Prominent Analyst
Jennifer Fritzsche Talks
Key Industry Themes to
Watch for in the New Year
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The NATE Administrative Office headquarters is located in Watertown, South Dakota. Office hours are Monday through Friday, 8:00 a.m. to 5:00 p.m. (Central Time).

NATE Mission Statement

- To pursue, formulate and adhere to uniform standards of safety to ensure the continued well-being of tower personnel.
- To educate the general public, applicable government agencies and clients on continued progress toward safer standards within the industry.
- To keep all members informed of issues relevant to the industry.
- To provide a unified voice for tower erection, service and maintenance companies.
- To facilitate effective safety training for the industry.
**NATE Board of Directors**

**Dates to Remember**

**AGL Local Summit 2020 - Seattle**
January 30 | Seattle, WA

**NATE UNITE 2020**
February 17-20 | Raleigh, NC

**Susan Harwood Grant - Wireless Rooftop Deployment Training Course**
February 17 | Raleigh, NC

**Susan Harwood Grant - Wireless Rooftop Deployment Training Course**
March 9 | Dedham, MA

**South Wireless Summit**
March 16-19 | Nashville, TN

**IWCE (International Wireless Communications Expo)**
March 30 - April 3 | Las Vegas, NV

**ETA International**
March 30 - April 3 | Las Vegas, NV

**CCA Mobile Carrier’s Show**
March 30-April 1 | Dallas, TX

**STAC 2020 Conference & Exhibition**
March 31-April 1 | Vancouver, Canada

**Canadian CommTech East**
April 7-8 | Mississauga, Canada

**ENTELEC**
April 7-9 | Houston, TX

**AGL Local Summit**
April 9 | Atlanta, GA

**NAB**
April 18-22 | Las Vegas, NV

**WON Leadership Summit**
April 20 | Chicago, IL
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Wireless Technician Program Approved

NATE IN ACTION

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CHAIRMAN’S CORNER

"How do we make hard work sexy again?" We are dealing with a different generation!

My first introduction to the workforce was at the age of 15. I was handed a shovel, told to dig a ditch 1 foot deep with a flat bottom and “dig that way until I come to get you and say it’s time to stop!” Me and that shovel got to know each other pretty well all day other than a 30 minute lunch break. Pretty much all summer, I was allowed to stay close to my new friend.

We cannot operate under this method with the workers of today. They won’t stand for it. They don’t care how many jobs that they ping around, they seek satisfaction, recognition, and the need to feel a part of the big picture. I tell everyone I meet that people like me need training on equating with the younger generation!

Looking across the NATE organizational membership, what does it take to work in the Elevated Wireless Industry? It’s discipline, safety, and the ability to climb and work at heights compounded with a basic understanding of current technologies such as fiber optic, basic electrical, and a general understanding of the waveforms modulated across a frequency to transmit the data, images, videos, and text that our society is accustomed to. In essence, tower technicians occupy an industry very similar to that of a traditional utility.

In October, NATE assembled a meeting of all the major industry groups including WIA, NWSA, and TIRAP, along with consultants from the community college level. While we have all been running independently in regards to workforce development, we agreed to derive a common set of goals and a roadmap to be revealed in 2020 outlining how our collective organizations, acting as one body, can attract more workers into our industry. This nationwide initiative will target key areas where the most workers can be solicited and employed.

Furthermore, I met with industry leaders across five states, and participated in 14 meetings, in five days. One of the main topics facing our industry and many others is attracting and retaining the workers necessary to maintain our current infrastructure, plus complete the future initiatives, specifically 5G.

We are competing with all the other basic trades, and we could be deemed slightly disadvantaged as working at heights is not for everyone!

We must work hard to attract and retain workers with the current initiatives underway; but, it all begins with the employer. ■

Jimmy Miller is the Chairman of the National Association of Tower Erectors and is President of MillerCo, Inc. in Gulfport, Mississippi. He can be reached at 228-832-3352 or jlmiller@millercoinc.com.
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Converge - verb (used without object), con·verged, con·verging. Definition: to tend to meet in a point or line; incline toward each other, as lines that are not parallel.

As the calendar turns to the year 2020, converge is certainly a word that is applicable to our thriving industry ecosystem.

Convergence is happening at a rapid pace with the lines between sectors such as wireless, wireline, fiber, cable, data centers and edge computing continuing to blur together and evolve.

This convergence is exciting for the industry and presents a golden opportunity for the Association to extend our reach to a larger audience and ultimately grow and diversify both our membership base and trade show. This convergence of sectors also presents an opportunity for our member companies to position themselves to work for additional customers. Simply put, convergence will allow the Association to tell our proud story to an even larger pool of companies and stakeholders who can benefit immensely from the safety and quality benefits of an affiliation with NATE.

Speaking of convergence, I am confident you will enjoy the cover story in this edition of Tower Times magazine featuring prominent industry analyst Jennifer M. Fritzsche. Jennifer serves as a Senior Equity Analyst and Managing Director for Wells Fargo and is a must-follow in order to monitor important industry trends, mergers, acquisitions and other news that impacts the landscape surrounding NATE member companies.

NATE UNITE 2020

NATE UNITE 2020 will take place on February 17-20 in Raleigh, North Carolina. The Association is excited to bring our premier conference and trade show to the state of North Carolina for the first time. The Raleigh-Durham Research Triangle region has emerged as a hub for the communications infrastructure industry and will be a great host to this dynamic event.

The Association is proud of the caliber of content that we will be offering at NATE UNITE 2020. I am confident that attendees will notice that industry convergence is a theme throughout the event whether attending an educational session, training course or strolling through the exhibit hall. Make your plans to register to attend and participate in NATE UNITE 2020 today.

See you in Raleigh, North Carolina!

#ElevateWireless

Todd Schlekeway is the NATE Executive Director. He can be reached at 888-882-5865 (U.S.) or 605-882-5865 or todd@natehome.com.
The Original “PREFORM”

BIG-GRIP DEAD-END

STRENGTH FROM THE GROUND UP
Remember back in 2000 when NATE was still in its infancy at just five years old? We were so excited about entering the new millennium and all the predictions, hopes, and expectations that went with it. Although hard to believe, it is now twenty years later. NATE has grown beyond those predictions, hopes and expectations. We will be celebrating our 25th Anniversary this year, February 17-20, in Raleigh, North Carolina, with what promises to be the biggest and best NATE UNITE yet! Hopefully you have already registered, made your hotel reservations and created your list of educational sessions to attend and the vendors you want to talk to on the trade show floor.

They say the only constant is change and 2020 will no doubt prove that old maxim right. Among the changes already implemented are the additions of new WIN Regional Ambassadors and State Liaisons.

Please welcome the following new folks to the Wireless Industry Network:

- **Great Lakes Regional Ambassador** – Diane Mueller of CITCA LLC (previous Illinois Liaison)
- **Great Plains Regional Ambassador** – Pete Hagstrom of Viking Maintenance dba Finish Tower (previous Iowa Liaison)
- **Alabama Liaison** – Josh Elkins of Crown Castle
- **Georgia Liaison** – Jason Miller of Ansco & Associates, LLC
- **Illinois Liaison** – Stephanie Brewer of MUTI - Sabre Industries Telecom Services
- **Iowa Liaison** – Pat Murphy of Murphy Tower Services, LLC
- **Mississippi Liaison** – Jordyn Ladner of MillerCo, Inc.
- **Missouri Liaison** – Mike Krohn of GME Supply Co
- **New Jersey Liaison** – James Weiss of Turnkey Safety Solutions, LLC
- **New Mexico Liaison** – Kari Candelaria of Advanced Tower Services, Inc.
- **Texas Liaison** – Joshua Tawwater of Performance Communications II, Inc
- **Vermont Liaison** – Donny Randall of Green Mountain Communications, Inc.

Please say hello to your State Liaison and Regional Ambassador when you see them at industry events.

Do not hesitate to contact your local Liaison or Ambassador if WIN can help with your state wireless association event, local legislative initiative, a local job fair, etc. We are here to facilitate communication and collaboration between all stakeholders in the wireless industry.

When making your upcoming industry event plans, don’t forget about the Tower Family Foundation Golf Event being held on February 20, 2020 in conjunction with NATE UNITE 2020 in Raleigh, North Carolina. Your support would be much appreciated! Register your golf teams now as space is limited. Registration and sponsorship forms can be found on the NATE website, www.natehome.com.

The NATE Wireless Industry Network is also planning two Regional Conferences later this year. One WIN Regional Conference in Parsippany, New Jersey will be held on May 5 to coincide with the OSHA National Safety Stand-Down Week. The other is planned for Austin, Texas in late September 2020. Look for additional information in upcoming issues of Tower Times and at www.natewin.org/calendar-of-events/.

