

Utility Arborist Newsline

MAY/JUNE 2019

VOLUME 10

NUMBER 3

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UAA Summit Focuses on Safety

Speakers emphasize communication and a questioning attitude

*By Alissa Braatz, Senior Corporate
Communications Specialist, ATC*

Vegetation management (VM) crews around the country face an exceptional challenge each day: doing their jobs in close proximity to electric lines *that are still energized*.

It's not an issue to take lightly, which demonstrates why nearly 100 VM crew members from across the Midwest gathered with other members of the UAA in Green Lake, Wisconsin on December 6-7, 2018 for a collaborative summit focused on safety.

"The UAA is a 4,000 member-led organization that manages priorities over the

FOCUS ON SAFETY

18-20 work teams and 250 volunteers who make the utility VM (UVM) industry a better place to work," said UAA Executive Director Philip Charlton. "We provide value to members and one of the ways we do this is by offering three to four safety summits per year."

ATC served as the host for this region's quarterly safety summit, but VM Specialists Joseph Benzschawel and Adam Helminiak began collaborating with nearly a dozen other UAA committee members in early 2018. The goal was to ensure that



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UAA Summit (Continued)



attendees heard from a range of speakers who could offer distinctive perspectives about safety.

“Without necessarily planning for it, I think the presenters conveyed very similar themes that everyone could relate to: safety starts with yourself, but also, good communication,” said Helminiak.

Amongst the presenters was Paul Hartgerink of the International Brotherhood of Electric Workers (IBEW Local 2150), who conveyed his life-changing story to the five rotating groups of attendees. On October 18, 2013, Hartgerink was called to service an ATC line and was inadvertently run over by his crew member in a bucket truck. Hartgerink detailed his accident of becoming stuck underneath the truck, the multiple surgeries that followed, and years of recovery afterwards. “I’m a statistic of human performance because I didn’t do my job,” said Hartgerink. “In my opinion, accidents like mine happen 100 percent of the time because of lack of communication.”

Not all of the sessions told such a harrowing tale. In fact, the chainsaw maintenance workshop was light-hearted while still technical. Safety



and communication was prevalent there too, though. S&S Tree Service employee Paul Ahlen noted the value of one simple tool for crews to communicate with each other: a whistle. A subsequent session offered a break outside with Wisconsin Department of Transportation patrolmen, who talked through the compliance and safety requirements of trailer hauling for commercial vehicles.

Under the glow of the chandeliers inside the main ballroom, Ted McAllister of Aerial Solutions explained how their safety practices have evolved and strengthened simply by communicating within their team. That process has limited the company to just four safety incidents in the last 30 years. “Tomorrow...is our reward for being safe today,” McAllister said to the crowd of attendees—many of whom had never seen the work of aerial saws.

Herbicide application talks with the Wisconsin Department of Agriculture,

Trade, and Consumer Protection and “Run, Hide, Fight” training from the Green Lake County Sheriff’s department also focused on safety and communication. The final theme mentioned in each of the sessions came during the discussion at the conclusion.

“No matter what role an individual has, it’s imperative to have a questioning attitude,” said Benzschawel to the group. “See something, say something. If a situation appears to be off, it likely is. Everyone has ‘stop work authority,’ even if it’s a brand-new crew member. Bottom line: if the situation involves safety in some way, the action should be communicated, and stopped.”

ATC’s Director of Asset Maintenance and Commissioning, Jared Winters, said of ATC’s support of the UAA Safety Summit: “We’re committed to working safely because at the end of the day, everyone deserves to go home safely.”





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President's Message

By Bob Richens

Working and Living Safely is the Most Important Thing We Do

Greetings everyone!

In this edition of the *Newslines*, we are focusing on one of the three core values of the UAA: safety. Our focus and attention to safety is the most important aspect of our job. Safety has always been a priority in my life and in the lives of my coworkers in the companies for which I have worked. For example, I remember a summer job I had while in college logging hickory in a river bottom forest. I worked in north Florida for a company that supplied cooking and smoking wood for several large chain barbecue restaurants. The personal protective equipment (PPE) and the safe work practices did prevent me from being injured on several occasions, but when I look back on that experience, knowing what I know now about safety, I am certain I could have done a better job of protecting myself and the team with whom I worked.

I am impressed by how we, as an industry, keep raising the bar higher and higher on what safe work practices are and what a best-in-class safety program is—but even with these successes, I also know that we must continue to push for more improvement.

I see the partnerships between electric and gas companies and their vendors that are yielding impressive results. This year, I have participated in several meetings with my customers that were dedicated specifically to safety. I see the metrics by which we measure ourselves from prior years. We are achieving better results and hitting the goals we set for ourselves. But we also still experience fatalities and injuries.

As an industry professional organization, the UAA is engaged in further excelling our safety standards. The UAA dedicates significant resources to safety in our role as the leading organization for the enhancement of the utility vegetation management (UVM) industry. Having this whole issue of the *Utility Arborist Newslines* focused on safety is one way we continue to lead—holding safety summits several times a year is another. The UAA assists in the development of safety-related fact sheets and then makes them available for our members, their employees, and the public.

There is no denying that our industry has never been safer than we are today, but we can do better. We can talk about safety, write about safety, but we will not continue to improve until we also take actions each day. As the UAA President, I call on each reader to continue to make safety your number one priority both on and off the job.

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As a full-service VM contractor, Asplundh performs routine and emergency tree pruning and removals, right-of-way (ROW) clearing and maintenance with specialized equipment, and integrated vegetation management (IVM) with herbicides. Asplundh's diversification in the last 45 years has enabled VM services to other specialized markets, such as municipalities, railroads, pipelines, and departments of transportation.

Asplundh employees in the field receive initial and ongoing training, which includes a rigorous safety curriculum. Safety is the top priority to Asplundh and a large network of corporate safety staff and regional safety superintendents provide training to employees in the field. This helps to ensure the team is trained effectively and in compliance with federal, state, and local regulations, as well as with corporate policies. Additional certifications in arboriculture and herbicide application are encouraged, which helps secure the company's reputation of professionalism and safety.

With unparalleled resources in people and equipment, Asplundh is often called upon to assist utilities in storm restoration work. Whenever a storm-related emergency occurs in North America, any number of Asplundh crews can be quickly mobilized to remove downed trees from power lines and roadways, as well as help repair lines.

Safe, reliable, uninterrupted power is an important service provided by the world's utilities and Asplundh has the expertise to help keep the power flowing.

Executive Director Comments

By Phil Charlton



“A culture of safety, environmental sustainability, and operational excellence are the foundation on which our vision and mission are built.”

With this core value affirmed a few years ago, the Safety Committee began leading an effort to build a culture of safety in all we do and, by extension, all our industry does.

The Safety Committee developed the idea of Safety Summits as a way to encourage conversation among field works, managers, and executives. The committee also promoted a new initiative to recognize safety leaders for their commitment to promoting and inspiring safety wherever they go. The UAA recognizes these elite leaders with the Silver Shield Award.

The Silver Shield Award recipients are safety champions focused on the health and safety of all individuals at home, at work, or at play. They prioritize safety 100 percent of the time, whether at home or work, or on and off the job. They are educators to those around them, interveners in poor practices, and leaders of communication and demonstration of personal conduct of health and safety. Safety champions have a passion for the utility arborist profession. They are knowledgeable and lead by example.

Please consider your coworkers. Is there a safety champion you'd like to nominate? If so, help us in our efforts to praise great leadership by taking a few minutes to submit their name. Simply go to the website www.gotouaa.org, select “About Us” and “Awards.” You will find the full description of qualifications and the process for making a nomination.



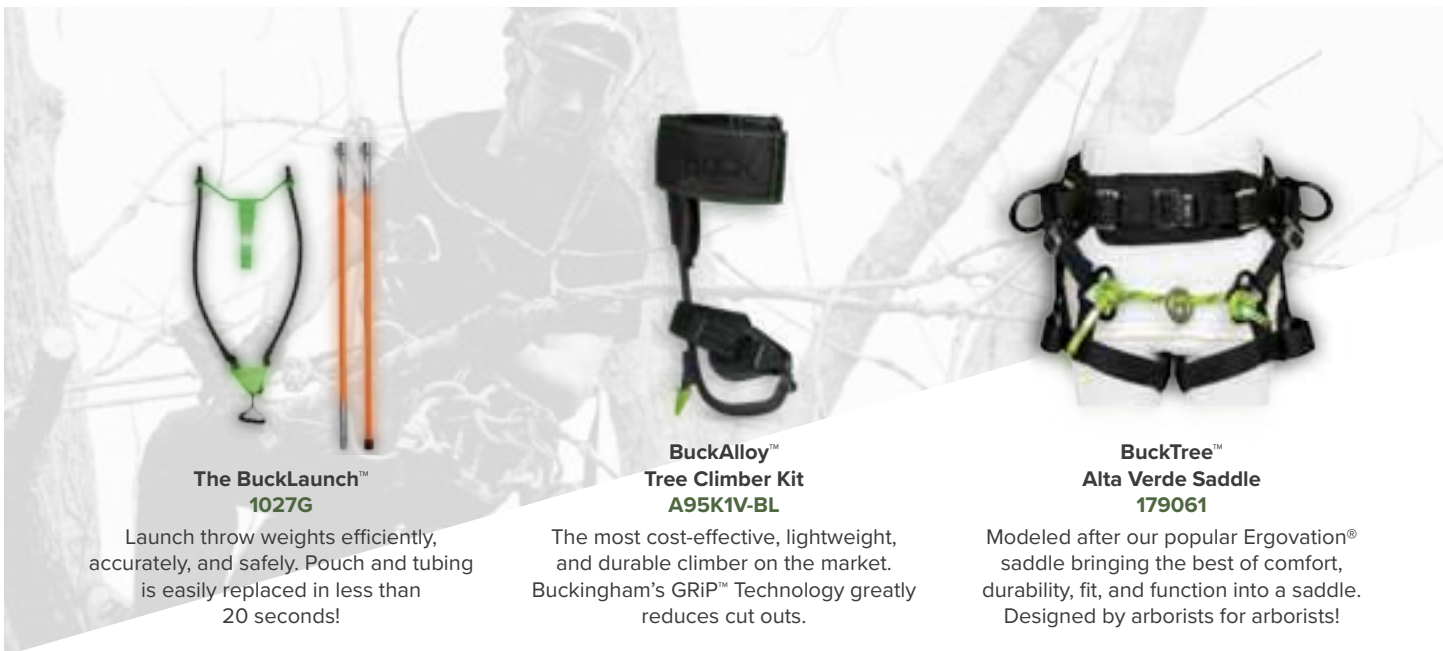
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Achieving a Culture of Safety

By Paul Huryz, Manager, Transmission Contract Resources, Duke Energy

Many of us have spent our careers trying to understand human performance principles or behavior-based safety. The moment we think we have it figured out, something or someone in our space of work does the unthinkable and before you know it, lives can forever be changed. As professionals, the next step that we tend to take when our world gets turned upside down is to try to figure out the “why” and vow never to allow an event to negatively change another family or work team again.

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www.gotouaa.org

Does that description of a utility line clearance safety culture sound familiar to anyone? It certainly does to me and many of my peers that sit on the UAA Safety Committee. For the last couple of years, we have challenged ourselves as an industry team to try to figure out a way to measure a culture of safety. Why is that important, you ask? Simply stated, measuring a culture of safety can be challenging. With that said, the committee decided to take one of the UAA’s core values—safety—to the next level by trying to define, or create, a simple self-assessment tool that helps individuals, companies, and organizations understand what success looks like as it relates to their “culture of safety.” The purpose of this article is an attempt by your UAA safety committee to help you, as a member leader, manager, executive, or owner to measure (or self-assess) your safety culture.

We can all probably think of a few safety metrics (e.g., TCR, Lost Cost per Hour, etc.) that we have used to measure safety successes or failures within a period of time. We certainly do not want to take anything away from the value of those metrics. However, the bigger question seems to be how do you effectively measure a safety culture? Tim Walsh with Davey Tree Expert Co. is on our committee and puts it this way: “Although the easiest type of metric to focus on are the lagging indicators, they are not a true measure of culture. Good safety performance is an outcome of a good culture, but isn’t a true measure of it. Focusing on leading indicators and culture assessments is the best way to identify the level of the safety culture within any organization.”

