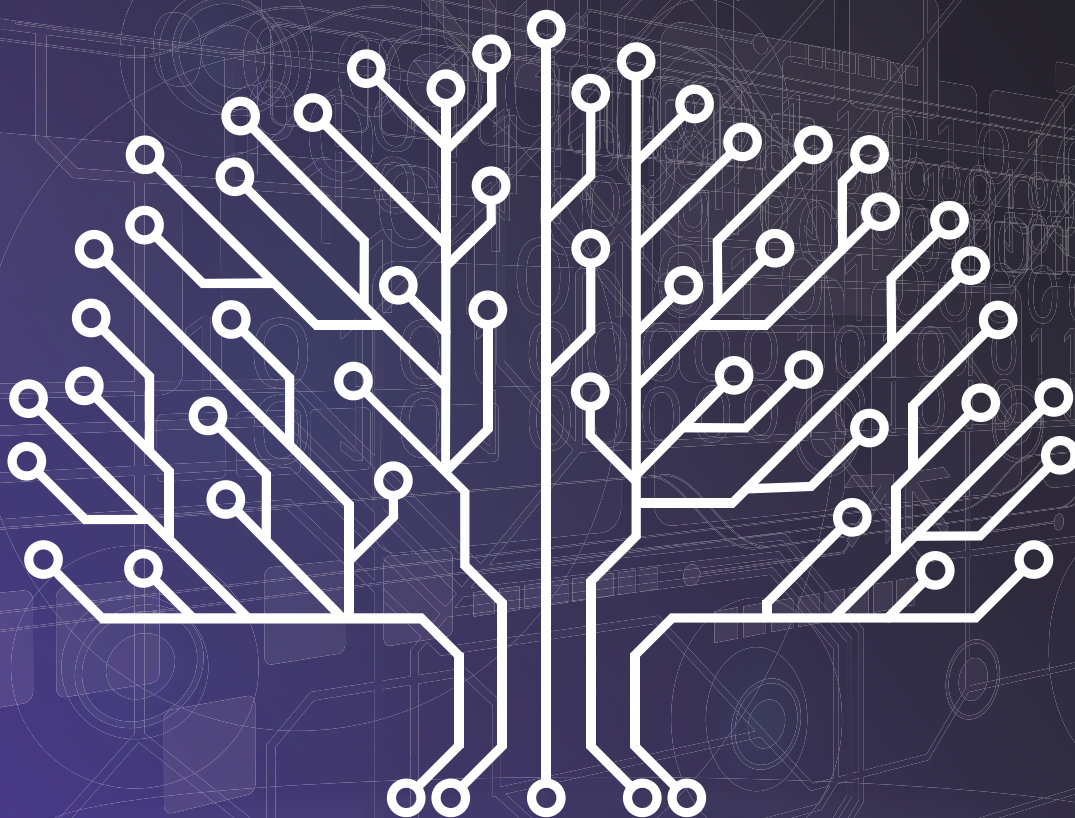
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Mark Shipp, CTSP, CIC

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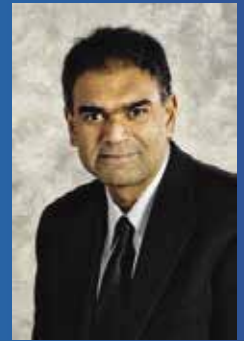(805) 618-3710 • (800) 566-6464
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SCIENCE MEETING PRACTICE

The UAA Research Committee continues in 2022 to conduct science reviews in four focal areas as defined by our strategic plan and research prioritization efforts. We have identified benefits of these reviews, which can better facilitate our UAA research mission. These four focal areas include (1) the creating linkages from science to practice, (2) influencing funding, (3) developing conference themes about UAA special issues, and (4) continuing to engage global considerations at a more aligned level with climate change and other emerging issues.

The following lists the three related goals in 2022:

1. We plan to continue evaluating published work in each of the four focal areas and interviewing author(s) where possible. The four categories were arboriculture, environmental, safety, and human/social. These categories were based on our research prioritization surveys, and threaded through each category will be economic ROI and furthering the use of technology.

2. We plant to launch the *Newsline Writers Group* (NWG). This group will have a continuing objective to summarize research for the *Newsline* and UAA publications (Greg Dahle and Anand Persad will serve as article editors).

3. We want to build an interactive graphic (honeycomb) as an outward-facing illustration and clearinghouse for our research objectives and deliverables.

Our aspirations, as we work collectively ahead, are to present and influence utility ROW research pathways and continue to connect industry questions with researchers and funding sources, including the UARF. We hope that our work benefits the industry and continues to align with emerging issues. We believe connected and engaged efforts on the UAA research front will help drive innovation, especially

By Anand Persad PhD, BCE; Director of Research, Science, and Innovation; ACRT

To: You

Subject: Secure Your ARBORMETRICS Key

From: Potential **spammer** (This is not spam. Honest. It's perfectly OK to open this email.)

Signature: Signature #1

Dear Reader,
We don't really have a key for you, but we *do have* advice on what to do when you receive an email with "red flags" like this:

1. Look at the sender's email address. Addresses can be spoofed to **look like someone you know**, but they might have a different country's domain.
2. Look at the Subject line. Does it create a sense of urgency? Does it have **one word in it that appears to be a response** like "Re: Document"?
3. Look at the body of the message. If the sender is recognized, be sure that the email **follows their normal emailing patterns**. Does it have a salutation? Is it directed to you specifically?
4. Look at the content of the body. Is it just **asking you to open a file or go to a website** link? Does it have "syntax" gone wrong?
5. Look at the direction of the message. Does it **ask you to open an attached file**? Does it create immediate urgency? With viruses, the body copy's purpose is to entice you to open the attachment—and a common tactic is fear.
6. Look at the attachment. Is it a zip file? Is it a PDF or .docx or .doc? How big is it? **If it's small**—between 1kb and 22kb—it could very well be a virus. And if the email has additional identifying marks as discussed above, there's a very good chance that it is.

BONUS TIP: When deleting these types of emails, use SHIFT DELETE (which will permanently delete the email)—and not just DELETE (which will only move it to your Deleted Items folder).

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REMOTE SENSING IN UVM TODAY

By Chris Kelly, CEO, Clearion

The UVM industry is experiencing a boom in technological innovation. One particularly exciting area centers on the remote sensing solutions working to solve the challenge of large-scale, cost-effective identification of tree risk to the electrical grid. These services offer utilities near real-time resets of their planning maps, springboarding managers to focus work on what is really important: speed.

Armed with a clearer line of sight to prioritize work, managers are able to optimize budgets and provide faster service while improving safety and reliability outcomes. These benefits are nothing short of transformative. The magnitude of success is pushing the industry forward on its slow, but seemingly, unavoidable path toward relying on remote sensing to identify and prioritize line clearing work as a de facto standard.

This article examines the various remote sensing options for UVM programs and the challenges and predictions for the future.

The Remote Sensing Process

Energy Source

Sensor (on a vehicle)

Target

Ground Station

Analysis and Processing

Image courtesy of Scandinavian Drone AB

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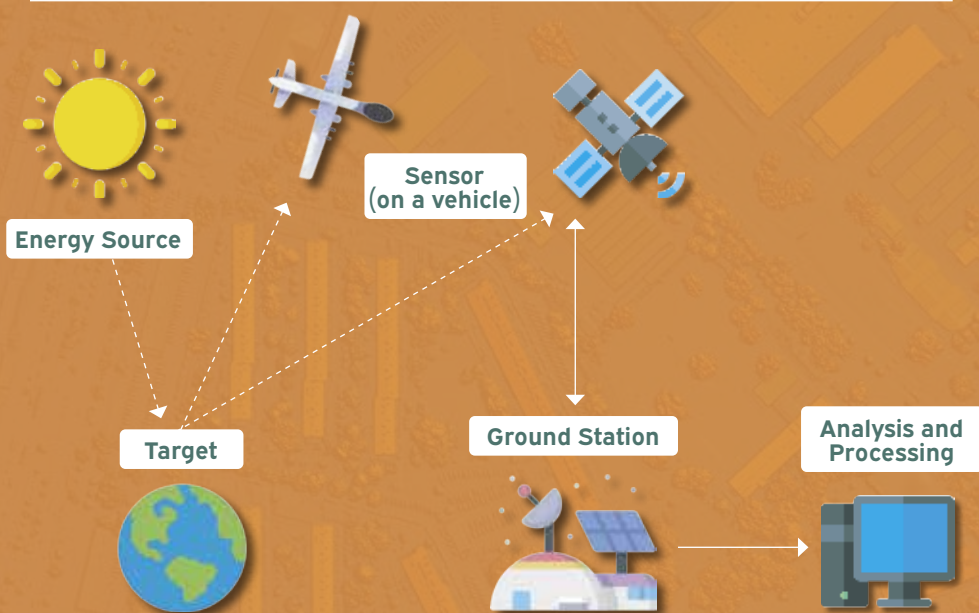
REMOTE SENSING OPTIONS FOR UTILITIES

There are several compelling ways to incorporate remote sensing into your VM strategy, and the range of technologies entering the market continues to expand, with satellite-based photography now competing with more established airborne photography, LiDAR systems, and UAVs.

These remote sensing technologies vary in their use cases and inherent costs and capabilities. Remote sensing also creates new data management challenges and requires powerful work management software systems to assist utilities in the prioritization and execution of work in the field. While these technologies are driving new approaches to the planning and completion of line clearing activities, data from remote sensing cannot replace certain processes like landowner communication and work authorization.

Finally, there are opportunities for utility vegetation managers to combine different remote sensing approaches, pointing to the likely emergence of new best practices that leverage LiDAR, aerial photography, UAVs, and satellite imagery in concert.

THE EVOLUTION AND SYSTEM IMPLICATIONS OF IMPLEMENTING REMOTE SENSING

The application of remote sensing technologies in UVM began in earnest in response to the first FAC-003 NERC regulation more than 15 years ago. The rules for electric transmission utilities that followed the 2003 blackout (and the steep cost of noncompliance in the form of fines and remediation mandates) created a booming industry of helicopter-based LiDAR specialists who could identify vegetation risks with considerable precision. These firms also delivered precise sag and sway conductor models. Fire risk from electric distribution lines drove innovations around the collection of LiDAR data from lower-cost fixed-wing aircraft. Both of these approaches are in active use today.

LiDAR uses lasers to build a precise 3D model of terrain, vegetation, and physical structures. Similar 3D models can also be derived from intelligent imagery systems that match pixels from various camera positions. As photo quality increased from more powerful camera systems and imagery processing capabilities improved, the cost of acquiring and analyzing data decreased significantly. Costs will further decline as commercial photography vendors repurpose aerial mapping products paid for by government agencies and the insurance industry. The more recent use of commercial satellite imagery to generate these 3D vegetation models further reduces costs and can be leveraged in areas that fall outside of these commercial coverage zones.

From the initial deployments of LiDAR in the VM industry, utilities were quickly drowning in an ocean of data. Point clouds and orthophoto mosaics are tremendously large datasets. In addition to these source vector and raster files, utilities need points and polygons that are derived from the 3D models. These derivative data products are the basis for work prioritization and for dispatching trimming and removal tasks to field workers. Grid operators often receive hundreds of thousands of tree crown polygon data records with conductor clearance attributes that they must track and manage through the entire process of prioritization, assignment, auditing, and reporting. Management systems that leverage paper or spreadsheets, or map-based software systems that are not field-enabled, are no longer sufficient in the age of remote sensing.