We hope that 2020 is a safe, happy, healthy and prosperous New Year for all of you. See you in Raleigh!
## Ambassadors and Liaisons

### Regional Ambassadors

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<thead>
<tr>
<th>Region</th>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>Atlantic Coast</td>
<td>Therese O’Brien</td>
<td>TESSCO Technologies</td>
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<td>Great Plains</td>
<td>Pete Hagstrom</td>
<td>Viking Maintenance dba Finish Tower</td>
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<tr>
<td>Northeast</td>
<td>Justin Pitts</td>
<td>East Coast Communications</td>
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<td>Pacific</td>
<td>Jesse Petrilla</td>
<td>Petrilla Technologies, LLC</td>
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<tr>
<td>Rocky Mountain</td>
<td>Chris Memmott</td>
<td>Triple M Enterprises</td>
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<td>Southwest</td>
<td>Dale Shumaker</td>
<td>Enertech Resources, LLC</td>
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### State Liaisons

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<tr>
<th>State</th>
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<tr>
<td>Alabama</td>
<td>Josh Elkins</td>
<td>Crown Castle</td>
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<tr>
<td>Alaska</td>
<td>Brian Horner</td>
<td>Learn To Return Training Systems</td>
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<tr>
<td>Arizona</td>
<td>Mark Salisbury</td>
<td>Engineering Wireless Services, LLC</td>
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<tr>
<td>Arkansas</td>
<td>Todd Williams</td>
<td>CMS Wireless, LLC</td>
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<tr>
<td>California</td>
<td>Corey Messer</td>
<td>Pacific Safety Solutions LLC</td>
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<tr>
<td>Colorado</td>
<td>Justin Miller</td>
<td>EasTex Tower, LLC</td>
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<tr>
<td>Connecticut</td>
<td>Denise Frey</td>
<td>Ericsson, Inc.</td>
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<tr>
<td>Delaware</td>
<td>Kevin Dougherty</td>
<td>MILLENNIA CONTRACTING, INC.</td>
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<td>District of Columbia</td>
<td>Jim Goldwater</td>
<td>Bob Lawrence &amp; Associates, Inc.</td>
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<tr>
<td>Florida</td>
<td>Lesley Liarikos</td>
<td>Tower Systems South, Inc.</td>
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<td>Georgia</td>
<td>Jason Miller</td>
<td>Anso &amp; Associates, Inc.</td>
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<td>Hawaii</td>
<td>Rick Jones</td>
<td>Skyjack Communications</td>
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<tr>
<td>Idaho</td>
<td>Kurt Funkhouser</td>
<td>Idaho Tower Construction Co.</td>
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<td>Illinois</td>
<td>Stephanie Brewer</td>
<td>MUTI - Sabre Industries Telecom Services</td>
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<td>Indiana</td>
<td>Brandon Chapman</td>
<td>Valmont Site Pro 1</td>
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<td>Iowa</td>
<td>Pat Murphy</td>
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<td>Tommy Lewis</td>
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<td>Kentucky</td>
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<td>BeLinda Fadely</td>
<td>CommScope</td>
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<td>Brent Hutchison</td>
<td>Newkirk Electric Associates Inc</td>
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<td>Midwest Unlimited LLC</td>
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<td>Scott Walls</td>
<td>Black &amp; Veatch</td>
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<td>New Hampshire</td>
<td>Amy Dulce</td>
<td>SAI Group</td>
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<td>New Jersey</td>
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<td>Turnkey Safety Solutions, LLC</td>
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<td>Kari Candelaria</td>
<td>Advanced Tower Services, Inc.</td>
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<td>New York</td>
<td>Doug Harradine</td>
<td>Patriot Towers Inc.</td>
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<tr>
<td>North Carolina</td>
<td>Stacey Moore</td>
<td>EM Educate</td>
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<tr>
<td>North Dakota</td>
<td>Kevin Reski</td>
<td>Great Plains Towers</td>
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<tr>
<td>Ohio</td>
<td>Nicole Paulette</td>
<td>Elevated Services, LLC</td>
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<tr>
<td>Oklahoma</td>
<td>Christy Hall</td>
<td>Texoma Contracting, Inc.</td>
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<tr>
<td>Oregon</td>
<td>Lee Morealle</td>
<td>Advanced Tower Components, LLC</td>
</tr>
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INTERNATIONAL LIAISONS

CANADA - QUEBEC
Craig McLellan
NOUVELLE HAUTEUR INC.

CANADA - ONTARIO
Jeanne Piercey
Tower Engineering Professionals, Inc. (TEP)

CANADA - ATLANTIC CANADA
Richard Tiller
Tiller Engineering Inc

BAHAMAS
Clement Rolle
Retired NATE Member

WYOMING
Justin Miller
EasTex Tower, LLC

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(Watertown, SD) - NATE recently released the official results of the 2020 Board of Directors election. The Association announced that Jimmy Miller, President of MillerCo, Inc. in Gulfport, Mississippi, John Paul Jones, President of Tower & Turbine Technologies LLC in Austin, Texas, Kevin Dougherty, President of MILLEN-NIA CONTRACTING, INC. in New Castle, Delaware and Bryan Lee, President of Lee Antenna & Line Service Inc. in Springtown, Pennsylvania were re-elected and will retain their respective seats on the NATE Board of Directors.

NATE also announced that candidate Jessica Cobb, Chief Executive Officer of MDTS in Ortonville, Michigan was elected to serve as a new member of the Board of Directors. Cobb currently serves as a Board Member of the Michigan Wireless Association, a member of the NATE Member Services Committee and a member of the Women of NATE (WON) Committee.

The five candidates who were elected by their industry peers will officially begin their new two-year terms on February 16, 2020 at the NATE UNITE 2020 Conference in Raleigh, North Carolina.

“I would like to congratulate Jimmy, John Paul, Kevin, Bryan and Jessica on their successful election and all nine of the candidates who threw their hat in the ring for what was a very competitive and close election," stated NATE Chief Operating Officer Paula Nurnberg.

“Looking ahead to 2020, the NATE Board of Directors will be governing during a very exciting and dynamic time in the industry that offers enormous potential to position the Association for future growth and influence,” added Nurnberg.

For more information on NATE, visit www.natehome.com today.
Will the Towers Stand Tall Again in 2020?

Wall Street’s Prediction of Key Themes to Watch for the Sector

Anyone who owned a tower stock in 2019 is likely very happy! Why? The towers subsector was once again one of the strongest under our coverage universe YTD2019 (+35% vs. S&P 500 +25%). The hard part of an analyst’s job is always calling the top (and bottom) of stocks. We have had a hard one with towers of late. Specifically, we downgraded the towers in April 2019 amid fears of ongoing S/TMUS merger concern, some disruption in carrier leasing activity across the Big 4 carriers, and that the group had appreciated to multiple levels that we feared were too frothy. While we thought (and continue to think) we had the logic at the time – the tower stocks and multiples continued to expand through August. However, what we saw in late summer is multiples began pulling back and returning to levels that we believe more appropriately reflect the risk/reward of the setup exiting 2019 and entering 2020. In late Summer/early Fall even with interest rates remaining quite low (a good thing for towers given the higher debt profile of these companies), the sector sold off as greater focus on underlying fundamentals took shape. On the domestic front, the noticeable theme was that T-Mobile, due to the uncertainty around the S/TMUS merger outcome, retrenched on network spend. Our guess is this may not come as a surprise to many of the readers here. Simply put, we believe T-Mobile thought the Sprint “bird” would be in hand by the Summer of 2019 and once it was not, things paused.

Given that T-Mobile has been such a contributor to growth for the tower sector the last 18 months, it is not a huge surprise that a pullback in this customer was a needle moving event for domestic growth trends. Further, the international segment (for American Tower Corporation and SBA Communications Corporation) continues to face political and FX headwinds in some pockets of their respective portfolios. India, in particular, remains a market where AMT has made a sizeable

Jennifer Fritzsche is a managing director in the Equity Research department at Wells Fargo Securities, where she has focused on the Telecommunications Services sector since 1999. Jennifer can be reached by phone at 312-920-3548 or e-mail at Jennifer.Fritzsche@wellsfargo.com. To subscribe to Jennifer’s industry analysis reports and e-mails, contact her at Jennifer.Fritzsche@wellsfargo.com.
investment to date, yet the wireless competitive market is still in flux. We expect 2020 to bring further clarity on S/TMUS merger result, which in turn could drive more activity from the likes of other players (namely DISH).

We also expect 2020 to bring more direction on the political issues in some international markets (namely India). But all of these comments are BACKWARDS looking….not forward!

As we look toward 2020, we expect wireless capex will decline by ~3% in 2020 (Exhibit 1). We note a few things. First, both TMUS and VZ no longer break out their dedicated wireless capex (it is grouped in total capex). Second, while our estimate for TMUS stand-alone assumes a 6.7% decline y/y, the outcome will be much different if it successfully completes the Sprint merger. By its own admission, TMUS has indicated it plans to spend 15% more over the next five years as one combined company than it would as two separate companies.

| Exhibit 1 |
| Big 4 Wireless Carriers' Capital Expenditure ($MMs) |
| |
| --- | --- | --- | --- | --- |
| AT&T | $10,934 | $10,775 | $11,340 | $11,156 | $10,391 |
| Sprint | $1,709 | $2,510 | $4,043 | $5,963 | $4,000 |
| T-Mobile | $4,702 | $5,237 | $5,541 | $6,434 | $6,000 |
| Verizon | $11,240 | $10,310 | $8,486 | $8,818 | $9,130 |
| Total | $28,576 | $28,832 | $29,430 | $29,372 | $29,521 |

Note: S and TMUS reported as standalone capex
Source: Rysavy Research

While carrier spending is of course important for growth – there are other important trends and themes expected to shape the sector. We highlight five of these below.