Improvements really have to start with *why* before reaching to *how* to fix most complex problems. I would certainly classify measuring or understanding where you or your organization is, from a cultural perspective with regards to safety, as a complex problem.

“There are a lot of indicators to let you know that you have a strong safety culture instilled,” said Afton Stanko, Wright Tree Service. “I believe the most recognizable one is when you see everyone from the ground up aligned with your safety culture, getting involved in safety issues, and playing a meaningful role in the process. When you see everyone actively engaged in safety, and are comfortable reporting safety problems, they don’t just have




a check-the-box kind of attitude and truly care about the safety of themselves and others.”

In your professional opinion, what components would be indicators (leading or lagging) to a safety culture? That is the question our safety committee struggled with for more than a year. We wanted to not only answer that question for ourselves, but also attempt to answer that question for the benefit of our membership and the larger industry.

The UAA’s first version of a self-assessment tool, intended to help the user *assess* and *measure* the culture of safety within their company or organization, is available as a PDF on the home page of the UAA website at www.gotouaa.org.

Industry safety professionals and leaders have weighed in on the topic of *assessment* and identified several attributes that are critical to a culture of safety. We narrowed our focus down to three broad categories that help define a safety culture: leadership, quality control, and safety compliance. From these categories, we derived a number of different sub-attributes. The sub-categories are ranked as either an absolutely necessary part of your program or as a best management practice (BMP) that is not always necessary, but recognized as attributes of a highly effective safety culture.

The self-assessment matrix also has a measurement component to it. The end user should self-assess and rank each attribute to a culture of safety by color:

-  Red: not existing
-  Yellow: marginal compliance
-  Green: industry leading

Once ranked, you will have a visual measurement, by color, of your safety culture with a goal of mostly green



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Lewis Tree Service

At Lewis Tree Service, with the direction of our new director of safety and human performance, we are supersizing our culture of learning. Some of the highlights include breaking into groups to study Todd Conklin's book, *Pre-Accident Investigations*, proactively seeking (and preventing) serious injury potential, "close call" stories to gather and share critical lessons that can keep others from getting hurt, building in thoughtful pauses in our work days to actively notice and manage risks and hazards, and changing the language around our After Action Reviews to include asking ourselves what surprised us the most and uncover what we learned.



We are also challenging perpetuated norms, including our leadership response to failures. We are lifting blame and empowering others. We are recognizing that our team members are not the problem, but rather the problem solvers. Through all of this, we are learning a new language of safety in order to ensure we continue to build a culture of trust, learning, and accountability.

In accordance with our shared values and operating principles, we are respectfully holding people accountable by engaging them to look forward to what must be done to repair, heal, and improve. We're focusing on what we do well in order to replicate the positive while gaining a better understanding of failure (i.e., deviation from an expected outcome). We are compiling and studying weak signals, error-prone situations, variability, ambiguity, mental models, and trade-off decisions.

We are on a mission-critical journey to embrace a new view of safety—and that's exciting. Importantly, we're happy to share our learnings. When it comes to safety, we're all in this together.

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Achieving a Culture of Safety (Continued from pg. 8)

checks and no red ones. Lastly, the matrix also includes space for the end user to take notes that identify anomalies and partial compliance with each attribute. The benefit of taking notes with your assessment is that you can reassess periodically for improvements.

"What I find to be the most powerful and rewarding action to take is to communicate the need and successes of our safety culture directly to employees," said Mark Kimbrough, Townsend. "Face-to-face, one-on-one, listening and following up with the employee, learning from them and what they do to be safe on the job while on the job with them. Every time I go out to the field to do trainings, audits, and interfacing with the employee, I can see in their eyes that they appreciate that management is supportive and cares for their safety culture. I also take away new ideas from the employees to improve our overall safety culture!"

With all of that said, if I were reading this article for the first time, I would have additional questions as to why we thought certain attributes were important to a culture of safety. One of those questions might be approximately half of the attributes listed have to do with leadership. Why does leadership have such a great impact on a culture of safety? Bob Urban with ACRT said, "Leadership from board/owner level down to field operations is what I think of when the word 'leadership' is used in this context."

Keith Pancake with ACRT said, "Good leaders are easy to follow. Strong leaders have a willingness to set ego aside and allow others to share knowledge on subject matter that they may be more familiar with. Leaders also have to readily admit that they are fallible and willing to grow from shortcomings. A good leader is ready to take ownership in every aspect of the company's safety culture."

When it comes to personal accountability and safety compliance, how does an individual's accountability figure into a culture of safety? Richard Zito with ECI said, "Employee ownership of the safety culture defines accountability. Employees should be encouraged to talk to co-workers about safety, observe one another's safety performance, and comment on safe and unsafe performance. That includes reporting near-misses and good catches without reservation or fear of retribution. However, it must be recognized that safety is a condition of employment. Fix the problems...not the blame! And lastly, understand that it is important to recognize safe performance. Recognition is reinforcement."

Chris Gaston with Wright Tree Service agreed with Zito: "Once leaders and teammates are accountable to themselves for their own safety, the safety culture will become contagious throughout the work place and become second nature to your team."

So what does the UAA think about training or quality control and assurance from an operational excellence perspective, and how does training have an effect on a culture of

safety? Phil Graham with BC Hydro said, "It can be a double-edged sword. Too often, training is mandated as the corrective action for an incident, even when the root causes do not point to a lack of knowledge or skill at all. When training is required, it must be effective. The material and tools can be great, but without great delivery, it is wasted. If the training is meant to improve or establish skill levels, it has to be training to fluency rather than just training for awareness."

Last, but certainly not least, everyone should agree that communication is the key to success. UAA subject matter experts think that communicating effectively to your team(s) about why a culture of safety is important to your company's mission is also critical to your success. "Meetings and conference calls are valuable tools for communication," said John McLamb, Asplundh Tree Expert Co., "but face-to-face conversation with field team members seems to be the most effective. Especially when you can share a true story of a life altering event that occurred as a result of a poor safety culture."


"They don't care what you know until they know that you care," said Mark Kimbrough with Townsend Tree. "I believe that leadership must show a genuine interest in our personnel prior to imparting any safety-related coaching or guidance. Do I know anything about their personal life? Their children? Do I remember their name from prior visits? Do I care?"

Pancake shared this simple but true thought on the subject: "Transparency throughout all forms of communication

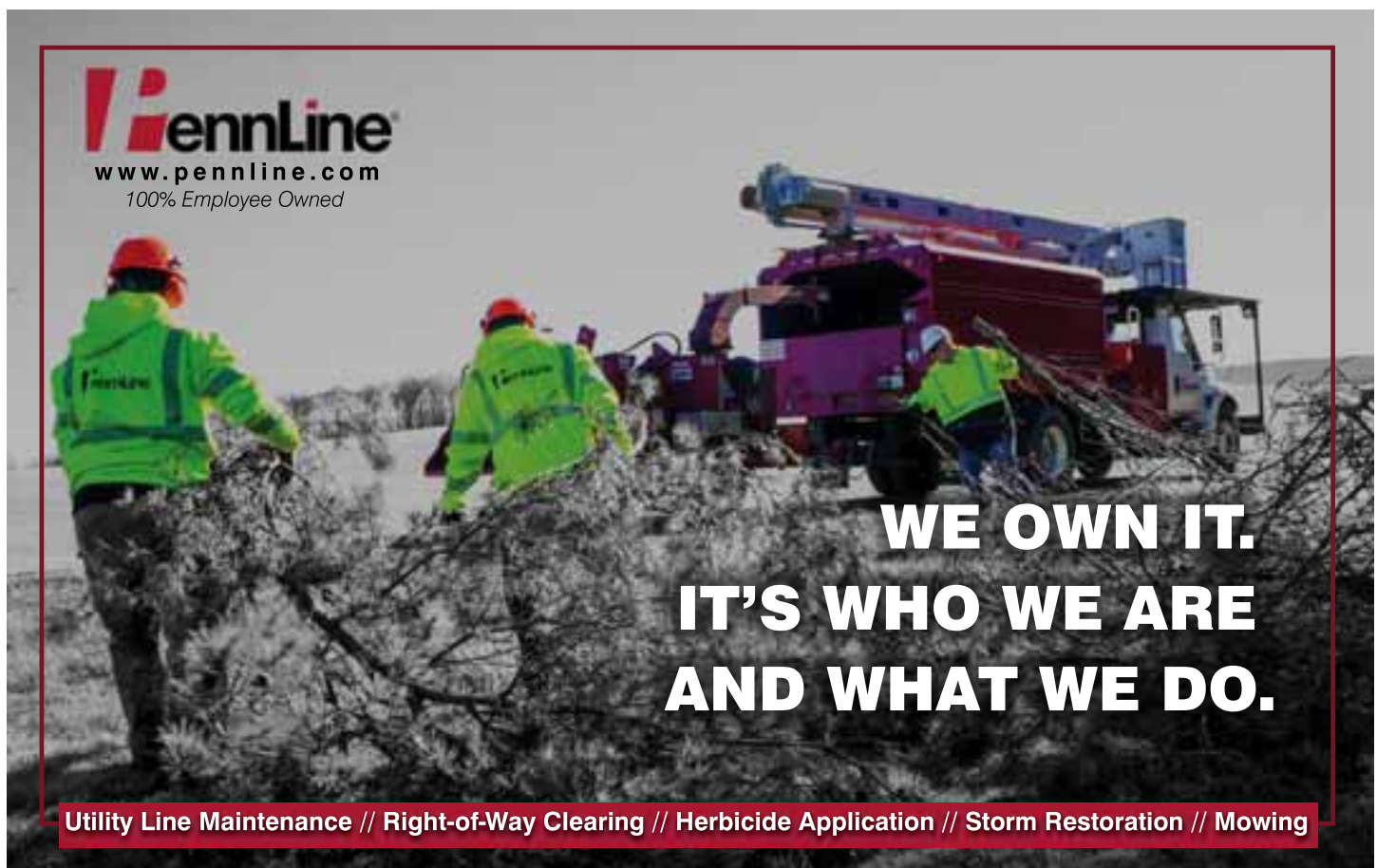
establishes trust in the process of cultivating the organization's safety culture. It is very important that their safety, the safety of their co-workers, and the effect that safety has on the company's ability to continue to conduct business is something that remains in the forefront of every communication."

We have all been given the ability to choose. "Openly sharing safety opportunities for continuous safety improvements with the entire team helps enhance your culture of safety," said Gerry Breton with Lucas Tree Co. That is exactly what the UAA is trying to do here. We by no means think this attempt at measuring a culture of safety is perfect. We do, however, feel like this attempt is a good starting point for a discussion. Please take the time to use what we have offered, and more importantly, add to it. Join us in committee, Trees and Utilities Conference, or even on LinkedIn or Facebook social media chats with your feedback and suggestions. The choices we all make around safety and the culture in which we choose to promote and work will define us all in the future!

We consulted with the Tree Care Industry Association (TCIA) which is a trade association of 2,300 tree care firms and affiliated companies and was established in 1938 as the National Arborist Association. Additionally, we pulled material from the following resource around leadership: Willink, J., & Babin, L. (2015). *Extreme ownership: How U.S. Navy SEALs lead and win* (First edition). New York: St. Martin's Press



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Environmental Stewardship

By Kevin Jones, Managing Thriving Ecosystems on ROWs UAA Task Force; ACRT

SPOTLIGHT on the Environment



NASA IMAGE

The core values of safety, environmental sustainability, and operational excellence support the UAA’s vision and mission statement. To complement the UAA’s core values, a task force was created on the concept of Managing for Thriving Ecosystems on Rights-of-Ways (ROWs). The Task Force’s mission is to set a vision to go “beyond compliance,” and strengthen an environmentally sustainable culture within the UAA. Part of the Task Force’s efforts in 2018 were dedicated to the creation of a UAA-sponsored video, “The Stewards,” to explain the vision and goal of the future state of utility vegetation management (UVM).