Additionally, data from remote sensing can require field-based workflows that enable utility arborists to access and augment data from laser and photogrammetry products. Some utilities will perform a field inspection to validate and authorize work locations identified by remote sensing systems. Where customer notification or landowner authorization is required by law or by utility policy, arborists require software to document and manage these work sites at the parcel level. Other innovative (and increasingly common) practices, like planting a new tree for each negotiated removal, demand integrated systems for data management and data sharing.

A remote sensing approach to work identification also increases the importance of integrated software to assist with the work execution phase. The intent of remote sensing

LiDAR created point clouds and orthophoto mosaics are turned into 3D models and polygons to form the basis for work prioritization and for dispatching trimming and removal tasks to field workers. Image courtesy of Clearion.

New!
Monarch CCAA Training Course

Pollinator Populations in Decline

Monarch populations have declined more than 80% in the past two decades, and despite a recent uptick in counted butterflies, the future of this royal butterfly is still uncertain[1] Rapid expansion of urban development, intensifying agriculture, and the accompanying habitat conversion have greatly reduced grassland/shrubland habitats across North America. Since many ROW will remain undeveloped, UVM is uniquely positioned to promote habitat and contribute positively to feeding and breeding resources for keystone wildlife species like the monarch butterfly *(Danaus plexippus)*.

Nationwide Monarch CCAA

In an unprecedented effort to protect the monarch butterfly, more than 40 organizations within the energy and transportation sectors developed a Candidate Conservation Agreement with Assurances (CCAA) to protect the monarch butterfly population through VM practices, such as brush removal, conservation-timed mowing, seeding or planting of native wildflowers, and pollinator-focused IVM.[2]

Want to Learn More?

Grow With Trees recently launched a new Monarch CCAA online training course for utility vegetation managers and field crews to learn how they can participate in this conservation effort. The Monarch CCAA course includes identification of monarchs and milkweed plants, understanding the monarch life cycle, high-level overview of the CCAA, and basic monitoring techniques. The course ends with a certification exam, which tests the knowledge and skills learned throughout the six modules.

The course is available now at *www.growwithtrees.com/course/ccaa* for $75 per person. UAA Members can receive $25 off with the coupon code **UAAMEMBER**.

For more information, visit *www.growwithtrees.com* or contact *branchout@growwithtrees.com*.

1. Wayne Thogmartin et al., "Monarch butterfly population decline in North America: identifying the threatening processes," *Royal Society Open Science*, 4, no. 9 (2017): 170760.
2. UIC Rights of Way as Habitat Working Group, "Monarch CCAA," The University of Illinois Chicago, accessed May 19, 2022, https://rightofway.erc.uic.edu/national-monarch-ccaa/.

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in UVM is to drive something like just-in-time tree trimming. Instead of a span-level clearing approach, data from remote sensing enables utilities to focus their budgets on the highest-risk vegetation across the entire system. This drives the need for GPS-enabled, map-based work management software that ensures the line clearing crews execute the right work at the right place and seamlessly passes that work completion information back to the utility for quality review and reporting.

WHERE IS REMOTE SENSING HEADED FOR UTILITIES?

As remote sensing continues to mature, it will likely become a cornerstone technology in the practice of UVM. Undoubtedly, innovation will continue and the costs and capabilities of various remote sensing technologies will keep improving, but it is unlikely that one vendor or one approach will dominate the industry.

LiDAR, while traditionally more expensive, can create a richer dataset by penetrating the top layer of vegetation and generating precise conductor models that have benefits outside of VM. UAVs can now carry LiDAR and photography systems, enabling utility companies to acquire data at dramatically lower costs relative to manned aircraft (as BVLOS rules loosen, the use cases for UAVs will further expand). Satellite-based imagery can be cost-effective but relies on clear skies—a potential deal breaker during post-storm damage assessment and in persistently cloudy areas of the world. Data from high-resolution imagery purchased by government agencies and insurance companies could prove to be the lowest cost option, but utilities will certainly have needs outside of these common coverage areas.

> **"As remote sensing continues to mature, it will likely become a cornerstone technology in the practice of UVM."**

The likely future of remote sensing in UVM is an ever-evolving strategy that combines all three of the major categories of acquisition options to optimize cost, accuracy, and availability. Without question, this trend will continue to drive the necessity of a powerful, secure, flexible software management system that enables utilities to prioritize, augment, dispatch, and report on work that is identified from 3D models.

Author Bio
Chris Kelly co-founded Clearion with Mano Sadeh in 2007; however, he had been working in utility field operations, geospatial technology, and solutions development since 1995. His roles have spanned from crew leader to business leader and include account management, sales, marketing, strategic partnerships, implementation, and product strategy. He has a bachelor's and a master's degree in International Affairs from Georgia Institute of Technology. ⚜

LEWIS TREE SERVICE WELCOMES
Chief Executive Officer Leslie Kass

Lewis has announced that Leslie Kass, a recognized leader in the energy industry, will succeed Tom Rogers as Chief Executive Officer. Rogers will lead through a transition period as he prepares to retire from the company at the year's end. Dennis Brown will continue to serve as the President and Chief Operating Officer of Lewis Tree Service, Inc.

"We are delighted to welcome Kass to Lewis," said Rogers. "She is uniquely qualified to lead this company through its next chapter of growth. We look forward to her leadership and are confident that her experience and perspective will fuel our company's continued success."

Kass brings more than 20 years of utility experience to Lewis, most recently as an executive vice president at TC Energy. During her career, she has managed multibillion-dollar capital portfolios and corporate-wide governance for engineering, research and development, safety, nuclear regulatory affairs, risk assessment, quality, compliance, security, and emergency response. Prior to her position at TC Energy, Kass held leadership positions at Babcock & Wilcox, Westinghouse Electric Company, Nuclear Energy Institute, Entergy, and Duke Energy. She is a graduate of Massachusetts Institute of Technology and holds an MBA from the Fuqua School of Business at Duke University.

"I am thrilled to be joining Lewis at this pivotal moment in the company's history," said Kass. "I was drawn to Lewis' culture of learning and empowerment, its reputation as a pioneer in New View of safety and human performance, and because Lewis is among the best in the industry in putting customers and employees first. This company truly checks the boxes on all the workplace elements that matter most to me. I intend to build on this success and expand upon our positive impact in the industry." ⚜

LEWIS

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**Litzy Estrada,
Grounds Person**

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Join Us in Celebrating Women's Equality Day

"I voted for the first time in 2020. It was important for me to vote, not just for my gender, but for my race as well. I am Mexican-American and a lot of Hispanics don't get involved in politics and exercising their right to vote. I wanted to show others that when you vote, you are part of something good, you are part of something bigger than yourself and your vote matters."

Learn more about Litzy's views on DEI at Lewis and her experience voting for the first time by scanning the QR Code or visting https://qr.page/g/yxrfYHTKUT.

At Lewis, our commitment to Diversity, Equity, and Inclusion (DEI) is key to the success of our business.

REVOLUTIONIZING VEGETATION MANAGEMENT WITH
Cyclomedia and GSI

By Anne Beard, Director of Vegetation Management, GeoSpatial Innovations, Inc.

GeoSpatial Innovations, Inc. (GSI)—a private, woman-owned company providing software and services to natural gas and electric companies across North America—recently partnered with Cyclomedia to host a joint webinar to explain how GSI's Forester solutions can be combined with Cyclomedia's LiDAR imagery to spearhead the next generation of UVM.

By combining GSI's Forester with Cyclomedia's LiDAR imagery, users can create an immersive 3D digital twin model of network and site conditions with unmatched accuracy, providing the user with precise, on-demand data while reducing the cost and amount of potential risk within a utility company's UVM processes.

The environment is changing every day, especially for utility companies. With the proliferation of storms, floods, and other natural disasters, the VM industry is becoming more aware of how essential electricity and the internet are for everyday life. One of the major problems for utilities is that within the infrastructure itself, overgrown vegetation oftentimes interferes with the facilities, causing interruptions in electric service to customers. Governing bodies, compliance officers, customers, and stakeholders are expecting utility companies to positively change the risk profile of their VM systems. GSI and Cyclomedia have partnered together to demonstrate to these regulators that a faster, more efficient VM system exists.

ADDRESSING KEY UVM CHALLENGES

One of the biggest challenges UVM professionals face is the high cost of performing effective VM. Oftentimes, performing UVM can be the most expensive budget line item for utility companies. Gaining access to timely data is a challenge, and we know that the accuracy of this data is crucial in order to make the best decisions and avoid costly mistakes down the road.

As the environment continues to change, a utility company's ability to remain efficient and

Image courtesy of GeoSpatial Innovations, Inc.

> GSI's Forester is a VM planning solution can be configured for a variety of contract types, including time and material, unit-based, and lump-sum contracts. Cyclomedia captures and processes approximately 375,000 miles of 360° panoramic street-level images and LiDAR data worldwide.

agile—now and in the future—will be determined by how the utility deals with the increased frequencies of natural disasters. The traditional cycle-based vegetation method may no longer be the only acceptable solution.

Through analytics, machine learning, and a comprehensive workflow management software solution, GSI and Cyclomedia's joint UVM software solution aims to solve these challenges by proposing automated workflows that utilize desktop patrols and risk-based maintenance as opposed to the traditional cyclical program. By identifying the areas that have the greatest potential to impact the infrastructure in the future, users can demonstrate the wise use of limited resources while increasing reliability, improving safety, and affecting intangibles that are difficult to quantify, such as reduced revenue, reputational risk, and regulatory intrusion.

THE VALUE OF AN INTEGRATED UVM SOLUTION

These two companies are coming together to combine the best of both worlds of their respective products. The LiDAR data collected by Cyclomedia can be entered into GSI's Forester workflow engine to transform the data into actionable work. Cyclomedia's vehicles capture dense LiDAR data and 100 megapixel (MP) imagery with incomparable data quality and accuracy, then combine the two to form a GeoCyclorama. These GeoCycloramas are seamless, 360° spherical panoramic images. Cyclomedia can then apply machine learning and AI to these images to create an entirely digital model that extracts network

asset and condition information from the imagery with advanced analytics.

ACTIONABLE INTELLIGENCE

These extremely accurate images can provide utilities with the precise information to know where vegetation is at greatest risk of causing an interruption, how much needs to be pruned, and how often it needs to be worked. GSI Foresters can then convert this data into actionable work packets for utility companies, resulting in a reduction or the elimination of manual field work planning and data collection that saves time and money. This adds efficiencies and automation to utility workflows while improving the quality of the data collected. Collectively, this process is able to mitigate risks, improve the quality and efficiency of workflows, and accelerate project completion time for a variety of utility companies.

SUMMARY

At GSI, the focus is on improving workflow. Combining the strengths of Cyclomedia's innovative LiDAR data, imagery, and analytics with GSI Forester solutions makes it possible to pioneer the next generation of VM by creating immersive 3D digital models of network and site conditions with unmatched accuracy. This, in turn, provides the user with precise, on-demand data while simultaneously reducing the cost and amount of potential risk within a utility company's current UVM processes. ⚘

Saving Energy Through

TREES AND TECHNOLOGY

*By Kristen Bousquet , Program Development Manager–
Community Canopy and Energy-Saving Trees, Arbor Day
Foundation*

Trees impact the world. Plain and simple.

They are some of the oldest living organisms on this planet, and they work hard to care for the earth. Trees purify the air and water and provide a home to wildlife everywhere they exist. Even with the changing climate, trees are a constant. Sometimes they are a natural constant, but other times human intervention and action ensure their continuous presence on this planet.

People Need Trees and Trees Need People

People also need innovation, and technology has been one of the main avenues of innovation. Technology has completely changed how almost everyone interacts with the world around them. It constantly seeks to improve and maximize any process humans have, from daily communication to self-driving cars, VM, and even planting trees. Technology has even helped to bridge the gap between utilities and trees.