5 Things to Watch for in the 2020 & Beyond Tower Narrative

1) **Impact of S/TMUS merger** - one way or another we will (FINALLY) know the path. The time is finally coming! Almost two full years since this merger was announced (April 2018), we expect to know if T-Mobile and Sprint get married or if a breakup is in their future. For the towers (stocks and companies!), we fully believe the better outcome is together (aka successful merger). If it is, we anticipate the “new T-Mobile” will rapidly begin building out their network plans, including 600MHz that T-Mobile owns and the 2.5GHz which Sprint brings to the table. In fact, we believe it is these 2.5GHz spectrum assets that are the true “crown jewels” of this merger for T-Mobile. If this merger gets done – by its own admission, the new T-Mobile will have to get very busy, very fast on the network side! Recall, the New T-Mobile committed to building low-band 5G to at least 90% of the rural population within six years, and to investing $40B over three years to build the network, ahead of its $8-10B per year run-rate to date. Stating the obvious, that is a big number! And that is good news. The bad news is if a merger does not happen it will take longer to start the network spend “machine” again. Recall, there is a 6-9 month time lag between when tower companies receive applications from carriers to when it shows up as revenue. So given that no applications have been happening of late from TMUS (or S), the best case would be a 2H 2020 ramp given this lag time, in our view. Adding to the pain is the fact that TMUS’s retrenchment in spend in mid-2019, many wireless E&C companies decreased staffing needs. Exhibit 2 shows this trend based on WirelessEstimator’s estimates. As shown, employee count has decreased significantly since April 2019. We make this point because it does take time to increase the headcount to service demand once it comes back. And this too may take time.

What happens if a merger is rejected (again by the time of this printing we may indeed know the path!)? Well then we may be in a bit of a holding period. While Sprint has a lot of unbuilt spectrum – it has a balance sheet with a significant amount of debt ($45 Billion dollars to be specific). In recent public statements, the Sprint C-Suite has said they need this merger with T-Mobile because they do not have the financial wherewithal to go it alone. As a result, it is difficult for us to see how Sprint will be able to spend aggressively on its network if its path is a solo one. For T-Mobile it too could be in a bit of a waiting period. T-Mobile has been very open and public with the fact if it is not able to purchase Sprint it will need to seek other sources of spectrum to keep up with its UnCarrier disruptive strategy. As we address below, finding this spectrum avenue may be a bit of a complicated one. Thus, while T-Mobile’s capital spending tends to typically be very front end loaded in the calendar (Q1), we believe an argument could be made we may not see this typical front end loaded spend given the uncertainty on the timing of a successful Sprint merger (Plan A) or the need to find an avenue to find more spectrum (Plan B). But either way, for the tower industry overall we see merger resolution – one way or another – as a positive as it gives two of your four main customers the ability to make definitive network decisions.
COVER STORY (CONTINUED)

Exhibit 2
Number of Job Postings For E&C Positions On WirelessEstimator

Source: Company reports, WirelessEstimator, and Wells Fargo Securities, LLC

2) DISH will play a role too, one way or another – Regardless of the Sprint/T-Mobile merger outcome, we believe catalysts exist for the tower companies in 2020 and beyond, though the exact timing of the events remains uncertain. Topping that catalyst list is DISH and its path from here. DISH has 75MHz of nationwide spectrum in the mid-band area. If the Sprint/T-Mobile merger gets done, DISH may prove to be the white knight. Recall their stake in the Sprint/T-Mobile merger is DISH plans to purchase S’s prepay business (Boost and Virgin) for $1.4B and S’s 800MHz spectrum for $3.6B (after three-years). In exchange, New T-Mobile will have a wholesale relationship with DISH for seven years, a standard transition of services arrangement for “up to three years,” and DISH cannot sell its spectrum for six years. Additionally, DISH will have the option to take on some of S’s planned divested cell sites (towers!) and retail locations. DISH’s new build out timeline moves from March 2020 to covering 70% of the U.S. with 5G by 2023 (so the “tick tock” volume goes down significantly for DISH). If the merger does not get approved, however, DISH must still see through to its commitments to the FCC. While its official deadline (which originally was March 2020) received a stay following the July 2019 announcement of the role it will play in S/TMUS merger, if the merger does not get consummated, DISH must again see through these commitments in order to prevent the FCC from revoking its spectrum. Stating the obvious, the FCC does NOT like spectrum warehousers – especially when you have carriers like AT&T and Verizon calling for the need for more spectrum. So for DISH to prevent the FCC from revoking its spectrum DISH must move on activity quickly to get this spectrum a working network. This is an important trend to watch as the tower companies’ customer list could have a new name on the list (with or without a successful Sprint/T-Mobile merger).

3) Lot going on in spectrum world...but more of benefit to towers coming in 2H 2020 / 2021 – There is very much an alphabet soup to spectrum these days! Multiple bands, multiple uses, multiple capacity and propagation capabilities. In the simplest form, spectrum can be broken down to three main buckets: low band (which we define as less 2GHz), mid-band (which we define as 2GHz – 10 GHz), and high band (10GHz – 100GHz but most of recent 5G focus is centered around mmWave spectrum in the 24GHz – 39 GHz range). Exhibit 3 outlines the basics around each spectrum category. As outlined below, low band spectrum is known more for its coverage capabilities. As physics dictates, the lower the spectrum, the longer the propagation. High band (namely mmWave) spectrum is known for its shorter propagation (~ 500 feet or so) but better capacity characteristics (given the large channels of spectrum which carriers own). Auction 103 (in mmWave space) was currently going on as of the time of this printing. While mmWave spectrum is not a huge catalyst for the tower space (given the short propagation capabilities of this spectrum (~ 500 feet) this is more suitable for small cell deployments than macro towers), we believe mid-band spectrum will be a major boon for the sector! Mid-band has gotten the most interest of late these days because it in many ways is the perfect hybrid spectrum that couples the benefits of both low (coverage) and high (capacity) spectrum. As T-Mobile has said, in order to be effective in the 5G ecosystem you need multiple “layers” of the “5G wedding cake” (low; mid and high band) and that middle layer (mid-band) is key to making the cake be presentable!

Exhibit 3
Physics Of Wireless Spectrum

Source: Rysavy Research and Wells Fargo Securities, LLC

There are four major buckets of midband spectrum that will be deployed over time. These include: Sprint’s 2.5GHz spectrum, DISH’s spectrum (as discussed above), CBRS (3.5GHz spectrum, of which 70MHZ is to...
be auctioned off in June, 2020) and the ~280MHz of C-Band spectrum (3.7GHz – 4.2GHz spectrum) set to be auctioned before YE 2020 (we note there is still much controversy on the spectrum band and much debate satellite companies will get paid for this spectrum). There is a proposal in front of the FCC (with support from CTIA) to clear possibly as much as 600MHz, or over 2x the amount which could come from C-Band of the upper 6GHz band (6.525GHz – 7.125 GHz). While most of this spectrum deployed in the urban core will be supported by small cells, in the highway and suburban markets, towers will most likely play a role.

Given the urgency around which some of the carriers are supporting some of these plans, one could argue some are in much need for additional spectrum. If more spectrum comes – that is a positive for the tower industry. Spectrum is not worth much unless there is a network behind it. However, if new spectrum is not allocated or cleared by the FCC, the other way to add coverage and capacity is to spend through it in an effort to aggressively densify the network. This leads to great cell splitting which also is a positive catalyst for the infrastructure players (i.e. tower companies) supporting these carriers’ efforts.

4) 5G Infrastructure Finding Its Sea Legs in 2020 - We continue to believe the 5G infrastructure is still in the extremely early innings. If one were to ask public and private tower companies where most of their revenue is being driven from – the majority would still say 4G spend. The key to 5G infrastructure will be greater densification of the networks. Fiber and small cells will be two of the key ingredients to get this done. Verizon recently noted that 90% of its 5G cell sites (which we still believe is a fairly small number) are connected to its own fiber. While owner economics will be a theme in 5G, other carriers (i.e. T-Mobile and Sprint) that do not have a legacy wireline network from which it can tap into, will have to rely on other infrastructure companies to provide this. This is one of the main reasons we continue to favor Crown Castle’s fiber acquisition strategy. However, while fiber and small cells may be the first area of spend for carriers in 5G, one could argue the role of the macro tower becomes all the more significant in a 5G ecosystem. We often use the somewhat rudimentary analogy of thinking of a 5G network almost like one would think of a cardiovascular system. In this analogy, the “veins” are the heavy and massive fiber that needs to be deployed. The “capillaries” at the end of the veins (aka fiber) may be thought of as the hundreds of thousands (some experts would say millions) of small cells which need to be deployed to support this densification and high band spectrum. And guess what? As biology 101 teaches us these veins and capillaries don’t really work if one vital organ is not ‘pumping’. That vital organ, of course, is the heart and in our analogy can you guess what the “heart” represents in a 5G network? The macro tower! We believe the role of the tower in a 5G world emerges as an important (vital!) centralization point of many of the other parts of the wireless infrastructure namely the small cells and fiber. Recall that the macro tower has fiber and power to it and represents a secure location. These represent key positives in any 5G network plan.