I encourage every UAA member to visit the UAA YouTube channel to view the work-in-progress of members taking steps to evolve the conditions of their ROW. “The Stewards” video describes our working environment after the 2003 Northeast Blackout, and provides a glimpse of the direction and future of UVM. The Northeast Blackout drove change in the utility industry through regulation and compliance. UVM’s charge at the time was to reclaim ROW largely through structural vegetation controls to eliminate the greatest threat of vegetation on utilities’ high voltage and critical assets. After many years of managing structurally, UVM has the vision to move beyond compliance and embrace multiple management objectives that include the incorporation and integration of compatible, biodiverse, native habitat on ROWs.

This transition in management focus was reinforced by a survey collected at

the 2018 Trees & Utilities conference. Survey participation and response was received from the following entities:

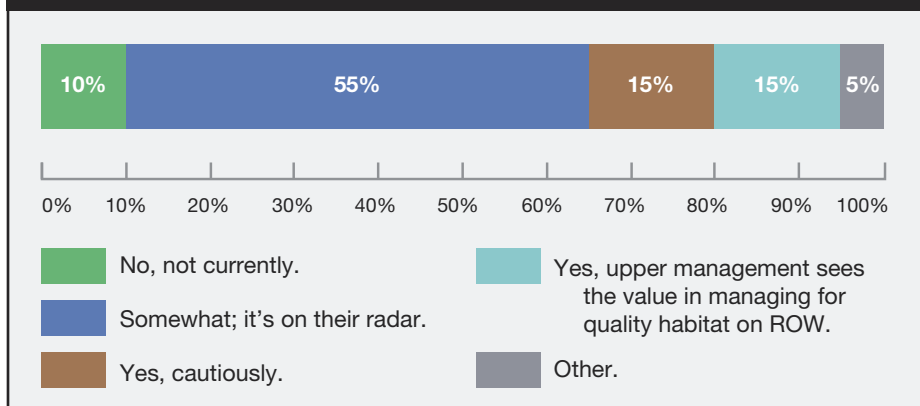
- 65 percent from investor-owned utilities
- 15 percent from member-owned electric cooperatives
- 20 percent from municipal power providers or consulting companies representing a utility

Ninety-five percent of respondents utilized a cycle-based approach to UVM, and 70 percent indicated that managing beyond compliance is something their utility aims to begin in the near future, or has already undertaken, on all or parts of their ROWs. These results strongly favor managing utility vegetation beyond compliance and indicate that our industry will continue to transition focus towards proactive management for compatible, biodiverse, native habit on ROWs.

However, these positive survey results must be contextualized within leadership’s interest in sustainable VM. Only 30 percent of respondents said they received support (e.g., resources, budget increase, etc.) from upper management to include environmental stewardship in their management practices, and 65 percent indicated that they received little to no support on the initiative to shift to sustainable practices (Figure 1). This indicates that the industry has work to do to gain support for stewardship from upper management.

The body of UVM professionals should take pride in the 30 percent of survey

Figure 1. Does your department receive upper management support to implement environmental and sustainable ROW vegetation management practices?





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respondents with favorable and even enthusiastic support from senior leadership. If these professionals can take action as early adopters of new management techniques and broadcast their support, a shift in management focus will no longer be “new.” Managing thriving ecosystems can be made an industry practice with time, and those in the 70 percent portion will shrink as “new” becomes normal operating procedures.

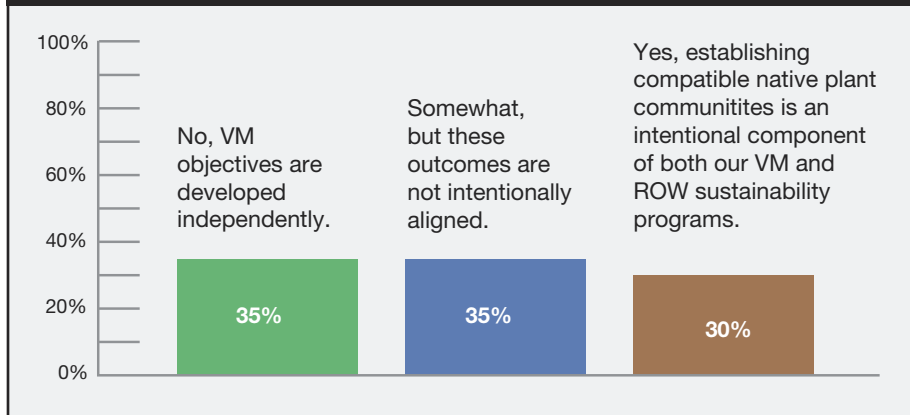
The survey also evaluated whether organizations align VM objectives with company-wide sustainability targets and/or sustainability initiatives. To that question, more than 70 percent of participants noted that VM objectives were not aligned to company-wide objectives, and if they happened to, it was not intentional (Figure 2).

Aside from gaining upper management support for environmental stewardship, the survey indicated that there are additional hurdles to incorporating management through stewardship into UVM practices. Members felt their organization was weak and could use support in areas which included:

- Access to local botanical knowledge and expertise
- Communicating new technologies and best management practices (BMPs) to employees and contractors in an effective and timely manner
- Education to promote contractor knowledge, which supports implementation of ecologically-oriented BMPs
- Forecasting to mitigate perceived higher costs
- Cultural perception of what a ROW should look like (e.g., clean floor, straight walls)

The previous list includes actual challenges, and combined, may feel overwhelming; however, the utility industry has visited these topics in the past, and as an entire body, has come closer to agreement that a change is necessary. Remember: the survey taken at the Trees & Utilities conference suggests that 85 percent of respondents find value in managing for compatible, biodiverse, native habitat on ROW, and 60 percent acknowledged that managing beyond

Figure 2. Does your organization align vegetation management objectives with sustainability targets and/or initiatives?



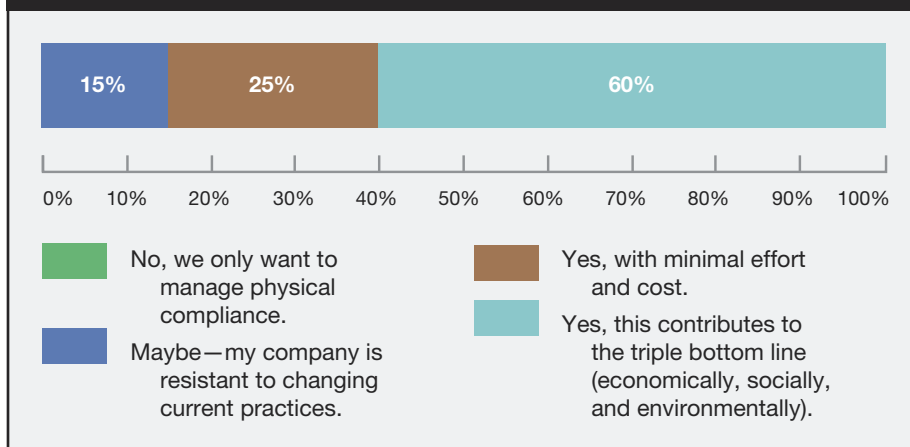
compliance contributes to a company’s triple bottom line (Figure 3). The result of this question addresses that a conversation is alive at many companies, and the VM organization within these companies has done leg work to persuade other supporting business units that embracing sustainability can be a win-win between business units, rather than a unique challenge or a competing interest.

Many utilities are working to upgrade their systems by incorporating more renewable, cleaner energy infrastructure, and many infrastructure upgrades are incorporated into sustainability plans and reports. These incorporations make a shift to managing thriving ecosystems on ROW—a smaller gap to close than it might initially seem. Including compatible, biodiverse habitat as a part of the initiative to deliver clean, renewable

energy across ROWs rich of healthy and thriving flora and fauna seems to be the right thing to do, and has potential to be an easy lift in the wake of a mindset shift to clean, sustainable initiatives. Including ROW stewardship also presents opportunity for more upper management buy-in and support.

The Managing Thriving Ecosystems on ROW Task Force would like to thank survey participants. Your feedback contributes to the Task Force’s efforts to move forward toward environmental stewardship, a core value for our industry. If you would like to join the Task Force to set new precedents in the industry to go “beyond compliance,” or if you have environmental messages you would like to share in *Spotlight on the Environment*, please send an email to: branchout@growwithtrees.com

Figure 3. If given the proper tools and techniques, do you see value managing for a biodiverse, predominantly native compatible ROW habitat?



Industry News

Davey Wins Safety and Communications Awards from TCIA

The Davey Tree Expert Company is proud to be awarded three Tree Care Industry Association (TCIA) Safety Awards and two Professional Communications Awards (PCA) for 2018.

Davey won two Outstanding Individual/Crew Performance safety awards. These awards recognize “an individual’s or crew’s heroic reaction to an emergency situation,” according to TCIA’s website.

The winners of these awards were Amador Reyes, Jr., foreman, Eastern Utility services, and Matthew Shepherd, pictured, ecosystems specialist, Wetland Studies and Solutions, a Davey company.



Matt Shephard

Reyes won for helping residents in Panama City, Florida change a tire so they could continue to bring aid to their community after Hurricane Michael. Shepherd and his crew were recognized for noticing a fire had started in a townhouse unit near their work site and alerting the neighbors of the fire. Due to their quick action, no one was injured in the fire.

The third award was an Outstanding Company Contribution safety award, which recognizes a TCIA member’s proactive program to address safety issues. Davey won for the Safety Mentor: Regional Level Initiative, with special recognition going to Bill Bunker, area manager, Eastern Utility services, and Randy Palmer, regional safety specialist. This local, crew-level initiative was developed to improve safety performance and engagement.

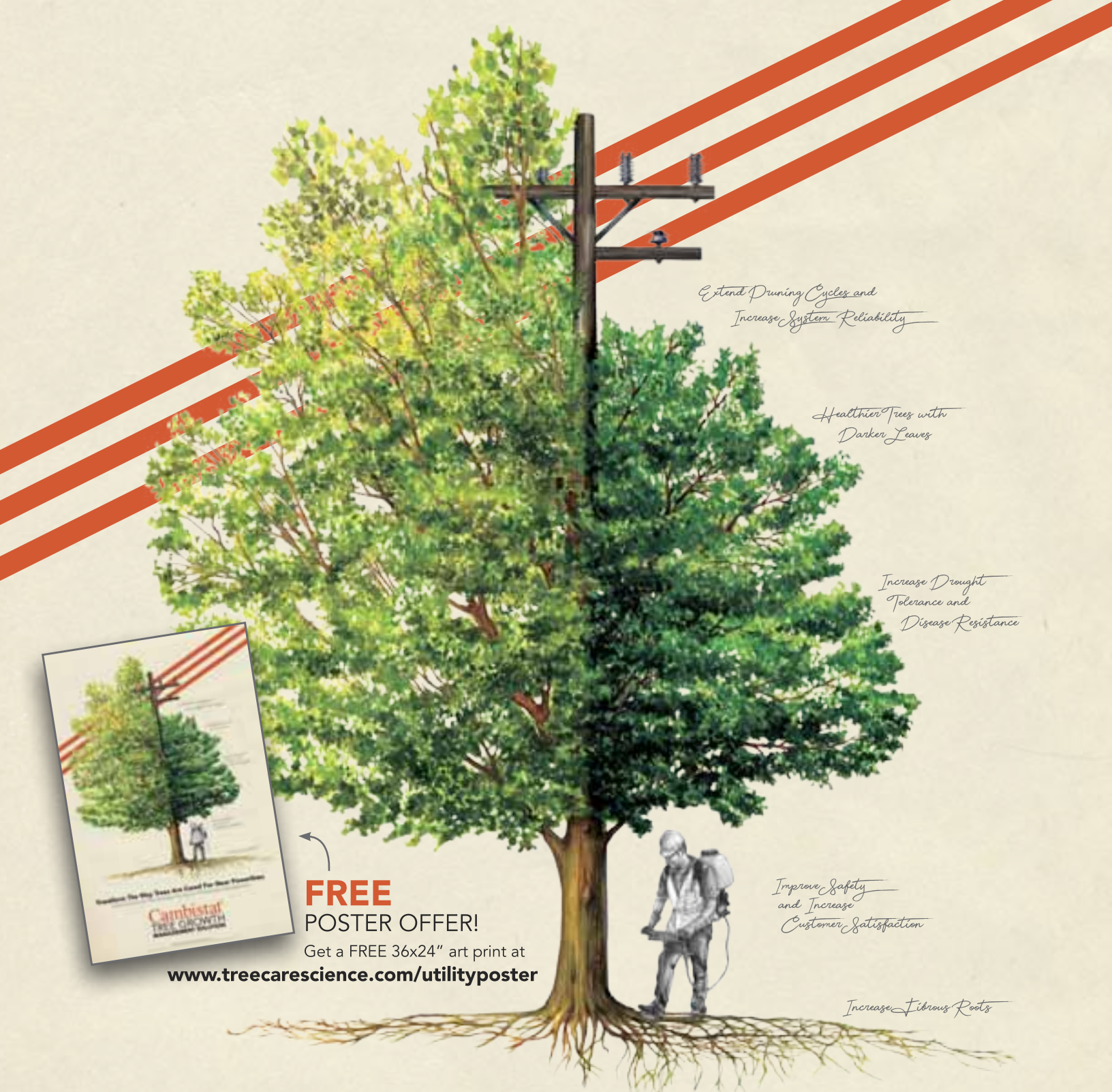
“Davey’s honored to receive these safety awards, but the real honor is having employees like Amador, Matthew, Bill, and Randy, who are dedicated to Davey’s safety culture,” said Tim Walsh, director, Corporate Safety. “Their commitment to the safety of their fellow employees and the communities they serve is something to be emulated.”