Utility companies and energy service providers are often viewed in opposition to urban trees. However, the Arbor Day Foundation does not believe this to be the case. The Arbor Day Foundation is the world's largest membership nonprofit organization dedicated to planting trees. There are even opportunities for energy companies to team up with local planting organizations to maximize the positive impact it can have on the community.

The Arbor Day Foundation believes in planting trees, but more strongly, we believe in the right tree planted in the right place. When tree planting is enhanced by technology, it saves even more energy, builds stronger relationships, and helps reach sustainability goals.

Saving Energy Through Trees

Planting a tree near a house can seem like an innocuous choice of landscaping; however, more thought should be given on precisely where a tree would yield the most benefits for a homeowner. When a tree is planted in the most optimized location, it can reduce energy usage by anywhere from 7–20%, and two or more trees can even reduce usage up to 30%. This kind of impact helps level out a utility's demand curve and reduce extreme peak usage, thereby positively affecting a utility's bottom line.

Seeing the problem and wanting to provide a solution, the Arbor Day Foundation worked with the U.S. Forest Service and the Davey Institute to build a research-based online mapping tool to help utility customers find the best location on their properties for their trees. This mapping tool is a part of the Energy-Saving Trees and Community Canopy program which are both celebrating 10 years of positive environmental impact.

Energy-Saving Trees is a program that helps utility providers distribute free trees to their customers. Community Canopy is a program that allows companies, cities, states, and nonprofit organizations to build out and maintain its own tree distribution

HUB Leaders Provide a
SAFETY NET
for Tree Care Workers

Mark Shipp: Reducing Risk Via Exclusive Programs

Mark Shipp and his team at the HUB Arbor Insurance Group are energetic about their alignment with the UAA to provide our perspective on the topic of safety.

Shipp has spent nearly 30 years dedicated exclusively to serving the tree care and VM industry. Shipp's chief objective with the 200+ tree care companies he works with nationally is to instill a safety culture within the organizations to help them manage their risk more effectively. This strategy has made a significant impact on those organizations, reducing their total cost of risk in the long run.

Shipp was recently invited onto the UAA Safety Committee—made possible by his thought leadership, expertise, and representation in the industry. He has been a "market maker" and built several exclusive programs for HUB Arbor Insurance Group clients, which include proprietary offerings for general liability, auto, excess liability, and contractors' equipment.

Rather than solely relying on the existing insurance companies that service the tree care and VM industries, the HUB Arbor Insurance Group has created an ecosystem of exclusive carriers and services to insulate our clients with superior coverage, competitive pricing, and industry-leading risk management practices. This is made possible by aligning with the insureds and our carrier partners to improve risk year-over-year.

In addition, Shipp was successful in launching the first ever homogenous group captive exclusive for the top tree care companies across the U.S. We are proud to introduce the Ascend Group Captive to the community of like-minded tree company owners who have a commitment to safety and want to be rewarded for that commitment.

In a traditional insurance model, organizations with few claims wind up subsidizing those with many claims. With a captive, however, premiums are based on the risk associated with the participating organizations—not the entire industry. So, when a select group of safety-conscious tree care experts form a captive, they pay significantly less for insurance coverage but still have appropriate protection against risk.

Furthermore, the Ascend Captive provides unique resources directed toward helping tree care and VM companies improve their businesses beyond the insurance.

Josh Caudill: Raising the Culture of Safety

Integral to our team is Josh Caudill, President of Safety Leadership Innovators and Head of Risk Control for the Ascend Captive. Caudill is a tenured climber from the industry and works alongside our team and senior management to build stronger safety cultures and manage risk more effectively.

Fostering an effective and transparent safety program and culture has become an increasingly popular topic amongst executive management teams and safety professionals. The HUB Arbor Insurance Group team has helped countless groups along their safety journey and leadership excellence by providing technical experts and substantial support for both field and office operations. By providing the necessary resources to fully support each individual client, the HUB Arbor Insurance Group has become the preeminent leader in equipping their partners with the valuable tools necessary to thrive in the arboriculture industry.

Caudill believes that the true path to safety and operational excellence is through the diligent development of each employee. Fostering a culture where each voice matters and everyone can visualize success through a myriad of career paths is at the core of what Safety Leadership Innovators provide the HUB Arbor Insurance Group team. Understanding that each individual has their own idea for success and blending those ideas with the vision of the company is something that creates a level of trust that is unmatched in the industry. By supporting arboricultural leaders to embrace the correlation of efficiency, morale, and safety, our team is helping to transform the tree care industry into a new methodology for engagement.

For those who are facing the challenges of hiring, training, and retaining employees, the HUB Arbor Insurance Group team has resources as well as the drive and determination to help lead our industry into the future. ⚘

programs. Both programs were founded to provide people with free or discounted trees, and the education to ensure the right tree is planted in the right place. The technology aims to help program members build and maintain tree distribution programs with relative ease. These programs offer an excellent avenue for service providers and any other professional entity wanting to make a positive, sustainable, climate-changing difference in its community.

Strengthening Relationships

Even though utility providers and trees are not thought of as existing peacefully alongside one another, many different energy service providers can use programs like Energy-Saving Trees to strengthen the bond with the community where it operates. By providing trees to the community, utility companies have a chance to elevate their brand by showing their investment in the well-being of the environment.

There are even opportunities for energy companies to team up with local planting organizations to maximize the positive impact it can have on the community. For example, in South Carolina, Duke Energy partnered with a local tree-planting nonprofit called TreesUpstate to hold tree distribution events. TreesUpstate helps distribute trees gained through the Energy-Saving Trees program, and can scale up its tree-planting efforts due to the support of Duke Energy.

TreesUpstate works diligently to educate and engage the community by distributing trees. Energy service providers like Duke Energy show that it realizes the energy-savings benefits of trees and want to improve the overall experience of trees and utilities living side-by-side. In addition, by providing access to specialized tree-planting software through Energy-Saving Trees, energy service providers build a sense of trust with the community.

> There are even opportunities for energy companies to team up with local planting organizations to maximize the positive impact it can have on the community.

Utilizing Tree Technology

Giving away trees has always been a great way to engage the community and make a positive environmental impact. However, as with everything else, technology has found a way to further improve upon this act. With the program technology powered by i-Tree, there are even better ways to engage and educate the public on the trees they receive and where to plant them. For example, TreesUpstate is sponsored by Duke Energy to help drive engagement and success of tree planting events by using the program technology.

"The software helps us quantify the benefits of trees by giving us the 20-year iTree cumulative benefits forecasts," said Joelle Teachey, the executive director at TreesUpstate. "The ADF software helps provide the right tree in the right place to avoid utility conflicts and is a really powerful tool to help people plant the tree in the best spot for energy conservation and savings."

The software helps homeowners determine where a tree should be planted on the property to receive the most benefits over 20 years. After the user inputs their address and outlines the shape of their home, they can go through a catalog of trees offered by the partner and place the tree in different locations to see which area would yield the most benefits. This technology

People need trees.

Trees need people.

empowers the homeowner to feel confident in planting a tree that will be there for several decades.

In addition to all the benefits users have from this technology, partners who use the i-Tree technology as part of the Energy-Saving Trees or Community Canopy program can see the combined impact of the trees that have been distributed to their audiences. The partner receives specific data of gallons of stormwater intercepted, pounds of air pollutants absorbed, and pounds of carbon sequestered. Having advanced enough technology allows Arbor Day Foundation partners to quantify the impact of distributing free trees.

Reaching Sustainability Goals

There has been a noticeable shift towards sustainability and how every company, not just in the energy sector, can reduce their carbon output and find additional clean energy sources. More and more energy providers are directing visitors to sections of their website dedicated to sustainability goals or detailing a climate plan for the provider. Of course, trees will always be a part of the solution when discussing sustainability or climate.

Through the Energy-Saving Trees and Community Canopy software, partners are able to track just how well it can reach sustainability goals. For example, the Salt River Project in Arizona uses the Energy-Saving Trees program data to keep

> Tree planting software can now help determine where exactly a tree should be planted to have the most benefits.

track of the exact amount of pounds of air cleaned and carbon sequestered. Then, it can find ways to adjust this goal to ensure it's on the right track, or even surpass it entirely.

"Salt River Project is in its fifth year of working with the Arbor Day Foundation, and thus far, we have planted nearly 3,000 trees," said Lori R. Jones, the distribution maintenance manager at the Salt River Project. "Year after year, we are able to report the sustainable impact we are achieving with our Energy-Saving Trees solution."

Getting Started

Yes, a shovel in the ground can always plant a tree. But look at how far trees and technology have come. Tree-planting software can now help determine where exactly a tree should be planted to have the most benefits.

Arbor Day Foundation programs like Energy-Saving Trees, Community Canopy, and Tree Line USA are prime examples of how energy service providers and utility companies can use tree technology to save energy, build stronger relationships, and reach sustainability goals. Remember, planting trees is great, but planting the right tree in the right place is even better.

This article was previously published in T&D World on January 5, 2022. www.tdworld.com/vegetation-management/article/21213263/saving-energy-through-trees technology. 🌲

What Is Cybersecurity and Why Is It So Crucial?

As cybercriminals continue to creatively scheme to gain access to utilities through subcontractors, we must focus as an industry on cybersecurity and understand how to protect both our organizations and the customers we serve.

ACRT Services IT Infrastructure Manager Andrew Lammert stresses the importance of mitigating phishing activity—whether it's through software solutions or training regimens on how to detect potential phishing attacks. Our employees are on the front line and are likely to receive phishing attempts often.

In today's world, Lammert anticipates an increased frequency of cyberattacks, including phishing attempts, across the board from multiple entities—regardless of affiliation.

Phishing attacks can take many forms, but they all share a common goal: getting you to share sensitive information such as login credentials, credit card information, or bank account details. When it comes to protecting organizations' networks and computers, employees are the first line of defense.

Cybersecurity is a threat that impacts us all, both professionally and personally. Your IT team may lead the charge by offering training and additional resources to keep employees educated and provide tools to help detect and report suspected unwanted intruders, but it is ultimately up to each individual to remain vigilant. Employees, organizations, and our industries are in this together.

Lammert also stresses the importance of organizations tightening up their infrastructure security by using multifactor authentication, adhering to readily accepted security practices, and maintaining compliance.

"Security needs to be among the highest of priorities for every organization today," shared Lammert. "When utilities partner with a company that prioritizes cybersecurity, their organization is better protected, their data is better protected, and so are their customers."

Andrew Lammert

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Companies that go above and beyond to support our mission will be recognized annually through our Partners in Excellence (PinE) Program.

Membership, sponsorship, advertising, active committee volunteerism, and many other means have been quantified and assigned a value, all adding up to equal a PinE Score.

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

We want to take this time to congratulate and thank our 2021 PinE Award Recipients.

Your continued support of the Utility Arborist Association is greatly appreciated on many levels.

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Password Protecting Apps

Reviews and Know-How

By Lindsay Denney, Editor, Pique Publishing, Inc.

Predictable password patterns and keywords, such as birthdays, anniversaries, and pet names, allow cyber criminals easier access to your bank accounts, medical records, and other valuable information. A secure, reliable solution can safeguard you, your family, and your organization from unnecessary headaches and worry. Ditch the sticky notes, Excel spreadsheets, and duplicate passwords—all big red flags from a security standpoint—and utilize a digital password manager. These apps are encrypted digital vaults that can safeguard your logins and other sensitive information with one secure password—or a second authentication factor, in some cases. That's right—*one* password to remember.