5) International gives more growth – but with a lot more risk – American Tower Corporation (AMT) and SBA Communications Corporation (SBAC) have continued to focus their capital on expanding their respective international market reach and scale. Pockets of these international segments have faced political and FX headwinds in their respective portfolios. SBAC recently announced a foray into South Africa, a new market for the company, but one the company has been familiar with for a number of years. AMT also expanded its African portfolio, agreeing to acquire ~5,500 sites across five African markets from Eaton Towers in May 2019. AMT continues to believe its global portfolio helps differentiate the ebbs and flows occurring in any one market. India continues to be a source of more questions than answers as carrier consolidation in that market appears to be settling but the regulatory environment is still in flux. Recent headlines of the government instituting taxes on the carriers for using spectrum licenses and other uses has presented headwinds on the carriers, with some questioning their commitment to the market. While these issues could persist near term, we agree with both AMT and SBAC’s view that the wireless infrastructure in many of these international markets lags that of the U.S. Therefore – while the risk may be higher – the reward may be as well. The classic example of this is seen in American Tower’s LatAm properties (namely Mexico). When they entered that market – they faced many headwinds (including a bankruptcy of their largest tenant). However, as smartphone penetration and wireless data usage in the region grew – wireless infrastructure investment followed. Today, we believe it is that portfolio of towers that is one of the (if not the!) best performing of assets in AMT’s entire tower asset base. We would also pay specific attention to developments in Europe over the coming year. Based on our checks, the public tower companies have tried to get into Europe in a more formal way (some operate in Europe via Joint Ventures), but were outbid by private infrastructure funds. Like the data center space, we believe Europe is behind the U.S. in terms of centralized and shared infrastructure. This is a trend we should watch next year and beyond.

In conclusion, while we are positive on the longer term trends on the tower sector, we remain on the sidelines for now until we get clarity around the Sprint/ T-Mobile merger and see greater stability in some pockets of the
international arena. We expect 2020 to bring further clarity on the S/TMUS merger result. While a successful merger is a better outcome for the towers in our view, ANY resolution of this merger’s outcome in itself is a catalyst for the towers because we (finally) have a determined plan. With a plan – network decisions will likely follow. The merger’s outcome could in turn drive more activity from the likes of other players (namely DISH). We also expect 2020 to bring more direction on the political issues in some international markets (namely India).

Our top tower pick for 2020 is Crown Castle (CCI, overweight, $133.15). We continue to favor the small cell and fiber centric strategy of CCI as we believe that is where more of the capital dollars will flow as we get deeper into the 5G infrastructure deployment. We believe CCI’s multi-asset infrastructure strategy, serving carriers with a mix of macro towers, small cells, and fiber, will all contribute to growth in 2020 and beyond. Checks continue to show that there is a desire by carriers to work with vendors that are able to service more infrastructure needs, and with network densification needs attracting a higher mix of incremental capex dollars, we view CCI as best positioned to meet this demand of the tower cos.

We have long said that it’s difficult to pick a loser amongst the public towers group, and 2019 was no exception. Despite their drastically differing strategies, all 3 tower companies trade in stride with each other, and within a couple turns on a valuation multiple perspective. From a valuation perspective, we believe CCI shares represent an attractive risk/reward at current levels. Based on our estimates, CCI shares are currently trading at a ~2.5x discount to its tower companies peer group (AMT, Equal Weight $211.93; SBAC, Equal Weight, $227.60) on 2020E AFFO/share basis. ■

### COURSE CATEGORIES

<table>
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<tr>
<th>CONFINED SPACE</th>
<th>ROPE</th>
<th>OSHA 30-HOUR</th>
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<tr>
<td>EQUIPMENT/VEHICLE OPERATIONS</td>
<td>UNMANNED AERIAL SYSTEMS (UAS)</td>
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<tr>
<td>FIRST AID/CPR/AED HAZARDS</td>
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<tr>
<td>RF AWARENESS</td>
<td>HOIST</td>
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</tr>
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By the time you are reading this article, the Christmas and New Year’s parties have ended. Our crews’ much needed break is over and they are back at it, settling in for the next long stretch of repack phases to be completed this year. All of us on the OSHA Relations Committee are back at it, and the A10.48 Standard is back on the revision track. 2019 was an “interesting” year for us broadcast folks, and I am sure 2020 will continue down a similar very hectic path of last year. The wireless side continues moving on the same crazy workload as broadcast. Yes, it’s interesting times right now. I can say honestly that one of the biggest challenges we faced last year and continue to face in the future, especially with the repack schedule, is without a doubt, our limited key resource, our labor pool.

To say that I am a “newbie” in the tower industry is an understatement. Don’t misunderstand me. I am definitely not a “newbie” in the construction indus-

CONTINUED ON PAGE 20

Kathy Stieler is a member of the Women Of NATE Committee, the NATE OSHA Relations Committee and Director of ERI Installations and Safety for ERI Installations, Inc. in Chandler, Indiana. She can be reached at 812-925-6000 or kstieler@eriinc.com.
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try. My 40 years of being in the workforce has always been in the construction industry; however, it was only eight years ago that I moved into the tower industry. I worked for a union electrical contractor for 14 years where our labor supply came from the Union Hall and apprentices out of the Joint Apprenticeship Training Program. I was actually tasked in the late 80’s and early 90’s to enhance the safety effort of the union by providing the OSHA 10 curriculum to all 800 members of the union. My next 17 years was devoted to the merit shop side of the electrical construction industry. It was in this 17 years of business, that I found that I had to develop my own labor pool so I established an in-house apprenticeship program.

When I was hired by Electronics Research, some of my first questions to the management team were:

- Where do you get your workforce?
- Is there a labor pool?
- Is there a trade school for the industry?

You can imagine the comments back to me. But, the one comment that stuck out to me most was, “There really is not a labor pool, you wait until someone is available from one of the other tower contractors, or you help make them available from other tower contractors.” That was not what I was expecting to hear. Trading employees from one contractor to the next does not increase our labor market, it just shifts it around a bit. This thought process had to change, and it is beginning to change.

I believe in our ever-changing industry that we all understand the need to train our employees. We train them on safety procedures, skills, problem solving, and company means and methods. But, training our employees is not what I consider workforce development. Training, to me, is a short-term process. It is a learning process for new employees, where they get to know about key skills for a job. Development is continuous, it is looking at the long term, the bigger picture. Our industry must focus on developing people, not just developing business.

So how do we nurture the concept of developing a workforce versus training a workforce?

Here are my thoughts:

1. My favorite line in the Sound of Music is “how do you catch a wave upon the sand” when talking about the spirited Maria. Our incredible tower workforce reminds me of Maria; high spirited, outgoing, not wanting to stay put, wanting to move at all time. So why would we rely on a training pro-

2. When I tell our crews that they need to come into the office for mandatory training, I may as well have told them they were headed to Siberia for a few days. But present these same great guys with an opportunity to learn a new skill, or work with someone they respect as a mentor, they are all in.

3. Communication – you know, we are in the communication field. But, sometimes I think the tower industry is about the worst when it comes to communication. Having some real transparent and regular discussions about business objectives and employee goals, will help ensure everyone is on the same page and creates a very supportive relationship between the crews and the employer. And don’t forget the feedback. Real time feedback will tell you quickly if your development strategy is working.

4. The most important strategy for developing a workforce is to let the learner set the what, where, and how of their development. This way, employees can focus on the skills that they NEED to develop for their roles, without wasting time on something they already know. Tailor made training increases the employee’s willingness to participate, as well as engages them in the training program.

Workforce development is a win-win for our industry.

As I sat in church on Sunday, when I should have been listening to the sermon (well actually I was listening to the sermon), Pastor Andy said something that really struck me. He called out a challenge, a challenge to give back nothing more than kindness. It hit me. Give back our talents. Our talents, expertise, that’s what is needed to develop our workforce.

I am challenging all of us. Some give back their talents and experience in committees; NATE, NWSA, TIRAP, TIA. But not everyone has the opportunity to give back that way. I challenge everyone to find where your talents can be best utilized in our development process. Women of NATE has a mentorship program; most everyone can mentor another. I’m not talking about just trying to improve your own company, but where do you best fit to help OUR industry. It’s a mind change, from what does the industry do for me, to what can I do for the industry.

I challenge everyone to find a way to leave their own footprint in our industry by their contribution to developing our industry’s workforce. What a concept!!!
JOIN
Women of NATE
at NATE UNITE 2020!

Monday, February 17
3:45 p.m. – 4:45 p.m.
Educational Session 4: Building a Respectful Workplace
Presented by Jill Kauker, Occupational Safety and Health Professional of the Naval Health Clinic in Charleston, South Carolina.

Tuesday, February 18
6:15 a.m. – 8:00 a.m.
3rd Annual WON 5K Fun Run/Walk
Start your day on the right foot by joining friends and colleagues in the industry for a morning run/walk through a portion of the beautiful Raleigh City Greenway Trail System. This fun event is free of charge to all NATE UNITE 2020 registrants. (ADVANCE REGISTRATION REQUIRED TO RECEIVE T-SHIRT - DEADLINE JANUARY 24.)

WON Exhibit Hall Lounge
Relax and visit with Women of NATE in the WON Exhibit Hall Lounge throughout exhibit hall hours Tuesday, 2:00 p.m. – 6:00 p.m. and Wednesday, 1:30 p.m. – 6:30 p.m.

Calling All Women: Meet & Greet | Group Photo
The number of women in the industry has grown as has the number of women attendees at NATE’s annual show. Help us celebrate ALL Women of NATE by joining the WON Committee in the WON Exhibit Hall Lounge at 3:00 p.m. on Tuesday for a Meet & Greet and group photo!
All women attendees are encouraged to bring a photo and short biography (no larger than 8.5” x 11”) to pin on the Women of NATE Biography Board in the WON Lounge.

Wednesday, February 19
8:00 a.m. – 9:00 a.m.
Educational Session 12: Women of NATE Legends: Effective Leadership in Today’s Competitive World
Moderator: Paula Nurnberg, Chief Operating Officer of NATE.
Panelists: Kari Carlson, Vice President of Tower Systems, Inc.; Pat Cipov, President of Cipov Enterprises, Inc.; and Pat Miller, Director of EasTex Tower, LLC.