A large advertisement for Wright Tree Care. The background is a dark green image of several workers wearing hard hats and safety vests, looking at a set of plans. In the top right corner is the Wright logo, which consists of a stylized tree inside a square frame with the word 'WRIGHT' below it. The main text 'GREEN RUNS DEEP' is prominently displayed in the center. 'GREEN' and 'RUNS' are in white, while 'DEEP' is in large, bold, yellow letters with a wood-grain texture. Below the slogan is a quote in white text: “Our foundation is based on family, character and values. These values play directly into our culture. It’s a feeling... a way of life – not something you can necessarily put into words. Being a Brother’s or Sister’s Keeper is more than a title. It’s a responsibility that everyone takes pride in. In our world, green runs deep.” At the bottom of the ad, there is a dark green bar with white text: 'Vegetation Management • Storm Restoration • Work Planning' on the left, 'Since 1933. Employee Owned.' in the center, and '1.800.882.1216 www.wrighttree.com' on the right.

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Tree Risk Assessment

By Michael Neal, ISA-Certified Arborist, Utility Specialist, Tree Risk Assessor, Michael Neal Consulting, LLC.

The utility vegetation management (UVM) industry raised the bar by standardizing the UVM process using ANSI-A300 (Part Seven), integrated vegetation management (IVM), including adding content for *Part One: Tree Pruning* and *Part Nine: Tree Risk Assessment* related to work around powerlines.

These standards, along with International Society of Arboriculture (ISA) companion Best Management Practices (BMPs) publications, assist utilities in the development of internal programs that are defensible, reduce the risk of safety incidents and wildfires, and improve the reliability of electrical systems.

Two third-party environmental organizations—the National Arbor Day Foundation and the Right-of-Way (ROW) Stewardship Council—require these standards to be part of a utility’s UVM program in order to obtain their award.

The Tree Line USA award requires annual training of utility employees, UVM contractors, and supervisors who perform VM. The training is comprehensive, compliant with ANSI A300 (Part One and Part Seven) and includes ANSI Z133 Safety Requirements for Arboricultural Operations. Utilities are held accountable for ensuring that worker training has taken place and is documented. It isn’t the contractor’s responsibility.

The ROW Stewardship program, as written in Criterion 1.1, refers to compliance with laws and BMPs. This includes a requirement that personnel are educated, trained, licensed, or supervised regarding applicable laws and BMPs. Further, it requires that utilities maintain a safe work environment, including the implementation of safety programs, practicing procedures consistent with industry standards, and ensuring safety programs have been developed and are accessible to internal and VM contractors.

The following BMPs must reference this criterion within utilities: UVM programs, IVM, closed chain of custody, and tree risk assessment. These environmental programs hold utilities accountable for safety, education, training, and gives creditability to their UVM programs. This is the duty of care for which utilities should strive.

It’s imperative that utilities carry out tree risk assessments to identify trees or segments of trees that could impact powerlines. Utilities should develop and implement plans for patrolling and inspecting trees that could affect their facilities on a regularly scheduled basis (Miller 2014). Utilities that are experiencing drought, abnormal insect infestation, ice storms, or hurricanes may have to do inspections annually to reduce the risk of outages, safety incidents, or wildfires.



ERIN CREEKMUUR, ARIZONA PUBLIC SERVICE

It is essentially impossible to prevent tree impacts to powerlines since each individual tree will fail or lose branches differently. However, compiling data on tree-caused outage patterns, with time, will assist utilities in determining which trees are more likely to fail compared to other species. This should enhance utility pre-inspection processes by focusing greater attention on at-risk species.

The 2017 *Tree Risk Assessment* manual identifies roles and responsibilities for risk managers, assessors, and tree workers. The risk or utility manager has the duty of care to: define and communicate tree risk policies, specify the desired level of assessment, determine the scope of work and share with the assessor, decide the level of risk, establish inspection frequency, and make other recommendations.

The assessor or pre-inspector has the duty to assess and classify the likelihood of a tree failure impacting a target, analyze tree risk, prepare reports, and make other recommendations.

The tree worker’s duties include tree inspection, performing a safety tailboard with the crew before engaging in the work, and making other recommendations.

Performing a risk assessment on every tree that could impact powerlines is impractical. There are three levels of assessment.

A Level 1 assessment is a limited visual assessment, which entails walk-by, drive-by, or aerial. The assessor should be looking for tree defects that could result in branch or tree failure. If these defects are identified, the assessor should move to a Level 2 assessment, which is more detailed.



utilities are being sued for wrongful deaths either by the public or VM contractors, and for starting wildfires because trees are falling into powerlines. VM managers should recognize that their programs will face greater scrutiny internally and externally when these types of incidents occur.

VM managers should also recognize that tree risk assessment programs may be viewed as just another line item in a budget, and it may or may not be funded by executive management. The VM manager is accountable for making a compelling case for the program.

It's imperative that utilities carry out tree risk assessments to identify trees or segments of trees that could impact powerlines. Utilities should develop and implement plans for patrolling and inspecting trees that could affect their facilities on a regularly scheduled basis. Utilities that are experiencing drought, abnormal insect infestation, ice storms, or hurricanes may have to do inspections annually to reduce the risk of outages, safety incidents, or wildfires.

According to Guggenmoos, in the *Journal of Arboriculture* 2014 article, 80-90 percent of tree-caused outages are a result of tree or branch failures from outside the ROW, based on information received from various utilities.

At PacifiCorp, Miller states that 84 percent of tree-related outages between 2013 and 2016 were caused by uprooted trees, broken trucks, or broken limbs.

In the study conducted by Guggenmoos and Sullivan on the National Grid transmission system, a regression analysis was applied to calculate risk factors and the annual interruption frequency. The result of the study identified species failures, areas of high risk, and budget requirements.

Using a third party to evaluate the percentage of tree risk in the system and doing a follow-up evaluation to determine the percentage increase or decrease in hazard trees following hazard tree program implementation would be prudent for the VM manager. The VM manager has completed his or her responsibility when he or she is able to produce data for executive management on the risk of doing or not performing hazard tree work. Every utility and VM manager should have a formal tree risk assessment program.

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Level 2 includes a 360-degree walk around, examining the defects more closely, and identifying any potential for a failure toward the powerline.

A Level 3 is an advanced assessment, which is more detailed and includes specialized equipment, data collection, and analysis.

The utility pre-inspector and tree crew foreman, at a minimum, should be trained and required to do Level 1 and Level 2 inspections. The reasons are obvious: safety of the tree worker and the public, as well as reducing the risk of outages and wildfires. Every utility deals with refusals on removing hazard trees that could harm, cause outages, or cause wildfires. Having qualified or trained tree risk assessors that can document the risk and communicate those risks in writing to the property owner will be invaluable, should litigation arise after an incident occurs.

The CN Utility (CNUC) Benchmark Survey of 2014 showed that 29 percent of the respondents have a formal hazard tree program. In addition, modifications to the UVM program as a response to tree-related outages in the last five years was adding a hazard tree program.

Some utilities may be led to believe that lack of a formal hazard tree program limits their liability in the event of a tree-related incident. There is actually more oversight by corporation commissions if the lights don't stay on. Also,

Bringing Safety to the Next Generation: Mobile SAFE Application

By Erin Creekmur, Forestry and Special Programs Supervisor, Arizona Public Service

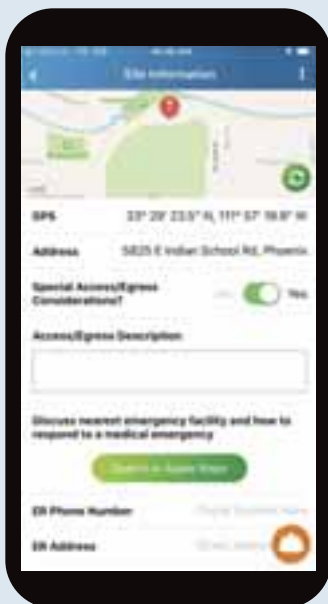
Arizona Public Service (APS) has been focusing on modernizing our system in the last few years. One strategy has been to implement innovative programs to equip transmission and distribution (T&D) field employees with tools that enable remote access to information in order to improve efficiency, productivity, and situational awareness. This mobility strategy will also improve data quality and expand our analytic capabilities for developing future business intelligence needs.

Like most utilities, safety is core to the success of APS. A critical initial step in work execution is the pre-job brief (PJB) discussion. In fact, when significant safety-related incidents occur, failure to complete a proper PJB is commonly identified as one of the causal factors. By improving the way we facilitate our safety discussions, we can also improve the quality of our safety culture.

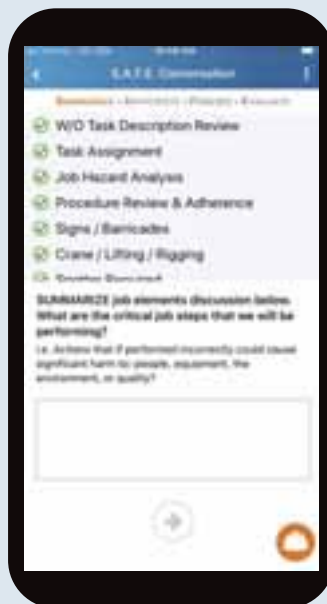
Traditional paper PJB forms can be tedious to fill out and can distract employees from the most valuable aspect of the exercise, which is the discussion. Therefore, a PJB can become more of a burden than a tool for success—a burden which far too often has resulted in forms where the foreman has flown through the check box options, scribbled illegible comments, or missed filling out sections entirely. By digitizing the PJB, the effort needed to capture data is less burdensome for the employee, thus improving the quality and capacity of the information. Additionally, digitizing data capture enables back-end access to the data for tracking, trending, and business decision-making.

SAFE is a new mobile application being rolled out to APS T&D employees in 2019. It is intended to enhance safety and situational awareness by facilitating robust and engaging safety discussions and providing employees with

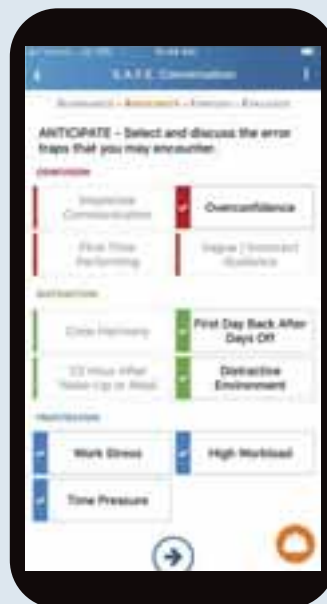
Improving the way pre-job briefs are performed has the potential to reduce...



Mobile GPS capabilities allow employees to easily identify location and emergency response information



Voice-to-text allows user to quickly summarize critical job steps needed to complete the work



Employees can scroll through a list and select potential error traps they may encounter during the job



A navigation feature provides employees with a quick tool to navigate between sections of the PJB and check their completed progress

easy access to safety and human performance tools. The SAFE app is a custom iOS mobile application that will undergo multiple phases of development, each phase expanding the features and capabilities of the application. The T&D PJB is the primary component of the first phase of the application rollout. Future phases of the app will include additional safety features, human performance tools, and expansion to other APS business units.