Many password manager apps offer differing features, but most trustworthy ones have a strong password generator to help create complicated passwords and PIN numbers for each login you have. But how do you choose a password manager? With so many choices—Bitwarden, LastPass, 1Password, Dashlane, to name a few—and various features, it can be overwhelming. Some important aspects to consider in an app that will protect sensitive data are: (1) a strong password generator, (2) ease of use, and (3) a trustworthy vendor. Many trustworthy vendors are transparent with their security documentation and security practices and will welcome scrutiny from security experts.

To help narrow down the search, we asked our peers in the industry which apps they use to keep their sensitive information safe, and why.

1Password

Diona Neeser (UAA Program and Operation's Manager) recommends 1Password. "I have used 1Password for more than five years now and love it. It keeps passwords, files, notes, and even identity items safe," Neeser said. "There is a master password and fingerprint/face ID to get in, and all I need to recall is the *one password*! The high level of the app is that I can put all my passwords in one spot, including the really unique, long ones."

As a type A personality, Neeser enjoys the organizational features, such as:

· Storing items in more than a dozen categories: logins, credit cards, addresses, notes, bank accounts, driver's licenses, passports, and more
· Creating multiple vaults to keep different areas of your life separate
· Organizing your information with tags and favorites
· Adding custom fields to your items to store security questions, extra URLs, and any other information you can think of

And it is a way to stay **safe**. Everything stored in this app is protected by a master password that only the user knows. 1Password uses end-to-end encryption so data is only ever decrypted offline. The encryption keys never leave your device, viewable only to the user.

Ease of use is essential. Neeser feels secure using the app as her authenticator, storing two-factor authentication codes that she can quickly access when it's time to sign in. And 1Password alerts the user when a site has been compromised so a new, secure password can be generated.

Keeper

Dennis Fallon (UAA Executive Director) weighed in on how he protects his logins and information. "I use a password protection app called Keeper, which also has a website access portal," he said. "The app does have an annual fee. The encryption capabilities are what drew me to use this app. I like the filing structure that Keeper uses. It has served me well both personally and professionally."

Fallon explained that the file structure for Keeper, which can be used on mobile devices and computers, is very similar to Microsoft Windows where folders can be created in a hierarchy. The naming convention is completely up to the user. Users can even store documents, photos, and videos for certain paid plans.

Depending on the pricing level, Keeper offers many features and benefits, including:

· Alerts when cybercriminals are using your credentials
· Fingerprint and face login capabilities
· Generates and autofills high-strength, random passwords

· Provides emergency access to your vault for up to five emergency contacts
· Securely shares with family, friends, and colleagues
· Supports two-factor authentication methods
· Saves and restores previous versions of your records at anytime

LastPass, Google, Apple, and Microsoft

Sally Lechin (Director of Marketing and Communications, Iapetus Holdings) uses features from Google, Apple, and Microsoft, which have all announced their expansion of passwordless sign ins—allowing users to rely on passkey, fingerprint, and facial ID methods. Although the big tech conglomerates may soon put the axe on passwords, Lechin also recommends LastPass, a secure password-using protection app. Lechin said, "Upon researching, I found that Google Chrome's built-in password saving is not as secure as cutting-edge password manager softwares. It depends on your computer's local encryption system to encrypt your sensitive data—no AES 256-bit encryption, no PBKDF2, or any other dedicated system that traditional programs use."

A program like LastPass, which can be used on your mobile device and computer, has both free and paid options. The app's features include:

· Unlimited, autogenerated, and autofill-capable passwords
· Multifactor authentication
· Encrypted file storage with paid subscription
· Emergency access and one-to-many sharing
· A family manager dashboard to manage users and security
· Grouping and sharing items in folders for optimal organization

For remembering passwords, Lechin echoed advice from experts who recommend using the first letters of a phrase and adding symbols and numbers as a great approach. This will help users remember their one master password. Keep in mind, password *length* is typically a better indicator of security than complexity of characters. Longer passphrases are more difficult to crack and easier to remember than a string of complex characters.

mSecure

Lori Jones (Manager Maintenance Services, Salt River Project) enjoys using mSecure. "Instead of managing hundreds of login details, I only need to manage one and mSecure takes care of the rest. In addition to keeping all of my login credentials secure, mSecure has templates for special dates, credit cards, frequent flyer miles, and many other record types that should be kept confidential and can be difficult to recall," Jones said. "In addition to following industry standard AES-256 for

TREES & UTILITIES

A partnership of the Utility Arborist Association and the Arbor Day Foundation
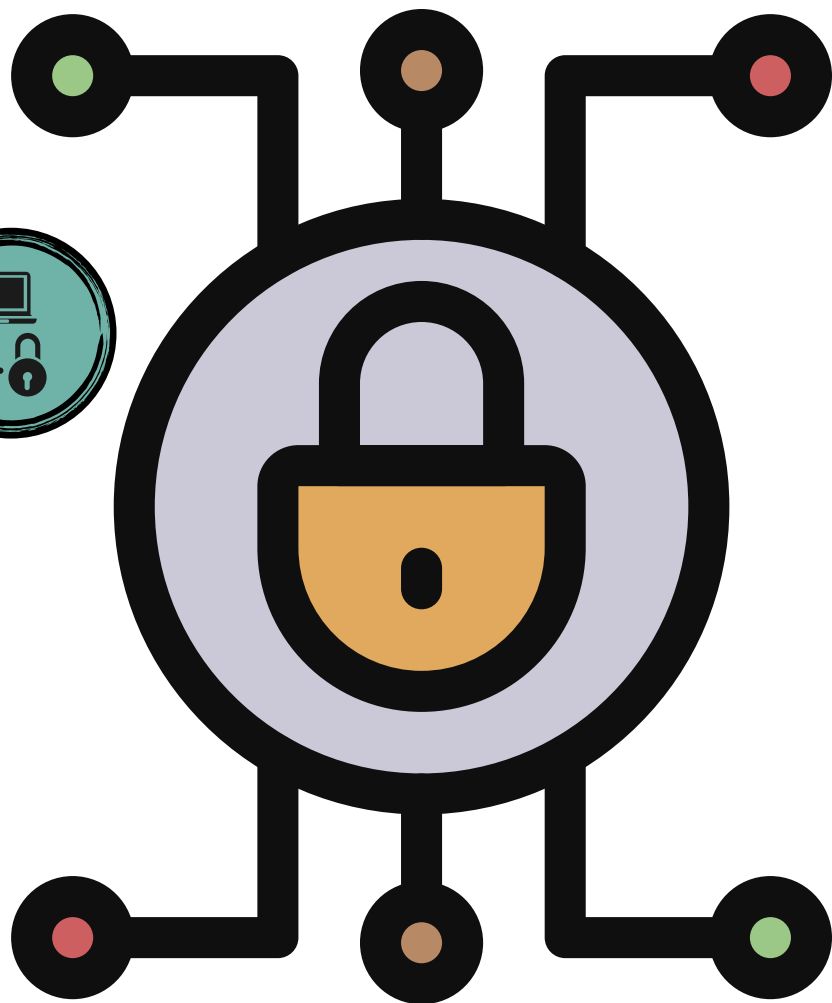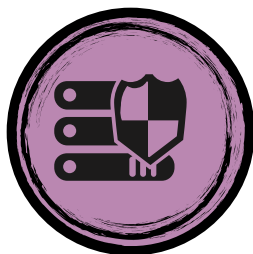
TreesandUtilities.org

encryption, mSecure will also allow syncing of devices through Dropbox. So, if I change a password on my iPhone, the update will also occur on my desktop computer and my iPad, too."

The following lists the mSecure features that Jones loves:
· Uncompromising security with one master password
· Password Generator creates and stores random, complex passwords
· Autofill and Auto-capture automatically stores and populates account logins
· Seamless syncing helps access data and passwords wherever you are
· Security center can easily find and fix weak, duplicate, or old passwords

Conclusion

Technology is always changing—and passwords may be obsolete someday—but we should be proactive in protecting the information that we currently use. We may never be 100% protected from all cyber threats, but we can use the available, user-friendly resources to minimize the risk as much as possible. From helping your kids remember their Spotify passwords to protecting your job's critical data, a password manager will make your life simpler, organized, and more secure. 🌲

Effectively Communicate Value to Decision Makers Using

FINANCIAL METRICS

By Amy N. Murray, UAA Outreach Chair

Communicating the theory and practice of the art of UVM to budget approvers and other utility departments is more effective using its own language. Test, communicate, and secure buy-in to your vision, goals, strategies, tactics, and expenditures expressed in terms of common financial benchmarks. The UAA Environmental Stewardship Committee has created a Net Present Value Calculator to compare costs, ROIs, payback period, and standard cost-benefit analysis of alternative program and project approaches.

Since IVM is a ROW best practice (ANSI A300 Part 7 and ISA BMP "Integrated Vegetation Management"), with least cost and highest-cost efficiency, what is preventing its adoption throughout all 13 million acres of electric and pipeline utility ROW? Unclear financial implications, lack of confidence in efficacy, and poorly communicated advantages are obstacles to integrating biological, cultural, chemical, and mechanical control methods.

To help overcome these obstacles, the UAA Environmental Stewardship Committee created a Business Case for IVM Toolkit. The toolkit empowers vegetation managers to test, make informed decisions, and effectively communicate their business case and budget forecasts with other stakeholders and approvers in the organization.

The Business Case for IVM Toolkit products:

· A slide deck presenting IVM principles and business/enterprise-wide benefits
· The Net Present Value (NPV) Calculator comparing financial metrics of the status quo and alternative management approaches
· A guide to managing ROW vegetation to maximize composition toward OH electric compatible, biodiverse, and targeted species are available for download (*www.gotouaa.org/integrated-vegetation-management*) free from the UAA website. Membership in the UAA is not required.

Evaluate Financial Metrics of One to Multiple VM Approaches

The NPV tool as a budget builder, for individual project financial snapshots, and as a dashboard comparing multiple program management choices. It presents these results using common financial metrics. To get started using this tool, download (1) the User Guide and (2) the NPV Calculator spreadsheet.

The User Guide details and explains concepts, contents, and how to use the spreadsheet. The spreadsheet calculates ROI, CBA, NPV/NPC, and payback period with embedded formulas in locked cells.