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The wireless industry has seen significant growth in the deployment of macro tower sites, small cells, 5G launches, indoor and outdoor DAS, public safety networks for first responders, and a variety of technology solutions requiring a wide range of talent in recent years. Workforce development for our industry faces immense challenges today and the future, considering developing, recruiting, and retaining fully trained, skilled, and a highly capable workforce.

As a business owner, developing a skilled workforce, retaining amazing employees, investing in our employees or “work family”, implementing regular and reoccurring training and certification plans, and cultivating a positive work culture are just a few best practices we’ve found with good success through servant leadership.

Focusing on employee appreciation and job satisfaction, while keeping team members challenged and on their career paths, offers excellent results.

We strive to cultivate an environment where employees feel respected, proud, inspired and safe. It is important to take a step back to reflect on our own recruiting, hiring, and overall company culture. An important step in our employment process is conducting exit interviews for those leaving the company. Most team members are very open and genuine with their feedback. This step is vital to our overall awareness as it relates to workforce development strategies and retaining employees.

Servant leadership principles have played a vital role in our company culture and leadership development. We believe in these principles and actively seek to educate our team and incorporate them into our daily operations.

Our leadership works to actively identify tools and process improvements that will help put our best foot forward such as recruiting AI (Artificial/Assisted Intelligence) platforms, improved screening techniques, employee referral incentives, enhanced safety orientation, mentorship programs, and employee feedback platforms. Additionally, we are thankful for our partners in the business such as Warriors4Wireless, recruiting and training veterans to join the telecommunications workforce.

A big thank you to the NATE Trade Show Committee for working hard to plan an amazing trade show experience that connects a vibrant mix of industry members and sponsors. With all the great educational and relevant topics at NATE UNITE 2020 in Raleigh, North Carolina, it’s clear that while this industry covers such a dynamic space, aligning our businesses that streamline workforce development initiatives and promoting collaboration among NATE member companies supports a positive outlook on the future of workforce development.

Ken Clark is a member of the NATE Trade Show Committee and the Founder and CEO of Engineering Wireless Services in Tempe, Arizona. He can be reached at 480-443-4000 or at Ken@EngineeringWireless.com.
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WELCOME CAFÉ

SILVER TOWER STRUCTURE

STRUCTURAL

ANCHOR

REGISTRATION DESK

EDUCATIONAL SESSION ADMINISTRATIVE/ BUSINESS TRACK

EDUCATIONAL SESSION TECHNICAL TRACK

SPONSORS AS OF 12/18/19
## SCHEDULE OF EVENTS

**SUBJECT TO CHANGE  | LAST REVISED DECEMBER 13, 2019**

### Administrative/Business Track

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<td>12:30 p.m.</td>
<td>6:30 p.m.</td>
<td><strong>Board of Directors Meeting</strong> <em>(Board Members Only)</em></td>
<td>Governor Board Room <em>(Marriott)</em></td>
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### Technical/Engineering Track

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<td>7:00 a.m.</td>
<td>8:00 p.m.</td>
<td>**Registration</td>
<td>Information Booth**</td>
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<tr>
<td>8:00 a.m.</td>
<td>7:00 p.m.</td>
<td><strong>Exhibitor Move-in</strong> <em>(NATE 2020 Exhibitors Only)</em></td>
<td>Exhibit Hall A/B</td>
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<tr>
<td>8:00 a.m.</td>
<td>11:30 a.m.</td>
<td><strong>OSHA Relations Committee</strong> <em>(Committee Members Only)</em></td>
<td>Room 201</td>
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<td>8:00 a.m.</td>
<td>11:30 a.m.</td>
<td><strong>Member Services Committee</strong> <em>(Committee Members Only)</em></td>
<td>Room 202</td>
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<td>11:30 a.m.</td>
<td><strong>Safety &amp; Education Committee</strong> <em>(Committee Members Only)</em></td>
<td>Room 206</td>
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<td>9:00 a.m.</td>
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<td><strong>OSHA Harwood Grant Wireless Rooftop Deployment</strong> <em>(Registered Class Participants Only)</em></td>
<td>Tower Engineering Professionals, Inc. Headquarters</td>
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<td><strong>Trade Show Committee</strong> <em>(Committee Members Only)</em></td>
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<td><strong>Tower Family Foundation</strong> <em>(TFF Board Members Only)</em></td>
<td>Room 206</td>
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<td><strong>WIN Liaisons/Ambassadors</strong> <em>(WIN Members Only)</em></td>
<td>Room 402</td>
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<td><strong>A10.48 Editing Committee</strong> <em>(Committee Members Only)</em></td>
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<td>4:45 p.m.</td>
<td><strong>Workforce Development Group</strong> <em>(Committee Members Only)</em></td>
<td>Room 206</td>
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<td>3:15 p.m.</td>
<td><strong>Women of NATE (WON) Committee</strong> <em>(Committee Members Only)</em></td>
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<td><strong>Small Cell and DAS Committee</strong> <em>(Committee Members Only)</em></td>
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<td>**Educational Session 1</td>
<td>Antenna and Cable Testing**</td>
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<td>2:30 p.m.</td>
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<td>**Educational Session 3</td>
<td>Understanding the Use of Synthetic Rope in the Tower Industry**</td>
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<td>3:45 p.m.</td>
<td>4:45 p.m.</td>
<td>**Educational Session 4</td>
<td>Building a Respectful Workplace**</td>
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<tr>
<td>5:00 p.m.</td>
<td>6:00 p.m.</td>
<td><strong>NATE Member Business Meeting</strong> <em>(All NATE Members Only)</em></td>
<td>Room 304</td>
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<tr>
<td>6:00 p.m.</td>
<td>8:00 p.m.</td>
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### Women of NATE

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<tr>
<td>1:15 p.m.</td>
<td>4:45 p.m.</td>
<td><strong>Transportation Departs for Women of NATE (WON) 5K Fun Run/Walk</strong></td>
<td>TBA</td>
</tr>
<tr>
<td>6:15 a.m.</td>
<td>8:00 a.m.</td>
<td><strong>Women of NATE (WON) 5K Fun Run/Walk</strong> <em>(Pre-registration Required)</em></td>
<td>Raleigh City Greenway Trail System</td>
</tr>
<tr>
<td>7:00 a.m.</td>
<td>8:00 p.m.</td>
<td>**Registration</td>
<td>Information Booth**</td>
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<td>Exhibit Hall A/B</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>9:30 a.m.</td>
<td>**Educational Session 5</td>
<td>Industry Best Practices for Hoisting/Winching**</td>
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<tr>
<td>8:30 a.m.</td>
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<td>**Educational Session 6</td>
<td>Understanding Compliance Companies**</td>
</tr>
<tr>
<td>9:45 a.m.</td>
<td>10:45 a.m.</td>
<td>**Educational Session 7</td>
<td>Safety Sleeve**</td>
</tr>
<tr>
<td>9:45 a.m.</td>
<td>10:45 a.m.</td>
<td>**Educational Session 8</td>
<td>Repack Now and in the Future**</td>
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<tr>
<td>11:00 a.m.</td>
<td>12:00 p.m.</td>
<td>**Educational Session 9</td>
<td>When it is Safe to Work Around Federally Protected Migration Birds**</td>
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<tr>
<td>11:00 a.m.</td>
<td>12:00 p.m.</td>
<td>**Educational Session 10</td>
<td>Perpetuation, Mergers, Acquisitions, and Preparing Your Company for Sale**</td>
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<tr>
<td>12:15 p.m.</td>
<td>1:45 p.m.</td>
<td><strong>Keynote Speaker Luncheon</strong></td>
<td>Ballroom B/C</td>
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<tr>
<td>2:00 p.m.</td>
<td>6:00 p.m.</td>
<td><strong>Exposition Ribbon Cutting Ceremony</strong></td>
<td>Exhibit Hall A/B</td>
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<tr>
<td>3:00 p.m.</td>
<td>6:00 p.m.</td>
<td><strong>Exposition Open</strong></td>
<td>Exhibit Hall A/B</td>
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<tr>
<td>5:00 p.m.</td>
<td>5:20 p.m.</td>
<td>**Women of NATE (WON) Meet &amp; Greet</td>
<td>Group Photo**</td>
</tr>
<tr>
<td>6:00 p.m.</td>
<td>8:00 p.m.</td>
<td><strong>First Principles of Personal Safety and Bird Welfare</strong></td>
<td>Exhibit Hall Tower Structure Stage</td>
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</table>
**Wednesday, February 19**