Speaking with the project lead, Alyssa Beerling, some of the challenges with developing this application centered on the widespread distribution of our employees: “Development projects require frequent feedback from end-users throughout the process,” she said. “This is challenging when your end-users are dispersed throughout a wide service territory and have very demanding day jobs. Additionally, due to the nature of our service territory, our end-users often don’t have cellular connectivity so we had to make the app work in offline mode.”

One key feature that is exciting for initial users is the voice-to-text option. This feature allows employees to quickly and more naturally summarize critical job steps by speaking into their phone. The mapping feature readily provides location information and the ability to search for the nearest emergency facilities. All emergency information is available on a widget on the lock screen of the device for easy access by any crew member. Crews will also have the ability to edit their PJB with minor revisions, re-brief larger scope changes, and document stop-work criteria. Foremen will be able to flag items captured during their post-job review as “important” for immediate review by their planner or supervisor. Field users and leaders alike are especially grateful to have one less piece of paper to keep track of, eliminating yet another common human performance error trap, thus improving our safety performance.



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Safety While Driving: AT&T DriveMode app

Everyone knows that texting while driving is dangerous, but when you receive a text message, it’s tempting to respond immediately. It’s important to remember that it can always wait. AT&T DriveMode is a free Smartphone app that can silence incoming text messages and phone calls so you can stay focused while driving.

The app allows you to create a customized message informing people that you are driving and will not be able to respond until you have stopped. The app automatically turns on when it detects that you are driving at 15 mph or more, and then shuts off at the end of your drive. Additionally, it has parental options for teen drivers that alerts parents if teens disable the app or if a 911 call is made.

Being able to avoid distractions in order to stay focused while driving is not only important for your safety, but also for the safety of others. We encourage you to explore this and other apps that protect your safety while driving, such as LifeSaver, SafeDrive, CellControl, and TextLimit, to name a few. As we all know, nothing is worth your life—especially a phone call or text.



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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 2018 PinE Award Recipients.

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2018 PinE Award Recipients



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Learning Reviews: A New Approach to Root Cause Investigations and Growing Your Company's Safety Culture

By Keith Cottle, Area Manager; Jenna Paul, Technical Writer, and Jack McCabe, VP and General Manager of UVM Consulting, Davey Resource Group

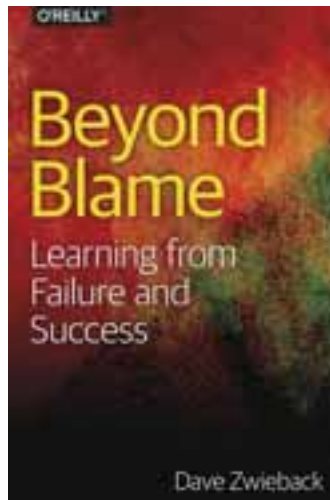
Expanding your company's safety culture requires the ability to learn and grow, along with the willingness to change systems that no longer deliver results. Many companies throughout our industry are expanding their commitment to safety and ensuring the well-being of their employees and the public. Sharing ideas, successes, and failures as we work toward improving our culture of safety opens us up to new perspectives regarding the challenges we face as leaders.

For several years, the utility vegetation management (UVM) and tree care industries have been exposed to a range of new approaches to safety. Human Performance Excellence became part of the lexicon more than 10 years ago and brought with it concepts like Error Precursors and Conditioned Risk Acceptance Tolerance (C-RAT) that changed our thinking about how to engage employees in the safety culture.

More recently, leaders like Todd Conklin have brought us terms like the "New View of Safety" or "Safety 2.0" that have inspired new ideas concerning how to expand the culture of safety. It was Todd Conklin's interview with author Dave Zwiebeck on the *PreAccident Investigation* podcast's 47th episode, wherein they discussed Zwiebeck's book, *Beyond Blame: Learning from Failure and Success*, that ultimately led our organization to implement a different approach to incident investigations called Learning Reviews.

Learning Reviews are a new way to implement root-cause investigations. They are designed to give the employee and the organization a clearer understanding of some of the underlying factors and causes of an incident or close call by going beyond the tendency to cast blame, instead focusing on the systems or processes that failed.

Typically, there are many factors that result in a safety incident, including human fallibility. Identifying the human error in an incident is often where a typical incident



By searching for someone to blame, it is easy to stop short of finding root causes or other factors that, if addressed, could build more effective processes and systems to reduce the consequences of human error.

investigation begins and ends. By searching for someone to blame, it is easy to stop short of finding root causes or other factors that, if addressed, could build more effective processes and systems to reduce the consequences of human error.

A successful Learning Review includes the employee(s) involved, their supervisor and manager, and an objective facilitator to discuss the circumstances around the event. The facilitator follows up about a range of factors and uses the "5 Why Method" to understand the key factors that led up to the event. During this process, the employee receives amnesty from punishment for the incident, particularly if the causes resulted from human error. The exception to this is if the employee violated a company policy or rule.

Rather than focusing on placing blame, emphasis is always placed on the individual's well-being and what their potential injury or death could mean to those around them. It is important for everyone to remember that safety affects far more than just those directly involved in an incident; there are many people in our lives who want us to come home at the end of the day.

This is a critical shift because it builds trust with the employee and empowers them to take a greater sense of ownership of the results without having to point the finger of blame somewhere else in order to avoid punishment. When we move past blame, employees feel free to discuss the nature of what happened and are better prepared to correct the course going forward. It also allows the organization to better understand how to avoid such events in the future.

The old methodology is ultimately regressive: punishing or firing employees when they make mistakes (as every human does) means there is no room for talented, excellent workers to learn from mistakes and correct their errors, and the organization cannot gain information that a person is too scared to share. The result is that no improvements are made to the system and mistakes continue to thrive.

Our experience with Learning Reviews has led to largely positive results. Many employees report that, since their manager is taking time to listen to them, they feel heard. After the review is completed, the employee is encouraged to share their story and what they have taken away from the experience to their team. It has been surprising to see just how many people are willing, and even

excited, to incite open dialogue concerning the incident, knowing that what they took away from it may very well help prevent more accidents or save someone's life.

The Learning Reviews are supplementing current training and providing valuable feedback to assess the effectiveness of established programs. As Learning Reviews teach us more about what knowledge would help employees to avoid dangerous situations, these programs are tuned and expanded to maximize their potential benefit.

It is too early in our implementation of the Learning Review process to see a direct reduction of our accident frequency rates. However, we do see that close call reporting is steadily increasing. We believe this is a leading indicator of increasing employee engagement within our safety culture.

Learning Reviews represent a vital step towards a better culture of safety, which draws upon personal growth and understanding rather than blame and fear. This new methodology can allow your organization to learn more effectively from previous mistakes and rectify the systems which allowed them to happen.

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ArborMetrics Solutions, LLC is a vegetation management (VM) company providing services to electric and gas utilities throughout the United States and Canada. At ArborMetrics, people are our power. Dedicated to safety and efficiency, ArborMetrics foresters and arborists focus on vegetation inspection, planning, and auditing along distribution, transmission, and gas rights-of-way (ROWs). Additional services include tree risk assessments, storm damage assessments, VM consulting, transmission inspections, herbicide planning, and special projects.

ArborMetrics ensures utilities stay compliant by utilizing smart technology and professional training programs. Based on individual state regulatory requirements, a core responsibility of ArborMetrics field staff is to conduct professional landowner notification.

Technology is a key focus at ArborMetrics. Web-based tools collect, record, and report on key performance indices (KPIs) for each project to measure the success of the operation.

ArborLine from ArborMetrics is a proprietary utility

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application designed by arborists for arborists. The reliable software bundled with rugged hardware has been a work management system since 2009. ArborLine provides complete documentation so the customer and their management team can view planned work, assign work, track costs, and measure success on the dashboard(s) with predetermined KPIs.

The Project Management Office (PMO) is the hub of ArborMetrics. Project Management Professionals (PMPs) are designated across departments, ensuring consistency and transparency to stakeholders. The PMO is also critical in employee satisfaction. Onboarding can be a challenging and daunting task, so PMPs are present throughout the process, helping new employees feel welcome.

"People Are Our Power" is not just our slogan; it's our belief. As a VM service provider, ArborMetrics understands our employees are our greatest assets. Our mission is to improve the effectiveness of VM through safe, efficient planning, scheduling, and reporting. Our people carry out this mission every day, providing the best in service and support to our valued customers.



COURTESY OF LEWIS TREE SERVICE

Resilience Engineering and Human Performance: What I've Learned in My First Six Months in UVM

By Beth Lay, Director of Safety and Human Performance, Lewis Tree Service

Someone once said to me, “There are a hundred ways to take a tree down.” No two trees are the same, landscapes differ, weather conditions change, and the level of experience and training varies per crew member. There is not a “best” way to take a tree down. While these take-aways may seem obvious, the extent of the variability and risk significantly affected me as a newcomer to this industry.

Since joining Lewis Tree Service last September, I have learned—and continue to learn—great lessons about vegetation management (VM). The following are just a few of many insights I've gained which, when applied to the fundamentals of resilience engineering and human performance, are informing what we, at Lewis, are calling our “new view of safety.”

Traditional safety looks backward and analyzes incidents. Instead, let's take a step back and think about all the crews working safely with every tree, every span, every mile, every day, all year long. When our day-to-day operations remain incident free 99 percent of the time, it makes more sense to study what we're doing correctly (i.e., the presence of safety) and replicate that success.

Traditional safety tends to focus on “control, correct, and react.” This might work well if you are making widgets on an assembly line, but it doesn't work well at all with highly variable work like ours. With a wide spectrum of tasks, we need to focus on learning, adapting, and acting to create safety.

Andrew Hopkins tells a story about leadership by performing a safety walk-down focused on slips, trips, and falls on the Deepwater Horizon rig as the well was failing around them. It's easy to get side-tracked and miss the bigger picture. We are prioritizing, understanding, and managing

risks with serious injury potential. This guides how we spend our time every day.

A gap exists between policies, procedures, etc. When reviewing incidents, we gain more by asking what went well, what surprised us, and what we learned. As we all continue to embrace learning, the positive momentum industry-wide will strengthen.

Storytelling is key. Ask your crew leaders what stories they share with new employees. Especially in this industry, a well-told, cautionary tale is incredibly effective. People identify more with engaging stories than with fact-based information. I encourage you to gather those stories of serious injury and potential close calls, and to share them widely; it could save lives.

Crew members are not the problem—they are the problem solvers. I'm grateful to have joined a company with a culture of caring (also termed “a restorative, just culture” by Sidney Dekker). Dennis Brown, the Lewis COO, leads with his heart and many others follow. With that said, the remnants of blame can still be heard. Shifting the language away from what crews should have done or failed to do is the right way to encourage open and healthy dialogue—and build trust.

In the past six months, I've been impressed with the safety experts across this industry, utilities, and contractors. Their unparalleled technical knowledge is a major strength; however, that alone is not enough. Our leadership response to failure really matters. It is much more important to build an adaptable, resilient workforce that embraces variability and is enabled to make wise decisions than it is to punish our crew members for minor safety violations.

Our teams are *actively creating safety* day in and day out. Let's celebrate that.

NEIGHBORHOOD SAFETY

Our job is to serve our customers in all neighborhoods at all times of the day.

You can't control the environment but you can control how you operate.

MAKE SITUATIONAL AWARENESS A MINDSET

Situational awareness is a Preventive Tactic. It is a mindset to purposely cultivate so that you don't have to think about it.

Practice relaxed alertness

by being aware of what is going on around you. Put yourself in a position to observe as much as possible.

Use all your senses to heighten awareness. Staying relaxed allows you to take in more information; fear causes you to take in less information.

Have a plan of action based on what you have observed. If you get into the habit of asking yourself what you would do in a situation that poses a potential threat, you are practicing situational awareness.

LOOK

THINK

ACT

When observing new information about our changing environment, we are able to make decisions to keep us safe. **Every environment has a baseline that is "normal."** Being aware of differences doesn't mean it is a threat. It just gives you something to pay attention to. Putting the information you observe into context—so that it has meaning—allows it to become actionable.

BEST PRACTICES

Practice, Practice, Practice!