Tabs on the spreadsheet define terms, present calculations and metrics in a dashboard, and serve as worksheets for management approaches that feed the dashboard. Users enter: (1) variables in the dashboard tab that apply to all the options under consideration and (2) expenses and revenues names, along with numerical annual values unique to each management alternative (Figure 1).
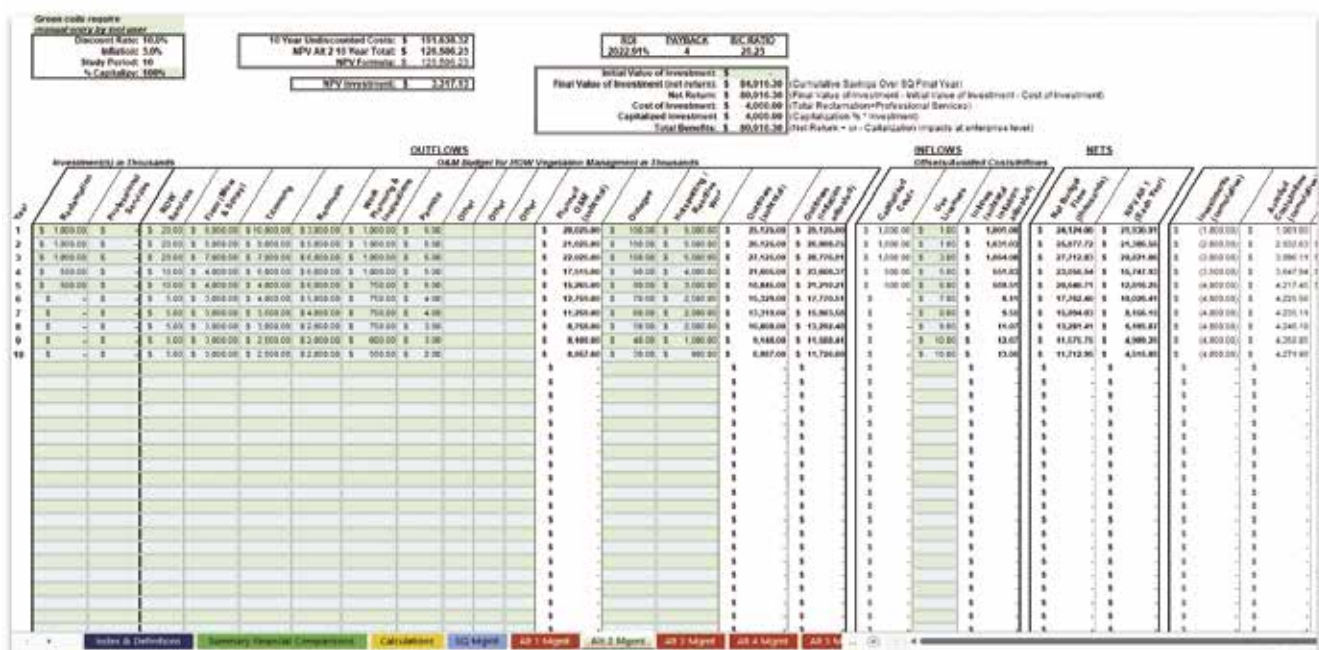

Figure 1. NPV Calculator Tool, UVM Management Alternative Tab Example

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To Benefit TREE Fund

TREE FUND

The dashboard (Figure 2) compares financial metrics, in the terminology of your managing directors and C-suite (net present value of costs, total undiscounted costs, net present value of the alternative as compared to status quo, payback year, benefit cost ratio, and ROI). The downloaded version contains hypothetical examples illustrating how to use it. All green cells can be overwritten, white cells cannot. If errors are made to the template, simply download again from the website.

Primary Uses and Benefits

The tool can be used to evaluate enterprise-level changes required for programmatic IVM (or other BMPs) because it:

- Forecasts long-term financial benefits/requirements
- Allows for multiple custom inputs
- Presents a side-by-side comparison of customized IVM options

ROW Vegetation Management Approaches: Comparing Maintenance Budget Alternatives

Discount Rate: 10.0% Study Period: 10
Inflation: 3.0%

		10 Year Total Costs NPV (thousands)	10 Year Total Costs Undiscounted	10 Year NPV of Change (thousands)	Payback Year	B/C Ratio	ROI
Status Quo:	No programmatic IVM/herbicide use, corridor reclamation needed	$ 166,063.43	$ 276,554.62	n/a	n/a	n/a	n/a
Alternatives							
1.	Reclaim, IVM, capitalize half of reclamation, followed by IVM using herbicide as much as possible	$ 128,146.23	$ 193,738.33	$ 37,917.21	5	19.70	18.70
2.	Capitalize all of Reclamation, followed by full IVM using herbicide as much as able	$ 126,506.23	$ 191,638.32	$ 39,557.21	4	20.23	20.23
3.	Reclaim, no IVM or change in policy, reclaimation capitalized, now mow more floor, maybe trim fewer trees, lose savings back into higher mowing vs. IV in which using spray and lose most of the cost thru lower mowing trimming and removals costs	$ 149,694.54	$ 239,204.39	$ 16,368.89	6	8.34	7.34
4.	Budget is cut in year 2 and 3 ; maintenance is deferred to future years	$ 174,324.66	$ 297,124.40	$ (8,261.23)	2	-94.50	-95.50
5.	30 year budget	$ 169,321.73	$ 169,321.73	$ 73,800.72	2	39.06	38.06

Figure 2. NPV Calculator Tool Results Dashboard

Communicating the THEORY and PRACTICE of the art of UVM to budget approvers and other utility departments is more effective using its own language.

©ISTOCK/DENPHUMI

- Gives structure and meaning to IVM programs
- Provides a timeline and milestones for IVM programs
- May help to identify potential pitfalls during planning processes
- Helps to design and initiate IVM programs that are well thought-out and researched, in turn increasing enterprise and team success

The tool can also be used for any financial comparison and decision-making at any scale and topic. For example, the one-time purchase of a service/piece of equipment or adopting customer service programs like tree replacements or stump grinding.

Conclusion

Change management begins with buy-in. Buy-in begins with effective communication. To communicate effectively, we need to understand the values and jargon of our audience.

Making the Business Case for IVM for the C-suite, non-VM decision makers, and broad stakeholder groups can be started using a common denominator: money. Since dollars and cents are understood by all stakeholders—whether their role is community relations, compliance, or reliability—the Net Present Value Calculator speaks in terms understood by all and may convince your stakeholders that IVM:

- Typically requires an up-front capital investment
- Must be continued in order to maximize the benefits
- Costs will decrease over time
- Net present value compares favorably to traditional mechanical methods ⚕

GOING PHISHING

By Brett Dufford, Technical Support Engineer, ECI

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Have you heard of phishing, spear phishing, or whaling?

According to Cisco's 2021 Cybersecurity Threat Report, 86% of companies had at least one user try to access a phishing site.

These aren't deep-sea excursions for ocean-faring wildlife. These are actual attacks users encounter in today's digital landscape, and they're becoming increasingly common in both private and professional settings. According to Cisco's 2021 Cybersecurity Threat Report, 86% of companies had at least one user try to access a phishing site. Phishing threats are significant and hackers are counting on human error to gain access. It's essential to protect yourself and your organization's IT infrastructure from this type of attack.

What Is Phishing?

To its core, phishing is acting as a trusted source to deliver a malicious link or attachment that could persuade users to provide confidential or sensitive information to locking your system or files until a ransom is paid. Have you ever heard of ransomware? Email is the most common delivery mechanism for these attacks. How do attackers manipulate victims into participating in the attack? Here are a few characteristics to look for:

· Well-known, widespread companies like Netflix, Amazon, and other brands
· Supervisors or familiar names, such as CEOs, CFOs, and immediate supervisors
· Certain words or topics to elicit an emotional response; using words like "urgent" or topics like taxes that can make users fearful

Different Types of Phishing Attacks

1. **Spear Phishing:** Targeted phishing attack for a specific individual or group
2. **Whaling:** Phishing attack that involves high-value targets, such as C-level, executive teams, and wealthy individuals
3. **Smishing:** Phishing attack that uses texting (SMS) to send fraudulent messages
4. **Vishing:** Completed over VoIP, attackers use phones, recorded messages, and spoofed phone numbers to convince users their message is legitimate. Attackers convince victims to visit malicious sites or call numbers where attackers offer to "help" the victim. (This type usually targets the elderly population.)
5. **Qishing:** A slightly newer version where attackers leave QR codes in plain sight that will redirect to sites where malware is usually installed unknowingly on the victim's device

How to Prevent Falling Victim to Phishing Attacks

Specific steps can be taken to prevent yourself from falling victim to phishing attacks:

· Be wary of all unsolicited messages.
· Think before clicking! Don't be in a rush, and take the time to examine the message thoroughly.
· Do not click on any links or attachments if you did not expect the email/message.
· If the display name and the incoming email address do not match, do not click any links or attachments.
· Poor grammar and spelling can indicate a fraudulent message.
· Most IT departments will have a warning banner at the top of an email for messages generated outside your organization.
· The signature lacks contact information.
· The message lacks a signature.
· Trust your gut! If you have any suspicion that an email or message is harmful, do not click on any links or attachments.
· Back up your data. While this doesn't prevent a phishing attack, it's essential to back up anything remotely important. The backup should be separate from your primary devices, such as an external hard drive or cloud backup.
· Report suspicious emails/messages to your IT department.

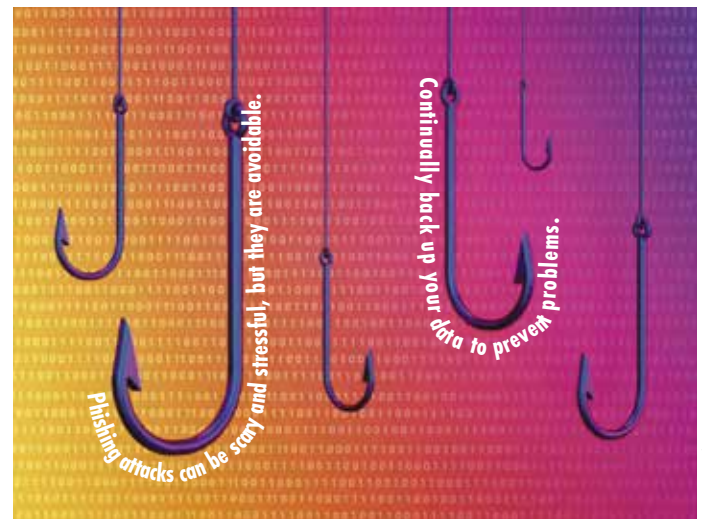## What to Do if You've Fallen Victim to a Phishing Attack

All is not lost if you've fallen victim to a phishing attack. Ideally, you've successfully backed up your data before being compromised. If not, you can still scrub your device to make it useable. If the malware proves too much, you can always wipe the device. Below are steps you can take to get your machine back online. It would be best to change your passwords for any accounts you used to access the malicious content.

If your device is a company computer:

· Contact your IT department or the IT security department immediately!
· Disconnect your computer from the internet.
· Usually companies provide cloud storage for all files, like OneDrive.
· Your IT department will clean or wipe your device depending on the severity of the attack.

If your personal computer is compromised:

· Disconnect your computer from the internet.
· If you have antivirus software, run the scanner to see if it can clear the malware.
· On another computer, download helpful software that helps remove malware. Then, run that software on the infected computer (e.g., rkill closes malicious processes, Malwarebytes and HitmanPro remove the vast majority of malware).
· If you're not confident that you've cleaned your computer, you can start from scratch. Download the Windows Install Tool to reinstall Windows.

Continually back up your data to prevent problems.

Phishing attacks can be scary and stressful, but they are avoidable.

©ISTOCK/GOCMEN

If the device is your phone:

· Factory resetting is the best way to get your phone up and running again.

Phishing attacks can be scary and stressful, but they are avoidable. Being vigilant and wary of malicious messages will filter out most threats, while critical thinking and calm decision-making should take care of the rest. Consistently and continually backing up your data is a great practice to prevent future headaches and provides comfort in knowing that the essential is protected and secured. ⚘
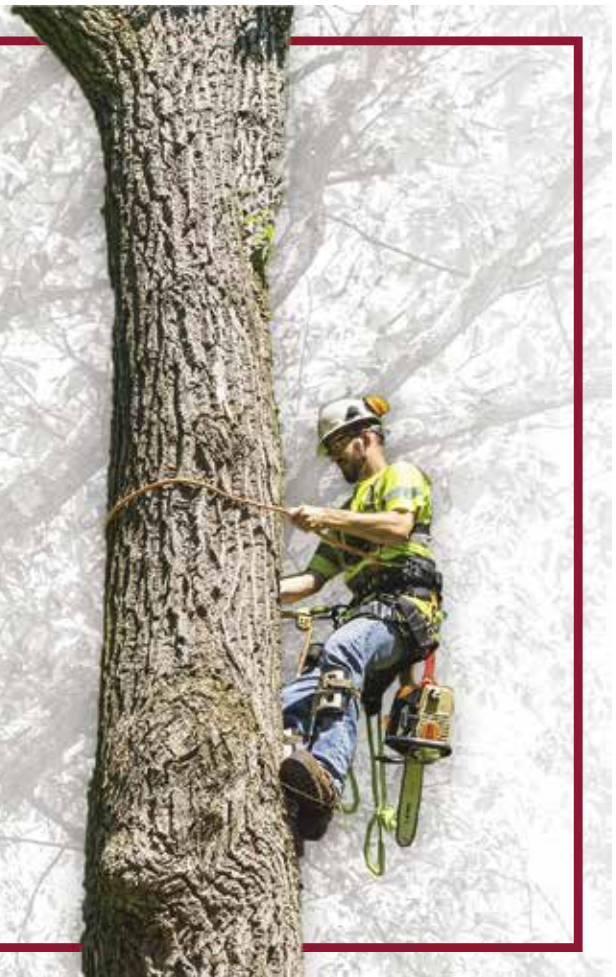
From the Experts:

Q&A Cybersecurity
Practices and Challenges

By Renée Bissett, Chair of UAA Editorial Committee and Director of Marketing and Communications, ACRT Services

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No industry is immune to cyberattacks; however, utilities are among the most vulnerable. Ensuring our infrastructure stays intact promises uninterrupted power, but also security from bad actors seeking to disrupt our lives and maximize damage. Technology continues to drive innovation, solve challenges, and make life easier. Brandon Davis (IT Cybersecurity Engineer) from City Utilities, Christi Mooring (Quality Assurance Analyst), and Shawn Long (IT Manager) from Middle Tennessee Electric are weighing in on the subject.