<table>
<thead>
<tr>
<th>Start</th>
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<tr>
<td>7:00 a.m.</td>
<td>6:30 p.m.</td>
<td>Registration</td>
<td>Information Booth</td>
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<td>7:00 a.m.</td>
<td>8:00 a.m.</td>
<td>Christian Fellowship</td>
<td>Room 201</td>
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<tr>
<td>8:00 a.m.</td>
<td>9:00 a.m.</td>
<td>Educational Session 11</td>
<td>Mount Structural Engineering Basics</td>
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<td>8:00 a.m.</td>
<td>9:00 a.m.</td>
<td>Educational Session 12</td>
<td>Women of NATE Legends Panel: Effective Leadership in Today's Competitive World</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>10:30 a.m.</td>
<td>UAS Working Group (UAS Working Group Only)</td>
<td>Room 305</td>
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<tr>
<td>9:15 a.m.</td>
<td>10:15 a.m.</td>
<td>Educational Session 13</td>
<td>Smart City</td>
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<tr>
<td>9:15 a.m.</td>
<td>10:15 a.m.</td>
<td>Educational Session 14</td>
<td>Veterans Returning to the Workforce</td>
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<tr>
<td>10:30 a.m.</td>
<td>11:30 a.m.</td>
<td>Educational Session 15</td>
<td>View from the Top: Tower CEO Panel</td>
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<tr>
<td>10:30 a.m.</td>
<td>11:30 a.m.</td>
<td>Educational Session 16</td>
<td>How to Resolve the Workforce Shortage and Prepare for the Future</td>
</tr>
<tr>
<td>11:45 a.m.</td>
<td>1:15 p.m.</td>
<td>NATE Awards &amp; Sponsor Recognition Luncheon</td>
<td>Ballroom B/C</td>
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<td>1:30 p.m.</td>
<td>6:30 p.m.</td>
<td>Exposition Open</td>
<td>Exhibit Hall A/B</td>
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<tr>
<td>1:30 p.m.</td>
<td>2:30 p.m.</td>
<td>Chairman’s Council Meeting</td>
<td>Governor Board Room (Marriott)</td>
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<tr>
<td>2:00 p.m.</td>
<td>2:20 p.m.</td>
<td>Considerations for Using Rope Access Techniques on Telecommunication Towers</td>
<td>Exhibit Hall Tower Structure Stage</td>
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<tr>
<td>2:30 p.m.</td>
<td>3:00 p.m.</td>
<td>Board of Directors Meeting (Board Members Only)</td>
<td>Governor Board Room (Marriott)</td>
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<tr>
<td>3:00 p.m.</td>
<td>3:20 p.m.</td>
<td>Gold Tower Stage Demo – Petzl America</td>
<td>Exhibit Hall Tower Structure Stage</td>
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<tr>
<td>4:00 p.m.</td>
<td>4:20 p.m.</td>
<td>Five Knots Every Tower Tech Should Know</td>
<td>Exhibit Hall Tower Structure Stage</td>
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<td>4:30 p.m.</td>
<td>6:30 p.m.</td>
<td>NATE Reception</td>
<td>Exhibit Hall A/B</td>
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<td>5:00 p.m.</td>
<td>5:20 p.m.</td>
<td>Gold Tower Stage Demo – Safety LMS</td>
<td>Exhibit Hall Tower Structure Stage</td>
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<tr>
<td>6:15 p.m.</td>
<td></td>
<td>Grand Prize Drawing</td>
<td>Exhibit Hall A/B</td>
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<td>6:30 p.m.</td>
<td>10:00 p.m.</td>
<td>Exhibit Dismantle and Move-out (NATE 2020 Exhibitors Only)</td>
<td>Exhibit Hall A/B</td>
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**Thursday, February 20**

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<tr>
<td>8:00 a.m.</td>
<td>12:00 p.m.</td>
<td>Exhibit Dismantle and Move-out (NATE 2020 Exhibitors Only)</td>
<td>Exhibit Hall A/B</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>5:00 p.m.</td>
<td>Educational Session 17</td>
<td>Tower Medical Responder - Part 1 (Registered Class Participants Only)</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>5:00 p.m.</td>
<td>Educational Session 18</td>
<td>OSHA 10-Hour - Part 1 (Registered Class Participants Only)</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>4:30 p.m.</td>
<td>Educational Session 19</td>
<td>Advanced Rigging Principles (Registered Class Participants Only)</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>12:00 p.m.</td>
<td>Educational Session 20</td>
<td>Combative Techniques on Self-Defense During a Physical Attack (Registered Class Participants Only)</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>3:00 p.m.</td>
<td>Tower Family Foundation Golf Event</td>
<td>Lonnie Poole Golf Course</td>
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**Friday, February 21**

<table>
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<tr>
<td>8:00 a.m.</td>
<td>5:00 p.m.</td>
<td>Educational Session 17</td>
<td>Tower Medical Responder - Part 2 (Registered Class Participants Only)</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>11:30 a.m.</td>
<td>Educational Session 18</td>
<td>OSHA 10-Hour - Part 2 (Registered Class Participants Only)</td>
</tr>
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*All functions are held at Raleigh Convention Center and open to all attendees unless otherwise noted.*
EXHIBIT HALL MAP

NATE UNITE 2020
February 17-20 | Raleigh, NC
Raleigh Convention Center | Exhibit Hall A-C

25TH ANNIVERSARY WALL

MEETING MODULES

EXHIBIT EXIT

EXHIBIT ENTRANCE

SUBJECT TO CHANGE - LAST REVISED 12-18-19
# EXHIBITORS

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<tr>
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<td>Advanced Test Equipment Rentals</td>
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<td>Zurich/Tower Program Insurance, Inc.</td>
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OPTIONAL COURSES
MUST REGISTER AND PAY IN ADVANCE | LIMITED SEATING

Educational Session 17 (Technical/Engineering)

Tower Medical Responder

MAXIMUM 26 PARTICIPANTS | $460 FEE

Thursday, February 20 | 8:00 a.m. – 5:00 p.m.
Friday, February 21 | 8:00 a.m. – 5:00 p.m.

Tower Engineering Professionals, Inc. | 326 Tryon Road | Raleigh, North Carolina 27603

Brian Horner | Course Director/Lead Medical Instructor | Learn to Return Training Systems
Seth Ransom | General Manager/Program Coordinator | Learn to Return Training Systems

Educational Session 18 (Technical/Engineering)

OSHA 10-Hour

MAXIMUM 40 PARTICIPANTS PER SESSION | $195 Fee

Thursday, February 20 | 8:00 a.m. – 5:00 pm.
Friday, February 21 | 8:00 a.m. – 11:30 a.m.

Room 201

Doug Hollingsworth | Vice President | Pacific Safety Solutions LLC
Travis Ross | Lead Safety Instructor | Pacific Safety Solutions LLC
Austin Gerber | Lead Trainer | Pacific Safety Solutions LLC

Educational Session 19 (Technical/Engineering)

Advanced Rigging Principles

MAXIMUM 40 PARTICIPANTS PER SESSION | $150 Fee

Thursday, February 20 | 8:00 a.m. – 4:30 p.m.

Room 203

James Ruedlinger | Senior VP Engineering | ERI Installations, Inc.

Educational Session 20 (Technical/Engineering)

Combative Techniques on Self-Defense During a Physical Attack

MAXIMUM 40 PARTICIPANTS PER SESSION | $55 Fee

Thursday, February 20 | 8:00 a.m. – 12:00 pm.

Room 206

A A Boone | President & Owner | Specialized Realistic Training Inc.

Any attendee who is registered for a full conference or one day pass for NATE UNITE 2020 has the opportunity to register for these optional courses. Class size is limited, and is available on a first-come, first-serve basis. Please visit www.natehome.com for additional information.
KEYNOTE SPEAKER

Kyle Petty
Auto-Racing Icon and Philanthropist

Kyle Petty is an auto racing icon, a champion of philanthropy and one of the most popular personalities in all of sports. His name and smile will always connect him with NASCAR’s most famous family. To the world, his father Richard Petty was, and still is, “the King,” the greatest champion in NASCAR history. Kyle’s grandfather, Lee, was larger-than-life in the early days of stock car racing. To a young boy growing up in Level Cross, N.C., and places like Daytona, Charlotte and Talladega, Lee and Richard were simply Grandpa and Dad to him. Kyle is as much a product of racing as he is of his famous forebears. For more than three decades as a driver, owner and media commentator, Kyle has put his heart and soul into doing what a Petty does best — compete with class and touching the lives of everyone around him.

Today, it is Kyle Petty who is larger than life. Inspired by the vision of his late son Adam, Kyle and the Petty family partnered with the NASCAR community and corporate sponsors nationwide to help those in need. Their crowning achievement is Victory Junction, a camp near Level Cross, where more children with chronic or life-threatening illnesses have found hope, laughter, friendship and adventure. Today, Adam’s dream lives on, as Victory Junction has provided more than 50,000 camp experiences to campers and their families – both onsite at the camp and offsite at participating hospitals and medical facilities through Victory Junction’s REACH program. Founded in 2004, Victory Junction has negated all who counseled Kyle against the undertaking, citing the immense cost and complexity of building and operating a camp for kids with special needs. The camp has become a shining example of what character and commitment can achieve.

For more than 25 years, Kyle has hosted hundreds of NASCAR fans, drivers and motorcycle enthusiasts on his annual Kyle Petty Charity Ride Across America. The Ride travels cross-country each spring to raise funds and awareness for Victory Junction. To date, the Ride has raised more than $19 million for children with chronic or life-threatening illnesses, and is the most successful philanthropic event hosted by any person in the NASCAR family.

Kyle has been named or nominated by NASCAR, plus various media outlets and corporations, as Person of the Year, Father of the Year, Sportsman of the Year and the USA’s Most Caring Athlete. He is an inductee in both the Philanthropy Hall of Fame, the Humanitarian Hall of Fame and the Little League Hall of Excellence.