- Look alert. The less vulnerable you look, the less likely you will be a target
- Scan your surroundings
- Observe people and establish baselines in environments
- At night, keep a flashlight with you
- Get in the habit of looking for exits
- Think of action plans if you were in a specific situation that is a possible threat
- Don't be paranoid, just mindful

PRACTICE IS THE BEST OF ALL INSTRUCTORS

insight



LISTEN TO YOUR INTUITION

- Tune in to your intuition, not fear
- Each day, set your intention for safety
- If something doesn't feel right, it probably isn't

BE AWARE OF YOUR SURROUNDINGS

- Review location records in advance
- Ride around the block before stopping
- Make people aware you see them
- Have an exit strategy



VEHICLE SAFETY

- Plan your route both in and out
- Drive around the block before deciding where to park
- Park strategically

- Don't open the door or roll down a window. If someone needs help, call 911
- Don't work in your vehicle at night. Do paperwork in a well-lit area with people or at the facility

- If you are hit by another vehicle and suspect foul play, drive to the nearest police station or fire department
- Have your keys ready when going to your vehicle

What do you do if you are threatened or feel the situation is unsafe?

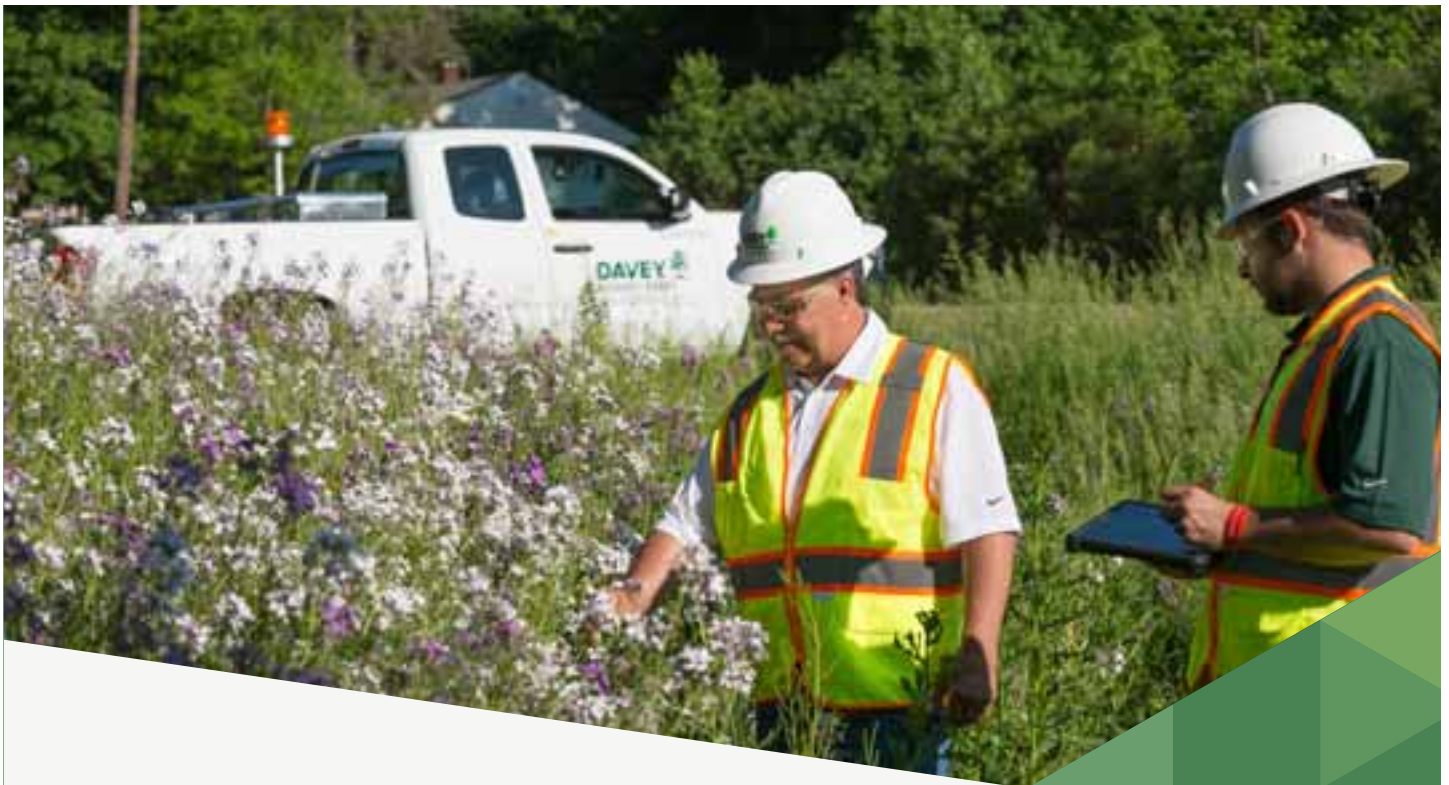
Relocate to a safe place

- Relocate if you have been assaulted or someone has brandished a weapon
- If there is no imminent danger, then notify work management
- Note: A threat can be verbal or physical



Communicate

- Call 911
- Notify work management after contacting police
- Complete an incident report



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Challenges of Working in Alaska

By Philip Chen, Manager of Research & Development, CNUC

Calling a work environment harsh or challenging can be a matter of perspective. For most in our industry, the bleakest work environment imaginable involves a cubicle and computer. For others, it is a cold, rainy day. When preparing for my first trip to Alaska to work with Alex Olesen, Golden Valley Electric Association (GVEA) right-of-way (ROW) manager, I had little idea of the harsh reality Alaska can present to its workers.

Wildlife

Before our trip, we asked extensively about bears. In our ignorance, we thought Alaska had bears everywhere. “We haven’t had a bear attack around Fairbanks in years,” we were told by GVEA staff. “We rarely see bears, or any wildlife, on the ROW. We make so much noise getting there on ATVs and snow machines; plus, we are always running chain-saws.” There was merit in what they told us. Before our visit, there had only been 15 bear-caused deaths in the state from 1980-2015, only three of which were in the Alaskan interior.

However, sometimes the past is not representative of the present. In the first three weeks of collecting field data in Alaska, there were four bear attacks resulting in two fatalities. One of these occurred only a couple of miles from one of our sample sites a few days before we traveled there to collect data. We never saw a bear, or any other large wildlife, while sampling data, but we were acutely vigilant.

Access—Terrain

During that first trip to Fairbanks, I spent three weeks collecting field



data on GVEA’s electric system. Some of our plots were on a stretch of remote transmission line called the Northern Intertie. This transmission line crosses the Tanana River out of Fairbanks and moves south across the river flats, spruce bogs, over the foothills, through the Alaska Range, and south to Anchorage. At a few places along its path, this circuit is less than 10 miles from the Parks Highway.

“Nobody has been out there without a helicopter in 20 years, especially not in summer.”

We heard iterations of that statement again and again from GVEA staff. Then, one lineman suggested we investigate the Rex Trail, which is used by hunters on snow machines in winter to access the deep parts of state lands. We did some googling, loaded the ATVs, and made our way to Clear, Alaska.

Before visiting Alaska, I had ideas in my head regarding access and wanted to avoid visiting in winter because I thought that the snowpack would affect access. Never once did I consider that there would be access issues due to a *lack* of snow and ice.

We set off on our ATVs on what we expected to be a quick ride into the lines. I thought we might be able to knock out a bunch of transmission plots that day. *It took us eight hours to reach lines that were only about eight miles off the road.*

Everyone made it to the line and back safely, and I left Alaska proficient in using a winch and operating an ATV.

Access—Manmade

The heavy use of ATVs and snow machines in Interior Alaska led to another access issue. Without a



dedicated trail system, utility easements often become super highways during the Alaskan winter. These cleared areas become a natural pathway for ever-increasing off-highway vehicle (OHV) traffic. As more people move out of the city, the traffic increases, and ROWs become increasingly leveraged for the clear space to move. However, this is an annoyance to many homeowners. This OHV pressure can create property damage and may lead to other deplorable acts on private landowner's property. Not to mention, most people who live in rural Alaska enjoy their quiet place in the woods, and OHV traffic can disrupt that peace. As a reaction, some homeowners have started blocking the ROW on their property to prevent OHV movement. An unintended consequence of this reaction is that ROW maintenance activities are now slowed as they are blocked by the cars, barrels, and other materials placed to stop OHV operators.

Winter

Although I didn't get to ride a snowmobile, I did have the chance to visit Alaska in the winter. Only one week before the winter solstice, Olesen and I were walking the circuits that were recently cut to see how the program had been progressing. Our time to do so was limited, as the Fairbanks winter has less than four hours of full daylight. It was also very cold. That week, highs were in the single negative digits and lows hovered around -20°F . According to the National Weather Service, exposed skin can succumb to frostbite in just 30 minutes at -12°F . I'm a native-born Iowan and I enjoy winter, but that day I was happy we only had a few hours of light.

Workforce

To avoid the harshness of doing tree work in the Interior Alaskan during winter, GVEA employs a seasonal ROW maintenance crew. The start and end dates for the team are driven by weather and budgets. Reaping the benefits of the 22 hours of sunlight during the summer, crews often work long hours, which can lead to burnout. Additionally, due to their location, few of the crew members have any line clearance experience outside of GVEA, as the GVEA crews are the only tree workers who are Line Clearance Certified within a 300-mile radius.

These are just a few of the challenges I experienced while working with GVEA in the last two years. Their program is evolving and progressing because of the work Olesen and his crews have dedicated to the system. They face all the same obstacles encountered by other utilities, as well as the extraordinary challenges that come with working in a challenging environment. Each region has its own idiosyncrasies. Working with Olesen and his team has helped me understand more about working in the Alaskan Interior and the power of human perseverance.





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Safety and Incident Prevention

By Randall H. Miller, Director of Research and Development, CNUC

Introduction

Tree work has unique potential risks due to the heavy loads, work height, power equipment, and extreme weather conditions associated with the trade (Blair, 1989; Ball and Vosberg, 2010). Add to that the risk related to working in proximity to high voltage and it becomes clear why utility arboriculture demands particular emphasis on safety.

There are humanitarian as well as economic reasons for worker safety (Blair, 1940). Heinrich, Petersen, and Roos (1980) consider industrial safety to be a moral imperative. They remind us that there is no business worth asking people to sacrifice what they value most—health, physical ability, or even their life. People work to provide for themselves and their families and to contribute to society. Serious work injuries can reduce victims' quality of life, and potentially hamper their ability to work. In extreme cases, this may mean people become dependent on the family for whom they provided and the community to which they had once fully contributed. Consequences of workplace injuries or fatalities extend far beyond the individual: their family, friends, colleagues, and people in the community.

From an economic perspective, incidents have a negative effect on a company's bottom line. Incidents generate compensation claims and medical costs. Worse, those costs account for only 20 percent of industrial injury expenditures, which increase due to higher insurance premiums, lost production, training replacements, and other financial liabilities (Heinrich, Peterson, and Roos, 1980). Companies that lack the strength of character to protect their employees' well-being because it is the right thing to do still have economic the economic imperative to send their staff home safely every day.