■ What are your most challenging areas as it relates to technology or cybersecurity?

Mooring and Long: There are a host of challenges that we must continually overcome. Technology and cybersecurity requirements are constantly evolving and changing, which require us to learn something new just to be able to do our job. For the VM team, and from a practical perspective, keeping non-tech-savvy users logged in via multifactor authentication is a constant challenge.

Davis: The biggest challenge we've encountered so far is integrating with individual business units. While securing the machines that the individual groups use to perform daily tasks is easy, integrating cybersecurity into their workflows and business processes has been difficult. A security-first mindset is usually not something that people have, so security is one of the last things thought of—if it's thought of at all.

Image originally published by McKinsey & Company

Electric utilities can be affected by cyberattacks across the whole value chain.

Potential threat impacts

Generation
Disruption of service and ransomware attacks against power plants and clean-energy generators

Root cause: Legacy generation systems and clean-energy infrastructure designed without security in mind

Transmission
Large-scale disruption of power to customers through remotely disconnecting services

Root cause: Physical security weaknesses allow access to grid control systems

Distribution
Disruption of substations that leads to regional loss of service and disruption of service to customers

Root cause: Distributed power systems and limited security built into SCADA[1] systems

Network
Theft of customer information, fraud, and disruption of services

Root cause: Large attack surface of IoT devices, including smart meters and electric vehicles

[1]Supervisory control and data acquisition.

McKinsey & Company

■ What are some of your best practices to protect your IT infrastructure?

Mooring and Long: One of the most important practices to protect infrastructure is security awareness training. The primary cause of breaches is due to human error, and security awareness training is very effective in reducing this. However, there are many security controls that are also very important in protecting our IT infrastructure. A few are multifactor authentication, enforcing strong password policies, updating and patching all systems regularly, data and device encryption, web filtering, anti-virus, and mobile device management. Specifically for the VM team, using BitLocker and Maas360 helps keep our devices secure.

Davis: Reducing privileged account usage has been a relatively quick win for us and will limit any potential attack path an adversary might take advantage of. Another important practice for us is to routinely send simulated phishing emails to our employees to better equip them to deal with outside threats.

■ What technology can you not live without or that you wish you had available to you?

Mooring and Long: For the mobile workforce, we cannot live without our cell phones. Delivering technology to the mobile worker using various platforms has made us more efficient and, in most cases, our jobs easier. I am not sure if we could live without any of our mobile devices, such as tablets and phones.

Davis: A log management/ingestion solution has been instrumental because

it allows us to gain visibility where we would not have had otherwise. The alerting capabilities provided by the solution are essential to a functioning cybersecurity program.

■ **What trends do you see for the future within our industry?**

Mooring and Long: Technology will continue to get better and more useful for the worker. However, protecting against cybersecurity threats is probably the most impactful in changing technology and how we use it.

Davis: As far as technology goes, I think that we'll start to see better integrations between products, more AI- and ML-driven processes, and widespread adoption of Zero Trust Architecture (ZTA).

■ **Any other insights or contributions as it relates to technology or cybersecurity?**

Mooring and Long: It is a challenge to keep technology up-to-date, secure, and usable. This is especially difficult considering that security and usability are often at the opposite ends of the spectrum. It requires a continuous effort to learn and use our technology, but in the end, the challenge is worth it.

Davis: People outlast technology. Technology is important, but retaining, training, and investing in employees will always be more effective in the long run. A seasoned cybersecurity professional is worth more than the most expensive security tool you could ever implement.

Would you like to participate in a future article? Please contact the author at *rbissett@acrtinc.com*. ⚘

TRACKED CHIPPERS: New Tools to Reduce Wildfire Risk

By Jeff Vining, Manager, Asplundh Tree Expert, LLC

Not many people know this, but Arizona has some of the most diverse landscapes and vegetation cover types of any state in the United States. There are 11 different climate types identified throughout the state, allowing for unique and diverse vegetation cover types. For example, the Grand Canyon State has the largest ponderosa pine *(Pinus ponderosa)* forest in the world, plus 24 National Park Service sites, including the Grand Canyon National Park, Saguaro National Park, and Petrified Forest National Park. Although Arizona is one of the largest states by area, the southern third holds most of the population in cities like Phoenix, Tucson, and Yuma—in fact, Phoenix is the fifth-largest city in the U.S. by population. The vegetation cover type for these areas is considered the "hot desert" portion. While hot desert evokes images of endless sand dunes, beating sun lasting from sunrise to sundown, and no rainfall, the hot desert of Arizona is quite different. Even in Southern Arizona, a large variety of taller-growing trees and large shrubs can grow and thrive.

In the Phoenix and Tucson metropolises, a wide variety of trees and shrubs have evolved to grow in this hot desert climate. Rains range from feast to famine, and this seesaw creates a challenge from a VM standpoint. Growth rates can be tremendous for the desert-adaptive species during years with heavy rains. Additionally, when people started moving to Phoenix in the mid-twentieth century, they brought along familiar trees and shrubs to grow. Surprisingly, non-native trees and shrubs from northern climates can grow in Phoenix, with a caveat: they need to receive supplemental irrigation through the high-heat times of the year. Though in recent years, more xerophytes (dry-climate-appropriate vegetation) have been planted in these urban areas and can grow tall. When vegetation can reach power lines where people co-locate, VM on our ROW is necessary.

Given the wide variety of species, predicting VM needs is challenging in the Phoenix–Tucson–Yuma metropolitan area. Topography and climate add other layers of complications. Even though Phoenix is located in a valley, the ROW delivering power to this large urban area sits over very rugged terrain, sometimes with limited access. Low humidity, 296 sunny to partly sunny days, and little to no rainfall creates wildfire risks that must be mitigated to continue delivering safe and reliable power. Another obstacle is the strong, gusty thunderstorms that can lead to vegetation-caused outages. Sometimes these storms can collapse, which means a strong, high-wind thunderstorm with no rain can cause lightning-ignited wildfires.

Mitigating the unique risks when managing vegetation in Arizona to maintain safe, reliable power is a challenge. Routine maintenance in urban areas often lends itself to chipping the generated brush into chip trucks. In the rugged terrain of the off-the-beaten-path ROW, the cut vegetation was traditionally lopped and scattered and left on the ROW relatively whole, but this caused a build of potential fuel load and increased wildfire risk. Accessing these sites with traditional trucks and chippers to reduce this fuel loading, plus the environmental impact of emissions, can be difficult—to say the least. The commonly used forestry mowers risk the metal teeth hitting rocks that cause sparks, which is deeply problematic in reducing fuel loads in wildfire-prone areas. Fuel loads had to be mitigated as part of the wildfire management plan, and the solution came in the form of a wood chipper designed to operate independently from a truck.

There are several makes and models of off-road or forestry wood chippers available, but a tracked Morbark brand that has a 15-inch capacity made the most sense for our needs in Arizona. The chipping operations are completed as if it was a bumper-pulled chipper. It needs to be hauled on a trailer to the ROW access point, but once off-loaded from the trailer, the rubber tracks on this self-propelled chipper move it around the ROW and to the chipping locations where chips are scattered, rather than piled in one location. With the rubber tracks, it places less ground pressure than a person walking on the ROW (per square inch) and can access some rugged terrain given its size and weight. With the advancements of wireless technology, this chipper, like other self-propelled machinery, comes with wireless controls. While the chipper moves, the operator is not tethered to the machine and can easily identify obstacles, hazards, and wildlife to remain out of harm's way if something were to go wrong. Once set up, the wireless control can operate the other functions of the chipper, such as feed rollers, throttle, and emergency stopping. The 15-inch capacity chips sizable pieces of wood to further reduce the fuel load.

Chipping the brush instead of lopping and scattering has made our crews safer and more efficient. There are challenges introducing new equipment to our crew's operation, but we work jointly with the manufacturer and the safety operations group to successfully meet our customers' requests. Like Arizona, each area of the country has its own challenges managing vegetation on our ROW. By deploying this VM equipment, we have been able to meet our customers' wildfire risk reduction goals and continue providing safe and reliable power to the citizens of Arizona. ⚘

2022
Richard E. Abbott Safety Scholarship Recipient:

TIMOTHY ROBERTSON

Our organization's history is synonymous with safety. Founding member Richard E. Abbott was instrumental in the development of the ANSI Z133 Tree Trimming Safety Standards through the American National Standards Institute, guidelines developed in response to incidents that occurred nationwide in the 1960s—and have saved and protected countless lives since. His influence on safety set a precedent for our industry.

A commitment to safety and the development of our employees is showcased in our organization's Richard E. Abbott Safety Scholarship—a $1,000 award that is granted annually to an employee who is seeking to further their career development and commitment to safety.

Congratulations to the 2022 Richard E. Abbott Safety Scholarship recipient: ACRT Pacific Vegetation Management Inspector Timothy Robertson.

Robertson enjoys staying up-to-date on the latest ANSI Z133 Tree Trimming Safety Standards and implementing those practices into his daily fieldwork and at home.

"I am pleased Robertson was selected to represent our second class of Richard E. Abbott Safety Scholarship recipients. His dedication to safety, his role, and our organization shines through in his daily actions," said ACRT Pacific Director of Operations Bryan Durr.

Wasting no time, Robertson has already used the scholarship funds to become a Certified Tree Care Safety Professional (CTSP) through the Tree Care Industry Association (TCIA) and complete an OSHA 30-hour training course. He plans to use the remainder of the funds to earn his Tree Risk Assessment Qualification (TRAQ) certification through the ISA.

"These certifications will complement my current credentials in helping to encourage a culture of safety amongst my coworkers," shared Robertson.