When Kyle isn’t behind the wheel of a racecar or serving humanitarian or philanthropic causes, he can be seen and heard on television, radio and online. Currently, Kyle is a featured analyst on NBCSN’s daily show, NASCAR America and on pre- and post-Race NASCAR Cup and XFINITY Series race coverage on NBC and NBCSN. He also co-hosts the weekly radio show, “Fast Talk” on the Performance Racing Network. Kyle and his wife, Morgan, and son, Overton, currently reside in Charlotte, N.C.
REGISTRATION FEES

<table>
<thead>
<tr>
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<th>DATES AVAILABLE</th>
<th>RATES</th>
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<tr>
<td>Advance Registration</td>
<td>December 1, 2019 through February 16, 2020</td>
<td>$209.00 $519.00</td>
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<tr>
<td>FULL CONFERENCE PASS</td>
<td></td>
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<tr>
<td>On-Site Registration</td>
<td>February 17, 2020 through February 20, 2020</td>
<td>$389.00 $699.00</td>
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<tr>
<td>FULL CONFERENCE PASS</td>
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</table>

One full conference registration fee provides attendees access to educational sessions*, exhibit hall, beverage breaks, luncheons, receptions, and many other networking opportunities throughout the four-day event.

*Does not include “registered course participants only” designated sessions.

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<tr>
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<th>MEMBER</th>
<th>NON-MEMBER</th>
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<tr>
<td>ONE-DAY PASS</td>
<td>Tuesday, February 18, 2020 or Wednesday, February 19, 2020</td>
<td>$199.00 $349.00</td>
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The One-Day Pass is valid only on Tuesday, February 18 or Wednesday, February 19, 2020 and does include all functions for that day only.

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<tr>
<th>EXHIBIT HALL ONLY PASS</th>
<th>Tuesday, February 18, 2020 or Wednesday, February 19, 2020</th>
<th>FREE</th>
<th>FREE</th>
</tr>
</thead>
</table>

The Exhibit Hall Pass is valid only for the exhibit hall on Tuesday and/or Wednesday during exhibit hall hours.

*Does not include educational sessions, beverage breaks, luncheons, and receptions.

HEADQUARTER HOTELS

Marriott Raleigh City Center
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Telephone: 919-833-1120

Online reservations:
https://tinyurl.com/NU2020Marriott

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Raleigh, North Carolina 27601
Telephone: 919-834-9900

Online reservations:
https://tinyurl.com/NU2020Sheraton

Hotel reservations are due by Thursday, January 23, 2020. Once the NATE room block has been filled, which could occur prior to Thursday, January 23, 2020, the hotel will not guarantee availability.

Subject to availability, rooms may be reserved at the Group Rate for the three days before February 17, 2020 and the three days after February 20, 2020.

Standard Room | Single or Double Occupancy: $199
Check in: 4:00 p.m. | Check out: 12:00 p.m.

ATTENTION: NATE UNITE EVENT ATTENDEES MUST CONTACT THE HOTEL DIRECTLY (EITHER BY PHONE OR THE POSTED HOTEL RESERVATION LINK) TO MAKE THEIR RESERVATIONS. ANY CONTACT TO YOU FROM A THIRD PARTY CLAIMING TO BE A BOOKING AGENT FOR NATE SHOULD BE CONSIDERED A SCAM.
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In November, I represented NATE at a symposium held by NEDAS (formerly the Northeast DAS & Small Cell Association). In that capacity, my responsibility was to speak about the Tower Family Foundation.

It was a great opportunity to extol the virtues of this incredible charity.

I noted that since its inception five years ago, the Tower Family Foundation has provided almost $800,000 to help sustain families in times of significant distress, including about $265,000 in 2019.

As you all know, funds provide financial assistance and scholarships to family members of a tower worker severely injured, permanently disabled, or killed in an accident on communication structures or stemming from working at heights on-the-job related activities that tower workers are involved in on a daily basis.

Ideally, we all would prefer that there would be no need to provide funds – no injuries, and no fatalities. But it certainly tugs on the heartstrings to know that there is such assistance available.

It is particularly gratifying that NEDAS selected the Tower Family Foundation as its charity partner for 2019, and is encouraging donations.

I was able to weave in a few other NATE priorities, including tower climber safety, workforce development, and unmanned aerial systems.

I stressed how NATE is committed to safety – “Safety First, Safety Always.” In addition to appropriate education and training, and proper equipment, we are dedicated to minimizing risk. Certainly our efforts on Riding the Line contribute to that lofty goal. So, too, is our growing use of UAS for tower inspections, which will not only facilitate tower work, but will reduce tower climbs for inspections by as much as one-third – thereby reducing fatigue and repetitive stress injuries as well as exposure to the elements (all assertions we made during our campaigns to establish a policy directive on Riding the Line, then to revise the directive). Using drones will help us maximize our existing workforce at a time when we continue to try addressing the industry’s significant workforce shortage.

These issues, along with our ongoing efforts to promote the Communications Jobs Training Act, were also featured subjects for another round of meetings around DC in mid-December for Todd Schlekeway and myself (following on the heels of meetings in early October by members of the NATE Legislative and Regulatory Committee – which followed our initial Fly-In in May in which a number of you participated). Preparations are already underway for the second NATE Fly-In next May; we are waiting for the 2020 congressional calendar to be released.

Next up: I am already working on my various presentations for NATE UNITE 2020. Of course, these issues will certainly be included.
The Norma de Capacitación de Protección contra Caídas para Trepadores de Torres de la NATE establishes the minimum requirements to which all tower climbers should be trained. The NATE CTS outlines the individual standards for varying levels of tower climber expertise: Authorized Climber, Authorized Rescuer, Competent Climber and Competent Rescuer. The document also contains a Course Training Plan to demonstrate how to implement and utilize the NATE CTS and includes a comprehensive Definitions section. This edition is available online as a free resource for member companies in the Member Login section of the NATE website. The NATE CTS is also available for purchase in print format for both members and non-members in English and Spanish.

**NOTE:** Non-members can purchase the NATE CTS for $200.00

Please visit www.natehome.com or call 888-882-5865 (U.S.) for more information.

**$50.00**


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It appears “getting caught up in the rat race” is just what we all do. Every day is a constant grind and seems so unyielding at times. The bigger picture gets a little smudged and soon the vision is blurry.

This is where a workforce development program can change lives. Now the picture is crystal clear. It’s time to apply myself, complete training and get to work.

Workforce development must be motivated by the community and local economy to create a better place to live.

Workforce Development should meet certain requirements and accomplish its goals through the following:

1) Cultivate potential employer relationships

Employers need to be forthcoming with details about potential employee requirements to allow for suitable candidates to be trained ahead of expansion projects. The spirit of community is tied closely with economic growth and should be treated with equal importance. By allowing local companies to thrive in this way, we are creating economic drivers with a direct impact on local infrastructure.

2) Limit student time in the classroom to eliminate extra expenses

We have all endured those mornings when nothing is working out. The outfit you wanted to wear is wrinkled, you forgot to hit snooze, you spilled coffee and on top of this your son has a fever and daycare won’t watch him. Plan B kicks in - call Me-Ma and drop off your son on the way to class. Now your job calls during your class break, someone is sick and you are the back-up. You excuse yourself and now you are missing the information to be presented this afternoon. This is where students could be relieved of this obstacle. If the ultimate goal is for students to pass testing, then let’s make it more maneuverable.

We have become entangled in the idea that students are all traditional learners when really there are several categories: visual, audible, hands-on and show me.

Visuals want to see the information displayed in a colorful pictorial or graph. Audible wants to hear the information to process it. Hands-on wants to put hands on the equipment and learn by manipulation. And “show me” wants to see illustrations with examples of step by step instructions. We must be specific in job descriptions and training requirements for each position, in order to deliver effectively trained candidates are ready to get started. Employment can be pre-screened and contracted with start dates on the condition of program completion.

In summary, workforce development will continue to push initiatives to build character and attitude in a qualified and evolving workforce capable of meeting future challenges. With the current need for telecom technicians, I hope to see more programs nurturing interest and support to give rise to many more qualified workers for our industry.

I hope to see you all in Raleigh, North Carolina for NATE UNITE 2020 on February 17-20 as we celebrate our 25th Anniversary.

Stacey A. Moore is the North Carolina WIN Liaison, member of the Member Services Committee and Owner of EM-Educate located in Chocowinity, North Carolina. She can reached at 252-623-7315 or emeducate99@gmail.com.
WELCOME to the newest members:

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BigRentz
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Digital Divide Communications, LLC
Drone Warrior LLC
F&H Wireless Inc
FastTrac Telecom Services LLC
Florida Power and Light
Frontline Communications Contracting Inc.
Helvetia Telecom Services, LLC
KMW Communications
KONG USA, LLC
Lowe-North Construction, Inc.
M.J. Electric, LLC - Telecom Division
Matheson
Matt’s Arm
Morrison Hershfield
Motorola Solutions
MulTEwave Communications, LLC
OFG Telecom USA, LLC
Pike Telecom
Rainbow Technology Corp.
Round Table Financial Group
RUC LLC
Skynet, LLC
Spartacus Gin Pole LLC.
Telecommunications Technical Services (TTS)
Telewincom Inc
Tower Remediation and Aerial Construction Solutions, LLC.
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Jeff Pettit Selected to Represent NATE on FCC’s Precision Ag Connectivity Task Force

(Washington, D.C.) - Federal Communications Commission Chairman Ajit Pai announced the agency’s appointments to serve on the Commission’s Precision Ag Connectivity Task Force.

Jeff Pettit, President and CEO of NATE member company Noash Construction, Inc. and Owner of Diamond P Cattle Company has been selected to serve as the Association’s Representative on the FCC’s Precision Ag Connectivity Task Force. Pettit founded Noash Construction, Inc, in 1997 as a company specializing in the development of tower sites in the rural areas of Kentucky and the surrounding states. Pettit’s company performs tower maintenance and installation service to customers ranging from wireless carriers, government agencies, utilities, equipment manufacturers and emergency responders.