Incidents

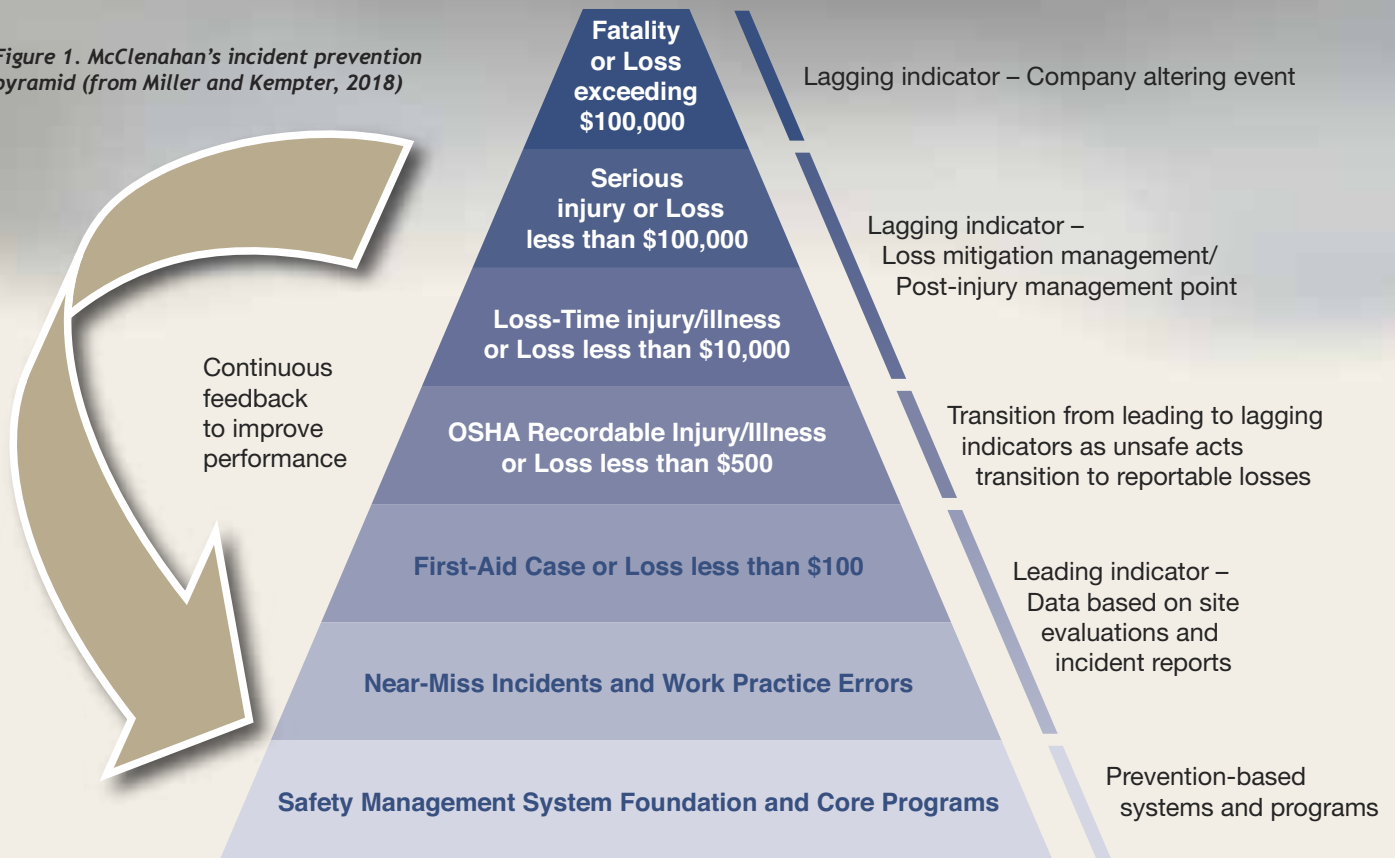
Safety managers make a distinction between accidents and incidents. The term “accident” is in disfavor because it implies that outcomes are due to fate or bad luck, now considered to be a counterproductive message (Salmone and Pons, 2007). Rather, industrial safety teaches that injuries are avoidable. Consequently, unplanned, undesirable events that could result in unintentional injuries or fatalities are better referred to as incidents.

Incidents can be attributed to unsafe acts and unsafe working conditions. Unsafe acts include human error, willful rule violation, and maliciousness. Equipment failure is an example of an unsafe condition. Managers should plan for and work to prevent most unsafe conditions. Providing workers with the mandatory personal protective equipment significantly reduces injury severity, including helmets, eye and hearing protection, and cut-resistant chaps. Equipment failure can be minimized through regular inspection and maintenance. Unsafe acts, such as willful rule violation and maliciousness, cannot be tolerated and should be subject to decisive discipline.

Human error is more difficult to manage. Most people average five errors an hour in their normal work environment, and can only concentrate on two or three things simultaneously. People often make errors when they are assigned tasks for which they are unsuited or inadequately trained (Petersen, 2001). Agnew and Daniels (2010) suggest a “can't do, won't do” test to determine whether an incident is attributable to deficient training or an unsafe workplace condition. If an employee cannot do what is required even if their life depends on it, it is a training problem. If they can, but do not, it is a behavior or motivational problem.



Figure 1. McClenahan's incident prevention pyramid (from Miller and Kempster, 2018)



Behavior-Based Safety

Industrial safety was pioneered in the 1930s by Herbert Heinrich. He initiated research that resulted in behavior-based principles of accident prevention (his words) that are still in use (Petersen, 2001). Heinrich found that 88 percent of all industrial accidents are caused by people committing unsafe acts, with the remainder attributable to unsafe working conditions. Heinrich reached the common sense conclusion that the more frequently a labor force works unsafely, the greater the chance they will have an accident. He determined that for every serious injury or fatality, there are scores of minor injuries, hundreds of close calls, and thousands of unsafe acts (Heinrich, Peterson, and Roos, 1980). Heinrich concluded that the best way to prevent serious or fatal accidents is to eliminate unsafe acts and conditions. He illustrated the concept with an accident pyramid comprised of untold thousands of unsafe acts or conditions at the base, which led to 300 close calls, 29 minor injuries, and ultimately one major injury or fatality at the top (Heinrich, Peterson, and Roos, 1980). Jacobs (2012) considers accepting unsafe acts as contributing to a counterproductive culture characterized by what he calls normalization of deviance.

While Heinrich's work is still valid, thinking has advanced since the 1930s. Heinrich's precise ratio of one major accident for every 29 minor incidents and 300 close calls should not be viewed as representative of all industries, but merely an example to illustrate the broader concept.

The terminology has changed from accidents to incidents, for example. Further, Heinrich's overwhelming focus on workers' contribution to incidents and the ratio of each layer of the pyramid are also out of date. Heinrich's work was based on insurance data that was not representative of all industries, and the contribution of unsafe conditions in incidents may be, and most likely is, higher. Companies need to examine their role in prevention rather than assume it is mostly the fault of workers.

McClenahan (2012) has advanced Heinrich's theories, describing the unsafe acts and close calls at the bottom of the pyramid as a safety program's leading indicators, and serious injuries or fatalities as lagging indicators. McClenahan modified Heinrich's pyramid (Figure 1), putting prevention-based systems at the base and classifying close calls, workplace errors, and first aid cases less than \$100 as leading indicators, OSHA records less than \$500 as transition cases, and lost-time injuries as lagging indicators. While he endorses incident investigation to obtain lessons learned from lagging indicators, he agrees with Heinrich that it is far more effective for safety programs to prevent incidents in the first place and recommends proactively using lessons learned from leading indicators to do so.

Multiple Causation

Multiple causation is a refinement of the behavioral-based safety theory. As described by Petersen (2001), this philosophy maintains that Heinrich oversimplifies reality. ►

Petersen considers workplace injuries to be caused by a number (rather than *the* number) of contributing factors and causes, which randomly interact. Prominent among these factors and causes is exposure to serious conditions. Rather than simply reducing the overall frequency of unsafe acts, Petersen reasons that safety managers should direct their attention to circumstances most likely to result in severe injuries. For example, debilitating injuries are far more likely to occur to workers at height in proximity to high voltage lines than to those completing production reports. Peterson concludes that it is a distraction for safety managers to spend their valuable time eliminating unsafe acts on benign activities when their energy would be better spent addressing behavior and conditions on potentially more threatening tasks.

Petersen (2001) maintains that severe injuries are most likely to occur in the following circumstances:

- Unusual, non-routine work
- Nonproduction activities
- Work associated with sources of high energy (e.g., electricity, steam, compressed gas and flammable liquids, height)
- Some construction activities

From Petersen’s perspective, focusing on these conditions is a more effective way to reduce severe injuries than simply reducing all cases of unsafe acts. The idea is not that Heinrich is wrong, but that time is limited, and the pyramid concept is more effective if intervention is focused on addressing circumstances most likely to result in serious injury or fatalities.

McClenahan (2012) advances the multiple-causation theory by prioritizing risk factors through a risk assessment matrix. The matrix categorizes unsafe acts on the basis of probability that they would cause an incident and the likely severity of the event’s consequences (Figure 2). This approach can be used to evaluate where managers should focus their energies. For example, a frequently occurring unsafe act with catastrophic potential consequences (serious injury or death) carries extreme ongoing risk and should draw closer attention than isolated acts with negli-

gible severity. That is not to say those unsafe acts should be ignored, just not emphasized. McClenahan advises that the technique provide a systematic approach to establishing feedback loops, trend analyses, and resource allocations. He also counsels companies to maintain criteria already determined to be best for their company culture rather than waste time focusing on areas of known high compliance.

McClenahan (2012) advises using job behavior observations and perception surveys to collect leading indicators. He asserts that successfully applying this information carries the following benefits:

- Targeted training programs address “real” issues within an organization.
- Training can advance further than strictly compliance-based programs that are required.
- Training can be geared toward operational efficiency and valuable results can be attained.
- Data can be combined with lagging-indicator data to strengthen employee development programs.
- It provides an early-warning system.
- It provides metrics for employee performance beyond the dollars and cents of a job.

Heavy Reliance on Punishment

Critics of behavioral-based safety argue that the pyramid theory has been abused by some who use it as justification to rely too heavily on punishment to reduce unsafe acts (Petersen, 1997). This can be counterproductive, because it carries the implication that bad things happen to bad people, and those bad people deserve punishment. While it might be satisfying to management to blame workers for choosing to work unsafely, using punitive action as a primary safety driver is a shortcut that often undermines morale and creates a mistrustful work environment. It can compromise safety programs by discouraging employees from coming forward to report close calls out of fear of reprisal. Consequently, retaliatory programs often lose the opportunity to fully benefit from lessons learned, including identifying latent circumstances and conditions that can lead to injuries (Reason, 2000; Petersen, 2001). Finally,

Figure 2. McClenhan’s generic safety risk assessment (from Miller and Kempter, 2018)

Probability of Loss	Severity of Loss			
	Negligible	Marginal	Serious	Catastrophic
Improbable	Low	Low	Moderate	High
Occasional	Low	Moderate	High	Extreme
Probable	Low	Moderate	High	Extreme
Frequent	Moderate	High	Extreme	Extreme

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relying too much on punishment diverts employers from their responsibility to prevent unsafe conditions. Managers should ask themselves whether punishment has led to a desired outcome in the past, or if it is ever likely to do so in the future.

Summary

Safety professionals now refer to incidents, rather than accidents, because accident implies fate, and incident sends a message that safety can be improved with the proper proactive approach. Incidents occur because of unsafe acts and unsafe conditions. Employers have an obligation to limit unsafe conditions. Unsafe acts are due to human error, willful rule violation, and maliciousness. Willful rule violation and maliciousness cannot be tolerated. Human error can be reduced by prioritizing leading indicators and concentrating on those that are most likely to cause high or extreme risk. Employers are cautioned not to rely on discipline to reduce the frequency of unsafe acts.

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This article was excerpted from Miller and Kempter, 2018.

Safety and Technology Revolutionized

By Brian Sprinkle and Patrick Larsen, Regional Supervisors, CNUC



Brian Sprinkle



Patrick Larsen

Maintaining a culture of safety is paramount for any organization that works in our field. Not only does a safer work environment protect employees and the public, but it also contributes to the financial bottom line. We have found that the best way to ensure that safety stays at the forefront of our team members' minds is to regularly collect and analyze data about safety.

Capturing data on safety-related incidents, accidents, and near-misses is an essential step to improving internal safety programs. To be successful, the way employees collect data has to be user friendly and efficient. Many companies have done a fantastic job collecting data on safety-related trends, but the systems used to store and analyze the data have fallen short. By streamlining the data collection, storage, and analysis processes, organizations can easily highlight areas of improvement in

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their business model and review historical trends. This is exactly what we are doing at CNUC.

Safety is one of CNUC's core values. We pride ourselves on being innovative and thinking of new processes and procedures to improve the way we do business. That's why CNUC has partnered with our sister company, Terra Spectrum Technologies (TST), to use their FieldNote™ app to help us achieve a state-of-the-art safety program.

FieldNote allows us to eliminate our paper-and-pencil process and move to an entirely electronic, self-contained system. The era of filling out forms by hand, scanning documents, and manually inputting data into an excel spreadsheet is at an end. Now, we are able to electronically capture data from daily job briefings, monthly vehicle checklists, safety audits, incident investigations, near-

miss reports, and other safety-related items on iPads that sync the data back to a secure database. These key performance indicators (KPIs) are automatically analyzed and displayed in customized dashboards, which our management team uses to draw conclusions about safety-related trends. Because the data is available as soon as it is entered, we can make changes to improve our safety culture in real time.