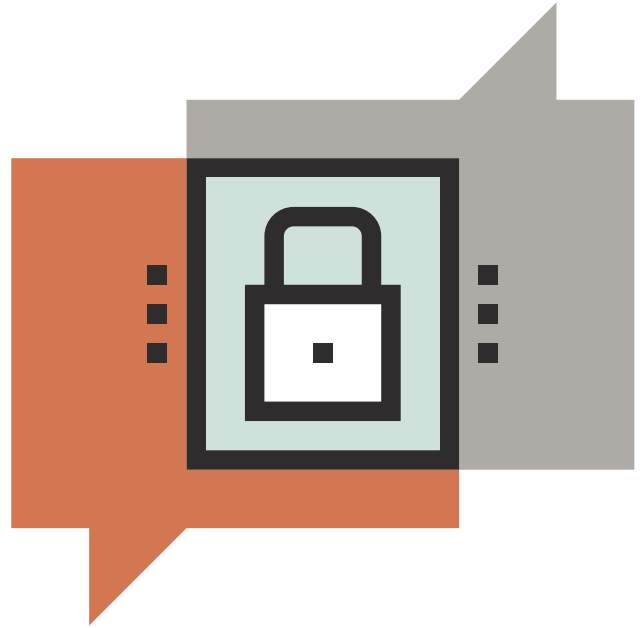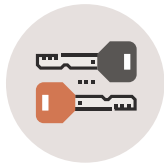Learn more about ACRT Pacific and our safety philosophy at *pacific.acrt.com*. ⚘

Seven Tips to Improve Your Company's Cybersecurity

By Taylor Erickson, Information Security Lead and Hannah Hamann, Information Security Assurance Analyst, Wright Service Corp.

On May 7, 2021, Colonial Pipeline was hit with a ransomware attack that would change the way we look at cybersecurity forever. The attack made the company take down its systems for six days, resulting in 45% of the East Coast being hit with a massive fuel shortage. It caused the state and federal governments to declare a state of emergency. In addition to system compromise, the attackers stole 100 GB of data that would be used in blackmail extortion before being leaked on the internet. These attacks against critical infrastructure are just the beginning. But in the coming years, corporations will experience larger and more damaging attacks. While major utilities and energy suppliers are the main targets in the UVM industry, it is their vendors and contractors that possibly pose the biggest risk for being hacked due to their vulnerable systems, easy-to-guess passwords, or falling prey to phishing attacks—all of which open the gateway to the primary target.
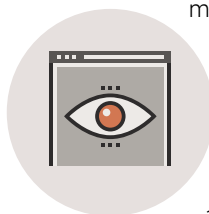
1 UNDERSTAND THE RISK AND MAKE IT A PRIORITY

Wright Service Corp. is the parent company to several companies that operate within the UVM industry, including Wright Tree Service, CNUC, and Terra Spectrum Technologies. As a company, we hold the responsibility of cybersecurity in high regard to protect our data and systems, but especially those of our customers—90% of which are based in the energy and utilities sector.

Safety is our highest core value. And like physical safety of our employees, we think that cyber safety is essential to ensuring true safety for our company and our customers. We hope that our practices can offer some insight for other organizations to heighten safety in the UVM industry.

2 CREATE A CYBER SECURITY TEAM

In 2019, Wright Service Corp. established an information security team. This team was created to improve our security posture and execute yearly strategic security roadmaps, updated annually. By doing so, we maintain and strengthen our company's ability to protect client data. The team conducts an annual security assessment in tandem with monthly vulnerability scans, and remediates identified issues. We want to be ready if and when an attack occurs, and be able to prevent incidents when possible.

We use many tools and platforms to assist in bolstering our security posture and to ensure our employees are cyber safe at work and home.

3 TRAIN YOUR EMPLOYEES

One of the platforms we use daily is called KnowBe4, a recognized industry leader in security training. KnowBe4 has several tools and one of them is a security awareness training (SAT) program that also also test-phishes our users. In this program, we can track our results by looking at stats and graphs for security training and phishing. We can see how well we are doing compared to the industry, which will tell us if we need to send out more training or phishing tests. We started using KnowBe4 in 2019 and have experienced significant improvements in our training and phishing campaigns.

4 INSTALL OUTLOOK'S PHISH ALERT BUTTON

In 2021, we had a 70% cyber training completion across all companies, and our phish-prone percentage was 6.4%. We hope to increase our cyber training completion and decrease our phish-prone percentage in 2022. Several types of security attacks are happening daily,
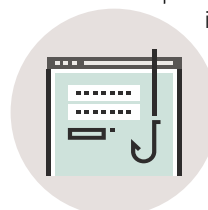
MEET RACHEL MILLER

Project Manager and Chief Supervisor of Part 107 and Part 137 Aerial Operations

Rachel is an FAA certified Private Pilot (SEL) as well as a Remote Pilot (sUAS) and holds an ITC Level 1 (sUAS) Thermographer certification. She is responsible for direct project planning, R&D, and implementing new sUAS solutions, processes, policies for the team. Rachel is also involved in ensuring FAA compliance and maintaining Davey's internal pilot training program. She enjoys helping clients find new solutions to old problems using emerging technology.

DID YOU KNOW?

Davey Resource Group, Inc. has 25 fully trained drone pilots across the U.S. and Canada, and an extended network of qualified partners to scale up for very large projects. DRG's fleet includes more than 30 drones featuring a variety of models, sizes, sensors and equipment attachments for specialized use cases like herbicide/seeding applications, visual/IR/thermal inspections, LiDAR, and more.

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which means we can always improve our training and education about cybersecurity. KnowBe4 is constantly updating its library with new training and content that we can send out to the employees. Each year, we do an annual foundational and new-hire awareness training. We do several training courses throughout the year that range from creating strong passwords to understanding how to use MFA. Optional training is also available for those who want additional cybersecurity training to help them improve their understanding.

Simulated phishing emails are another way we help our employees protect our company. Monthly phishing tests are sent out to users, and ideally, they will report it using the Phish Alert Button. When employees fail the phishing test by clicking the link or entering personal information, they will be given additional training to increase their knowledge of proper cyber safety. Cybersecurity is not something that can only be practiced at work. KnowBe4 offers a free, short training course that employees can also share and help train their families. To help keep our company protected, we need our employees to be cyber safe at work and home.

PhishER is another tool we use. PhishER allows us to view all the reported phishing emails that have been sent in by using the Phish Alert Button. From there we can determine if the email is a clean, threat, or spam. When multiple emails from the same sender are reported, we use a tool in PhishER called PhishRIP. This tool can prevent active phishing attacks by removing potential email threats from users' mailboxes. PhishER is just one of the many tools we use daily.

5 STREAMLINE YOUR PROCESSES WITH TECHNOLOGY

Included in the KnowBe4 platform is KCM, a tool we recently started using. KCM is a governance, risk, and compliance (GRC) platform that helps us manage risk and compliance within our organization and get insight into gaps in our security plan. It makes it easy to clarify what needs to be done, who is going to do it, and when each task is due. We can upload our policies and start campaigns to help manage policy distribution,

reminders, and user acknowledgment. There will always be risks in cybersecurity, so having a risk assessment platform is helpful. This risk platform helps us identify, respond to, and monitor each risk. Lastly, we can keep track of our third-party vendors and their compliance requirements. Having all this information in one place allows us to stay organized and up-to-date on our documents.

6 GET YOUR COMPANY PASSWORDS UNDER CONTROL

Your employees have access to company platforms, which of course means that there are passwords involved. Another program we recently implemented in our corporate office is Bitwarden. This is a password manager that helps users generate, save, and manage employee login credentials safely and securely. They can also share secure information with others in our organization. We know it can be difficult to remember all your passwords without writing them down somewhere—a lot of people write them down on a sticky note and leave it at their desk or on their desktop. Bitwarden allows you to create one primary password that stores all your other passwords. To prevent users from using similar passwords, it will generate a random password for you. Generated passwords are almost impossible to guess, which is why Bitwarden is a successful and effective program. It is quite easy to use and allows users to only worry about remembering one password.
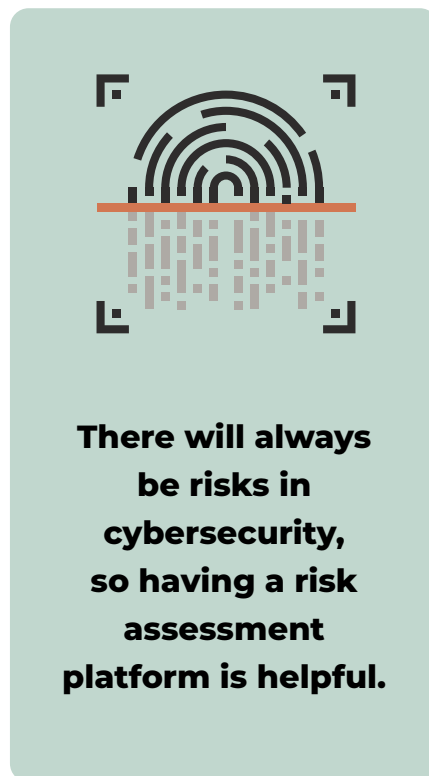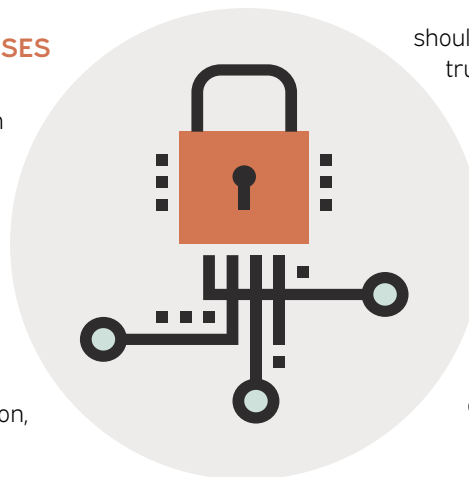
7 CONNECT AND LEARN FROM OTHERS

The Wright Service Corp. InfoSec Team joins quarterly community roundtables, information security conferences, and cyber networking events. These events allow organic discussion with leaders at other companies to consider new ideas, the latest trends, and engage in networking—all which ensure relationships and connections are established. We value those connections because cybersecurity should not be us versus the world. Rather, we need trusted allies to help ensure we all stay safe.

These platforms, programs, and practices are some of the many tools we use to ensure a strong security posture. Lastly and most importantly, our family of companies' core value of safety, and being a digital brother's and sister's keeper, helps ensure we all deliver on the promise of taking responsibility and accountability for maintaining the safety and security for our company and that of our clients. ⚘
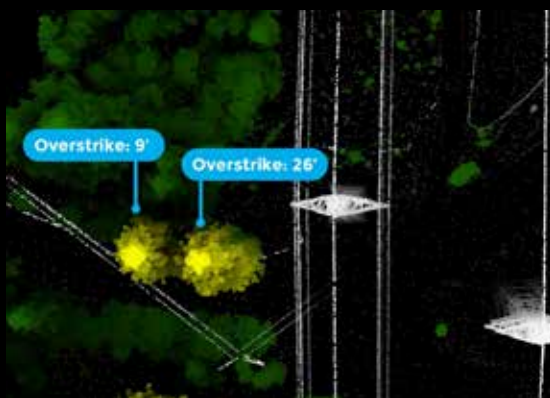
> **There will always be risks in cybersecurity, so having a risk assessment platform is helpful.**

Too late.

Overstrike: 9'
Overstrike: 26'

Don't miss another one. NV5 Geosaptial's Decision Tree is a predictive modeling platform for vegetation management. Decision Tree combines innovative data science and modeling to identify the relative risk of any given tree and help prioritize and optimize your operational activities. With Decision Tree, it's never too late.

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THE SWITCH TO THE
TRIPLE
Bottom-Line

By Chris Kelly, CEO, Clearion

Twenty years ago, business value was measured in dollars and cents. In today's uber-connected world, everything is scrutinized—and any misstep can turn your markets against you. To succeed in these modern times, the industry needs to shift their barometers of success to the triple bottom-line: people, process, and planet.

UNDERSTANDING THE PATH

The way people work has changed exponentially throughout the last few years. The utility industry has invested in and undergone substantial digital transformations regarding IoT, AI, ML, data analytics, and more for the purpose of improving process efficiency.

In most cases, these efficiencies improved the overall work experience for people by eliminating the drudgery of paper and data entry. It boosted productivity while simultaneously making work safer. It created a halo effect of job satisfaction, where employees saw tangible growth.

Often, these benefits of digital transformation spilled to the customer base as well. Faster, safer, and more stable processes lowered costs. Digitization opened the floodgates of communication, creating more frequent touchpoints, self-service, and overall improved customer experiences.

Meanwhile, as the transformation process rippled across the industry, digitization connected communities around industries and the world. Unified, people were able to collaborate more easily across distance and time. Topics like global warming became a focus. Data became available for independent analysis, and "Joe Public" had the keys to make a difference.

Certainly, the utility industry realized long ago it needs to lead the change toward renewable energy. It is common sense to realize you are working with a finite supply, and to continue operations, alternative supplies will be necessary. In a world where these supplies are not available, utilities must work earnestly to create them. However, we did not fully predict the benefits of those efforts in today's business performance.

PROOF THAT BEING GOOD IS GOOD BUSINESS

This new interconnected world afforded new parameters to influence customer relationships with vendors. Sustainability resonates with all demographics on some level, and while most are unable to effect serious change, they can use their wallets to encourage others who are being better stewards for the future.

Overwhelmingly, sustainability-minded products beat out the competition. More than 90% of the time, customers will choose a product because they prefer to feel better about their purchases. Nearly three in four customers will actually seek out information on sustainability when considering purchases. In fact, consumers generally indicate they would pay an additional 5% for a green product if it met the same performance standards as a non-green alternative.

> More than 90% of the time, customers will choose a product because they prefer to feel better about their purchases.

A solid majority of them will switch brands if they discover environmental transgressions.

So, sustainability isn't just something we need in the long term for our planet, but in the very immediate term; it is governing customer relationships and purchasing decisions.

CONSERVATION AND SUSTAINABILITY HITS AN INFLECTION POINT

For more than a decade, utilities confined their efforts toward environmental conservation and sustainability to R&D and communications. Most of the efforts were in active pursuit of a competitive advantage when fossil fuel supplies run out. These efforts involved huge investments and frequently made the agenda for board meetings, annual reports, and investor relations.

Efforts on these fronts often earned positive media coverage, and transparency reports became standard. Almost compartmentalized from regular operations, and only tangible in reports, the real impact of a truly sustainability-minded utility was unapparent.

Then, the pandemic happened. Anyone who hadn't already, desperately needed to complete their digital transformation. Eighty percent of energy industry respondents to the KPMG 2020 CEO Outlook said they have either accelerated or rapidly accelerated their efforts to digitize operations and create the next-generation operating model since the outbreak began.

Unable to avoid change, some smart utilities used it as a catalyst to improve their relations with their communities. They used their newfound business agility to create new engagement points, deepen connections, and earn the moniker of being an essential steward of the markets they serve.

GEORGIA POWER: TRANSFORMING TRASH TO TREASURE

Utilities like Georgia Power looked at creative ways to address waste in their VM activities. In urban areas like Atlanta, crews frequently carried trimmings and debris 15–20 miles for disposal outside the city limits. In a city that jokes that Atlanta is an hour away from Atlanta, this distance translated to an expensive loss in productivity and fuel. Instead, Georgia Power created a digital system to create new waste depots, allowing community farms, nonprofits, and schools to register to receive free wood chips.

Now, Georgia Power can access disposal sites that are in a reasonable range, boosting

productivity and lowering costs. Importantly, they are also creating powerful ways to improve job satisfaction for their crews, while also elevating sentiment for their brand across their customer base. Their people are prouder of the work they do, and their efforts affect civic centers that echo gratitude for their brand. This is smart business.

The success of Georgia Power's wood chip program inspired another opportunity to be a community ambassador by working with Zoo Atlanta. In this program, they more selectively reroute fresh vegetation from tree trimmings to be used for zoo animal feedings. The star animals like giraffes and elephants now have access to fresh, locally sourced food thanks to the power company. And you can bet that the zoo and the animals are sure to publicly thank and promote the goodwill of Georgia Power. These two programs, made possible by GIS-powered workforce management, created a triple win for process, people, and the planet.

THE WAY PEOPLE BUY HAS **CHANGED FOR GOOD**

In more than

90% of product categories, sustainability-marketed products outperformed their counterparts

74% say their purchase decisions are always/usually (26%) or sometimes (48%) based on concerns for environmental and social well-being.

61% say they're likely to switch brands if they realize theirs isn't environmentally friendly.

CLEAR-ION

AEP's Strategic Vision and Execution

TOP 10 MATERIAL ESG ISSUES	EXECUTE STRATEGY	TOP PRIORITIES
Clean Energy Transition Electrification	Promote clean energy transformation	• Invest in regulated and contracted renewables • Optimize the generation fleet
Public Safety D&I, Equity Electrification	Enable growth and prosperity for our communities	• Grow top line revenue • Champion economic development • Be good neighbors
Customer Experience Data Privacy	Innovate for the benefit of our customers	• Improve customer experience through use of technology and business innovation • Modernize regulatory mechanisms to support customer expectations
Reliability & Resilience Cyber /Physical Security	Build a modern, secure and resilient grid	• Deploy technologies that enhance grid safety, security and value • Invest in leveraging energy infrastructure
Safety & Health D&I, Equity Ethics & Compliance	Drive operational excellence	• Achieve Zero Harm • Drive relentless O&M optimization • Implement automation, digitization and process improvements • Be a great place to work

AEP: BEING GOOD IS GOOD BUSINESS

AEP's history of environmental, social, and governance efforts is also bearing fruits. Over the past decade, they increasingly found that efforts here realized both short- and long-term benefits across a variety of areas with a profound effect. Today, those seemingly softer efforts—aimed at benefiting the world around them rather than solely focused on their coffers—are becoming as pivotal to success as the dollar.

In their words, "Today, the view of a company's non-financial performance has become as important as its financial health." Their priorities now include being a good neighbor.

The triple bottom-line of process, people, and planet are the company's nonfinancial performance measures. And it directly impacts their cost of capital, credit scores, insurance rates, how shareholders vote, and how stakeholders engage with them.

"Research has proven that companies with strong ESG performance realize short- and long-term value through enhanced growth, reduced costs, improved stakeholder relationships, increased employee satisfaction, and optimization of investment and capital expenditures."

Their commitment to the triple bottom-line is paying off, too. AEP was named to the Forbes JUST 100 2021 list, which recognizes companies that set the standard in commitment to their stakeholders while remaining in the upper half of the Fortune 500.

> By focusing on process, people, and planet, utilities are leading their markets to a brighter future.

THE FUTURE IS BRIGHT

Being good is proven to be good business. The best utilities used the pandemic to reinvent themselves as essential stewards of the communities they serve, paying particular attention to the triple bottom-line of process, people, and planet. They actively created opportunities to expand past the artificial boundaries of corporate walls and create meaningful engagement within their communities.

Their ability to surprise and delight their neighbors has paid off with enormous dividends of goodwill. And it's addictive. Personally speaking, I have served the utility industry for more than 25 years, solving truly hard problems around workforce management. But creating solutions that benefit our customers, community, and ecosystem equally is something more than work or a career—it is a recipe for a better business and a legacy for a brighter future.

This article was previously published in T&D World on May 9, 2022. https://www.tdworld.com/vegetation-management/article/21240755/the-switch-to-the-triple-bottom-line.

ECI

DIGITAL CORRIDOR MANAGEMENT:
THE MODERN SOLUTION TO REMOTELY IDENTIFYING ASSET AND VEGETATION NETWORK CONDITIONS

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1. DCM: VEGETATION

> Transmission and Distribution
> Virtual Work Planning
> Work Quantification
> Field Validation

> End to End Work Management Solution
> Tree Crew Mobile Work Orders
> Progress Reporting

2. DCM: ASSET

> Transmission and Distribution
> GIS Conflation
> Asset Inventory
> Asset Defect Inspection

> Connectivity and Engineering
> Joint Use Inventory
> End to End Work Management Solution

3. DCM: AUDIT

> Transmission and Distribution
> Regulatory Compliance Validation
> Wildfire Risk Analysis
> Reliability Risk Analysis
> Asset Maintenance/Construction Validation
> End to End Work Management Solution

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

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

Use Custom Blending for PEAK RESULTS without Guesswork

By Tim Lawyer, Key Account Manager, Railroad/Custom Blending/Digital Risk Management, Bayer Vegetation Management

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A perk of custom blending is that each drum is barcoded, allowing for easy tracking if any are misplaced.

Custom blending is one of the most important innovations of the last 20 years for delivering superior weed control and flexibility. VM has its challenges, of course, but custom blending is an approach that can help you get great results. If you're familiar with this technique but don't know how to leverage it, now is a great time to learn about the extended benefits.

You may be surprised at the savings that result from the reduced labor that comes with this approach. Custom blending means that the products you need come premixed, so your crew doesn't spend any time measuring or mixing products. All they have to do is add water and start spraying. You also don't need to triple rinse containers because the closed-loop system means the drums go back to the mixing company.

Custom blending is sometimes perceived as more expensive, but the actual cost difference is only around $1 more per acre, partly because shipping costs apply to both options. Eliminating the margin for error is well worth the few extra dollars. It could be a $40 or $50 mistake if you use too much or too little product, don't mix in the right order, or don't mix well enough. Additionally, you'll eliminate the cost and environmental implications that come from spilling even one product in the field. And because packages are sized for your specific application equipment, only the exact amount needed is delivered, minimizing waste and storage.

You also get improved worker safety when you use premixed solutions because there's less exposure hazard and fewer opportunities for spills. The tailored, more precise weed control of a custom-blend approach also promotes safety by reducing or eliminating the need to mow and trim along busy highways, providing a clear line of sight for safe operations and visibility, and reducing the risk of fire hazards from invasive vegetation in other settings.

The benefits of custom blending don't stop there. Many VM professionals I work with are pleasantly surprised by how much easier it is to deal with record keeping and tracking because each drum is barcoded. That also means you can locate a misplaced drum based on the last time it was scanned and who scanned it. Many blending companies also keep a sample of each blend they prepare so that issues with results can be tracked or even caught early, which improves your customer experience over time.

For settings like highways, railways, bare-ground facilities and utility corridors, I recommend using customized blends that include products with multiple modes of action. This approach of combining specialized herbicides delivers broad-spectrum, long-lasting weed control—and using a custom-blend approach only improves the results.

I'm very passionate about being back in the VM industry and helping others achieve their goals, and I believe that custom blending helps accomplish many of them. If you want to cut down on mowing and see lasting results, look into custom blending and get ready to reap the benefits. When you consider that you'll get reduced labor and waste, increased convenience and safety, plus easy tracking, it's a blend that's hard to beat.

> **Custom blending means that the products you need come premixed.**

ABOUT THE AUTHOR

Tim Lawyer is a UAA Member and Rising Star Award recipient, as well as an ISA Certified Arborist/Utility Specialist with 20 years of experience in the industry. He returned to the VM sector after a two-year stint with the Bayer Pest Management and Public Health division, is currently the key account manager for railroad herbicide applicators and custom blend partners, and is involved in digital risk management. He lives just outside Nashville, Tennessee, with his wife, two kids, and a chocolate lab. ⚘

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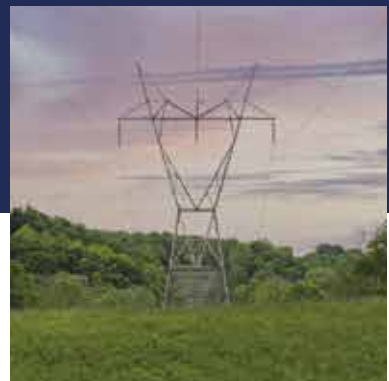
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