The only way to create a premier safety program is to gather input from all levels of our employee base. Each level of our management team, from the supervising consulting utility foresters in the field to the president of our company, has access to the database and can review safety analytics. We also share our findings with the entire company on our weekly team safety calls.

Integrating FieldNote™ into our

safety program has improved our business model in many ways. Prior to the rollout of this program, our supervisors and managers would spend many hours editing spreadsheets, filling out PDFs, etc. The ease of use with FieldNote™ helps our team submit data and review it instantaneously in a user-friendly format. This also allows our management team to spend more time in the field with our employees to provide additional training and support.

Our culture of safety is the pinnacle of who we are and why we are so successful. Implementing FieldNote™ into our safety program has revolutionized how we capture, store, and analyze data to thoroughly understand safety-related trends within our company. This helps us continuously develop our safety culture, improve our working environment, and ensure our employees make it home safely each and every day.

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2. How do you deal with safety violations? How do you differentiate between a “true accident” and an intentional violation?
3. Are you aware of the UAA Safety Summits and if so, would you be interested in hosting?
4. Are there any safety apps and technology that you are using in your area?
5. How are you sharing safety metrics and methods with your crew and team? How do you share near-misses—do you share them at all?
6. Are your emergency safety standards the same as your safety standards?

Midwest Region

By Andy Olson, Forestry Services Supervisor for East Central Energy (ECE).

1. We do not track safety metrics with internal employees or contract tree crews in a traditional sense. However, that’s not to say safety is of low importance. As a host utility, ECE expects all contract tree crews to operate in accordance with the ANSI Z133 2017 standard, and also within the expectations of their company safety manual. This is heavily emphasized within the language of the RUS contract and work specifications. Our cyclic clearing projects have an extensive scoring system, which include criteria for work quality, member relations, and safety. For instance, if a contractor causes an outage during a project, their score is penalized, and thereby affects the likelihood of winning bids on future work. This is one way that we incentivize safe work practices on lump-sum work. We also perform random safety “observations” on the crews we encounter. This is essentially a quick glance at PPE, roadside



Andy Olson

set-up, and overall work procedures. Feedback is provided to contractor management at our monthly progress meetings, but we generally leave it up to the vendor’s management to correct things that we agree to be problematic.

2. We have a low tolerance for intentional violations of the ANSI standard, or any other negligent or careless behavior. Every case is different, but if a pattern has been established with little effort to correct the problem, we reserve the contractual right to remove an individual, a crew, or an entire company from our system. If repeated problems persist without correction, the contract is suspended and the vendor is removed until appropriate steps are taken. T&E crews are observed in a similar manner; any crews that are not willing to work within the ANSI standard are removed from the property.

4. Some of our vendors use apps on their mobile tablets to record daily tailgate session topics, and also for completing and storing job briefing forms electronically. ECE has incorporated a visual alert system within our GIS mapping program that will notify the user of potentially dangerous situations within certain properties, based on past interactions—this would include hostile members, aggressive dogs, or locked

gates. This alert system has helped our crews be as safe as possible when entering private property. We also provide safety-related documents and procedures that crews can access remotely from the field via a crew-assigned tablet.

5. During every team and contractor-progress meeting, we discuss any accidents or near-misses that occurred during the previous month. Safety methods and metrics are examined in great detail during these meetings. We review accidents (avoidable or otherwise) to prevent such incidents from reoccurring. Our team believes we can learn a great deal when accidents or near-misses happen. Safety is our highest value.

6. At ECE, we have a detailed Electrical Hazard Abatement plan (ANSI Z133 Section 4.3.12). We share this with all crews working on the property during a yearly pruning safety session. This would apply to ECE’s safety standard and mitigation procedures when working in normal conditions. In emergency storm situations, all of the normal standards still apply, but we have an additional procedure that tree crews and line personnel are to follow with regard to isolation and physical grounding of downed conductors. This is also reviewed annually with our internal operations department and tree crew members.

Midwest Region

The following is a special message from Wright Tree Service (WTS):

Training and Tools Spotlight

By Nathan Carlisle, Safety Supervisor, Wright Tree Service

“Integrity is doing the right thing, even when no one is watching.”

Too often, we are willing to take shortcuts to shave off a few minutes of a task. Many times, we are only compliant with rules and procedures when a supervisor is present.

Daily tasks that are small and tedious are often when workers fall

short of performing proper safety procedures. Having a commitment to safety requires us to not only being compliant with regulations on the clock, but also to prioritize safety when we go home after a day of work. It needs to be a lifestyle.

As a safety supervisor, I oversee WTS employee-led safety meetings in various locations across the U.S. Employee-led safety meetings are when crew members conduct a presentation about a topic to their peers. During these routine safety meetings, I always ask crew members to define the terms, "compliant" and "committed."

In an effort to really show the difference between *compliant* and *committed*, I begin with a series of questions. I first ask, "By a show of hands, who is going to mow their lawn this weekend?" Most hands go up. I then ask, "Who will wear eye protection while mowing their lawn?" Fewer hands shoot up. Next

question: "Who will wear eye AND ear protection as you mow?" Very few hands rise, signifying that almost no one plans to wear ear protection while they mow their lawn.

From there, I explain that being committed to safety carries beyond the work day. At home, safety practices should be followed just as much as at work. We wear eye and ear protection when working on the jobsite—why not at home? The next step after being compliant with safety practices is to be *committed* to safety as well.

Most workers have been persuaded that eye protection is an immediate safety benefit. Persuasion of using ear protection, however, is a little harder because most consequences aren't noticed until years later when people start experiencing hearing loss.

Unfortunately, it might take a catastrophic event to occur in someone's life to alter their mindset.

Taking precaution is the key to prevention. When I first began working as a tree trimmer, I witnessed a co-worker get hit in the head with a hanger that we had been working around for several hours that day. I directly saw the result: my 23-year-old friend was badly injured, paralyzed, and in a coma for six months. Eighteen years later, he remains paralyzed. From the first moment, everyone who witnessed the accident was convinced that safety precautions are imperative.

I believe that we don't go to work with the intention of hurting ourselves or others, and you really have to work hard to get injured with every safety measure we have in place (e.g., job briefings, Brother's and Sister's Keeper, and our safety challenges). And still, we take shortcuts. We might breeze through a job briefing and sign the forms without thinking about being *committed* to safety; instead we're more concerned



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about being *compliant*. A commitment to safety and to all our procedures is key to preventing injuries.

I hope it doesn't take an injury to convince you to take the next steps toward your commitment to safety. Act now and stay focused every day.

■ Southwest Region

The following is a special message from Davey Tree Surgery Company:



Steve White

What We Can Learn from a Fire Hydrant

By Steve White, Area Manager, Davey Tree Surgery Company

Our topic is about vegetation management (VM) practices for utility corridors and facilities. The challenge is mind-boggling and involves frustrating iterations that go on for years and years. It is a power grab for priorities and funding. Sometimes, it is even a solemn head-dropping moment for all, knowing that lives have been lost, and valuable and expensive property destroyed.

Why is it that almost everybody understands the logic regarding fire hydrants, but not power lines? Roadway corridors are a close second behind fire hydrants, but we still see crosses, flowers, and broken bark on the side of a large tree in the right-of-way (ROW), and the smashed car is gone. Each of those events also brought head-dropping sorrow and traumatic loss.

Go look at any fire hydrant. It will be clear. The water utility has a solid success. Most hydrants sit their entire life and never get used except for maintenance. Homeowners just know to keep them clear on their dime. Water departments completely enforce that clear space. Why is that? And why can't our society realize the same importance with corridors that are shipping gobs of volts of live electricity?

How did the fire hydrant's importance become so ubiquitously respected? It seems to me a culture was developed after many tragedies emphasized the need for easy access.

In urban and rural forested areas, utility vegetation managers are shouldered with the dilemma of how and where to use the hard-fought funding to keep the power on at minimum cost. It requires creative techniques because the forest continues to grow. The business of accomplishing those techniques drains the budget in a hurry. We organize and stick to these priorities as much as we can:

- Priority #1: Use the money to keep the lights from going off.
- Priority #2: Don't waste any of the money.
- Priority #3: Find ways to improve Priorities #1 and #2.

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This priority is the crux of the dilemma because outside pressures like new construction, storm recovery, unplanned utility emergencies, rising costs, and underfunding impede improvements.

I'm thinking those priorities are good questions to be asking ourselves about every project and activity. The forest is always changing. It takes frequent inspections to find those changes, because some of them will now be a threat. Alberta, Canada's government is impressive with its effort to widen power corridors to help prevent fires and save their huge forests. The Water Departments are impressive also with their routine inspections and established culture on hydrants.

There is another priority that we all miss. I hate to say it, but I think it is even drastically more important than using the money to keep the lights on: making safety a renowned requirement to the community. Vegetation power outages are difficult to prevent, just as fire hydrants are not always helpful in nearby emergencies, but society continues to maintain safety standards for that one significant moment when such an understanding saves lives. We hope that vegetation managers in utility corridors and facilities can strategically fund more public urgency campaigns to keep those areas safe.

International Region

By Fábio José de Carvalho – Electricity Distribution Engineer at Cemig Distribuição

1. At Cemig, the accident frequency rate (TFA) and gravity rate (TG) are used for accident metrics. We also have the safety index practiced (ISP) indicator and ISV security index checked on housing, tools, and vehicles. The accident frequency rate (TFA) is an indicator that shows the effectiveness of the safety measures through the cumulative number of staff with work-related accidents (personnel crews and outsourced), temporary or permanent, per million hours worked (personnel crews and outsourced) in a given period.



Fábio José de Carvalho

Equation:

$$TFA = [(number\ of\ personnel\ and\ outsourced\ crews\ with\ leave\ at\ work) \times 1,000,000] / (Number\ of\ hours\ worked\ by\ the\ labor\ force)$$



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Vegetation Management Specialists

The severity rate (TG) is intended to express, in relation to one million hours of exposure to risk, the days lost by all accident victims, and the days debited for cases of death or permanent disability.

It should be made clear that in cases of death or permanent disability, do not consider the days lost, but only the debited—except for injury losses lasting more days than the the permanent injury suffered.

Cemig treats security violations differently, according to the degree of violation, which we call “non-compliances.” They are classified as

severe, serious, and mild, according to the risk of injury. After reviewing the non-compliances and the employee’s history, we develop an action plan based on the prevention of new occurrences.

2. No, we are not aware of the UAA Safety Summits, but would be pleased to have a UAA representative in our International Symposium on Electrical Safety—a Latina American conference held every year to discuss security issues in the utility industry. Please visit <http://www.sise.online/>

3. We rely on some information systems to manage safety performance at Cemig. SAP systems are used to record accidents. In addition to registration, this platform provides some reports. To control field inspections, the company has software

to record inspections, action plans are developed, and reports are generated and disclosed. We have also developed software to manage safety documentation, such as legal requirements and training in general that are necessary to support the performance of our routine activities.

4. Security metrics are tracked by the company managers and addressed in weekly and monthly meetings with employees and contractors. All work methods and procedures are made available to all employees. These documents are available in the software system and as hard copies in vehicles.

5. We take into account legal aspects and have internal procedures for dealing with accidents and other emergency situations.

Equation:

$$G = T \times 1,000,000 / H$$

Where:

- G is the rate of gravity
- T is the time computed
- H is hours of risk exposure
- ISP identifies the level of safety practiced by operational crews. Standardized inspections are carried out using specific guides, and the indicator is calculated according to the number of non-compliances and inspection hours. We grade non-compliances as severe, serious, and mild, according to the risk of injury.
- ISV identifies the level of safety in vehicles, housing, and tools. Standardized inspections are carried out using specific guides. According to the number of non-compliances, they are pointed out in vehicles, housings, and tools. After adding the number of items inspected, we determine the indicator. We grade non-compliances as severe, serious, and mild, according to the risk of injury.

UAA needs your help!

Every two months, UAA Regional Representatives can provide a report for the *Utility Arborist Newsline*. Let them know what is going on in your company or in your region.

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