Jeff Pettit also owns and operates Diamond P Cattle Company and currently serves as an Executive Committee Board Member for the Kentucky Cattlemen’s Association, a Board member for the Red Angus Association of America, and a Board member for the Webster County (KY) Farm Bureau.

“It is an honor to be appointed to serve on the FCC’s Precision Ag Connectivity Task Force as I will be able to bring to the table my passions and experiences working in both the wireless infrastructure and agricultural sectors,” stated Pettit.

“I am really excited to roll up my sleeves and bring my passion and extensive experiences working in the wireless infrastructure, broadband and agriculture sectors to help accomplish the goals and objectives set out by Chairman Pai and the FCC on this important initiative,” Pettit added.

“Jeff Pettit is a man of tremendous character and will be a great asset to the FCC’s Precision Ag Connectivity Task Force,” said NATE Executive Director Todd Schlekeway. “Jeff’s experience as President and CEO of Noash Construction, Inc. has provided him with vast experience and keen insights into deploying the infrastructure and technology necessary to enable connectivity in rural America and he also possesses a keen understanding of where coverage gaps exist and how the lack of accessible broadband negatively impacts the agriculture industry and economy,” added Schlekeway.

The mission of the FCC Precision Ag Connectivity Task Force will focus on the following objectives:

- Identify and measure current gaps in the availability of broadband Internet access service on agricultural land;
- Develop policy recommendations to promote the rapid, expanded deployment of broadband Internet access service on unserved agricultural land, with a goal of achieving reliable capabilities on 95 percent of agricultural land in the United States by 2025;
- Promote effective policy and regulatory solutions that encourage the adoption of broadband Internet access service on farms and ranches and promote precision agriculture;
- Recommend specific new rules or amendments to existing rules of the Commission that the Commission should issue to achieve the goals and purposes of the policy recommendations described in the second bullet in this list;
- Recommend specific steps that the Commission should take to obtain reliable and standardized data measurements of the availability of broadband Internet access service as may be necessary to target funding support, from future programs of the Commission dedicated to the deployment of broadband Internet access service, to unserved...
agricultural land in need of broadband Internet access service; and

- Recommend specific steps that the Commission should consider to ensure that the expertise of the Secretary and available farm data are reflected in future programs of the Commission dedicated to the infrastructure deployment of broadband Internet access service and to direct available funding to unserved agricultural land where needed.

The Precision Ag Connectivity Task Force will be organized under, and will operate in accordance with, the provisions of the Federal Advisory Committee Act (FACA). As permitted by FACA, the Task Force is authorized to facilitate its work through informal subcommittees, or other subgroups of the Task Force, which shall report their activities and recommendations to the Task Force as a whole.

For more information on the FCC, visit www.fcc.gov. To learn more about NATE, visit www.natehome.com.

Attention Advertisers:

The 2020 Media Planner is now available on the NATE website.
To view, please visit: http://natehome.com/tower-times/advertising-information/

NATE is pleased to announce that rates have not increased for 2020. If you have any questions regarding advertising, please contact the NATE office at 605-882-5865 or 888-882-5865 (U.S.) or email towertimes@natehome.com.

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The NATE STAR Initiative is currently entering its tenth year and is the Association’s signature program designed to help companies operate safely and recognize tower contractors, owners and carriers who voluntarily adhere to higher safety standards. The NATE STAR Initiative emphasizes Safety, Training, Accountability and Reliability by requiring participants to commit to requisite levels of training, site safety audits and the implementation of safety programs while adhering to industry best practices. STAR Initiative participants also receive discounts on designated training courses offered on the NATE EXCHANGE, a dynamic website platform connecting companies to the most up-to-date training courses offered in the tower industry.

Congratulations to the following NATE member companies who have been accepted into the NATE STAR Initiative for the 2019 – 2020 program year!

**2019-2020 NATE STAR Initiative Participants**

A&J Steel Reinforcing Services Inc.
Above All Tower Climbing, LLC
Advanced Tower Services, Inc.
Advanced Wireless Solutions, Inc.
Aerial Wireless Services, LLC
Aloft Wireless LLC
Amatel, Inc.
AmChel Communications, Inc.
AMF Electrical Contractors, Inc.
Ansc0 & Associates, LLC
Atlantic CommTech Corporation
Atlantic Construction Companies
B+T Group
B-C Walker, Inc.
BDC Group, Inc.
Best Endeavours, Inc.
Black & Veatch
Branch Communications, LLC
Bright Lighting, Inc
Capstone Solutions Inc
Cellular Construction Services
Centerline Communications LLC
Cipov Enterprises, Inc.
Clifton’s Tower Service, Inc.
CMS Wireless, LLC
Com Plus Inc.
Commsite Corp.
D & H Builders, Inc.
Dan Combs Consulting Inc.
DAWCOM
Design 1
Design Telecommunications Inc.
Dietz Brothers, Inc.
Diverse Construction, Inc.
Diversified Communications Services
E.M. Enterprises General Contractors, Inc.
East Coast Communications
Eastern Communications, Inc.
EasTex Tower, LLC
Easttower Communications Inc
Elevated Services, LLC
Elexco, Inc.
Elite Elevations
Emergency Radio Service, Inc.
Engineering Wireless Services, LLC (EWS)
ERI Installations, Inc.
Ericsson Inc.
Excalibur Builders and Maintenance, Inc.
Excel Construction, Inc.
FDH Infrastructure Services, LLC
Flash Technology
Global Tank and Tower, LLC
Grapevine Solutions, Inc.
Gray’s Tower Service LLC
Great Plains Towers
Green Mountain Communications, Inc.

If you have questions, please contact Sandy Jurgens, NATE Project Assistant at sandy@natehome.com or 605-882-5865 or 888-882-5865 (U.S.).
Gulf Services
Hayden Tower Service, Inc.
Heartland Solutions Corp.
Hightower Communications, Inc.
Independent Network Services, LLC
Industrial Communications, LLC
Infinigy Solutions, LLC
Integrated Installations, Inc.
Joshrob Integrated Services Limited
JT Tower Service
KGPCo.
KMM
Lee Antenna & Line Service, Inc.
Legacy Telecommunications, LLC
Long Wave Inc.
MasTec Network Solutions
McPhee Electric
MDTS
Mercury Communications Contractors LLC
Meridian Blue Construction, LLC
Mesquite Valley Communications, Inc.
Michigan Towers Incorporated
Microwave Transmission Systems, Inc.
Mid Atlantic Contracting, Inc.
Midland Communications Inc.
Midwest Tower Erection, Inc.
MILLENNIA CONTRACTING, INC.
MillerCo, Inc.
Murphy Tower Services, LLC
MUTI - Sabre Industries Telecom Services
MZI Group
NDC Communications, LLC
Needmore Towers Inc.
Network Installation Specialists, LLC
Newkirk Electric Associates Inc
NextGen Services Group, Inc.
Noash Construction, Inc.
North Sky Communications, Inc.
Northeast Towers, Inc.
Northern Pride Communications, Inc.
Nsight Tower
Omega Development Company
Pathwave Inc.
Patriot Towers Inc.
Peak Signals, LLC
Penn-Tech International, Inc.
Pilgrim Communications, Inc.
Pillar Innovations LLC
Pioneer Telephone Cooperative, Inc.
Platinum Communications
Power of Design Group, LLC
Premise, Inc.
Primoris Aevenia, Inc.

Professional Teleconcepts, LLC
PT Holdings Company, LLC
Pyramid Network Services
Pyrgos Communications Inc.
R & M Electrical Telecom/Maint., Inc.
Radiofrequency Safety International (RSI)
RIO Steel & Tower, LTD
Sabre Industries, Inc.
SAC Wireless LLC
SAI Group
Show Me Welding
SiteMaster, Inc.
Sky Climber Tower Solutions DBA Sky Climber Telecom
Skyjack Communications
Spectrum Construction Services, Inc.
Speelman Electric, Inc.
STG Communication Services
Stout & Company, LLC
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Windy City Tower Techs LLC
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Wireless Horizon
Wireless Infrastructure Services
(Washington, D.C.) - NATE announced that Jesse Petrilla has been selected to serve on the U.S. Department of State’s International Telecommunications Advisory Committee (ITAC). The purpose of the ITAC is to advise the Department of State with respect to telecommunications and information policy matters related to United States participation in the work of the International Telecommunication Union (ITU), the Organization of American States Inter-American Telecommunication Commission (CITEL), the Organization for Economic Cooperation and Development (OECD), and other international bodies addressing telecommunications.

Jesse Petrilla is President of NATE member company Petrilla Technologies, LLC, a wireless infrastructure manufacturing company certified as a Service Disabled Veteran Owned Small Business (SDVOSB). Petrilla possesses a distinguished record of military service as a former Army Signal Corps Captain and Afghanistan veteran. Petrilla also is an active leader within NATE who serves as the Association’s Wireless Industry Network (WIN) Pacific Region Ambassador.

“I am honored to have been selected to serve as a member of ITAC,” said Petrilla.

“I have long had a vested interest in international telecommunications policy and believe my past and current experiences will bring a lot to the table. I can’t wait for my first official meeting on December 12 in Washington, D.C.,” added Petrilla.

“NATE extends our congratulations to Jesse Petrilla for being selected to serve on ITAC. Jesse’s diverse background serving in key leadership positions in the military and the wireless industry combined with his integrity and character will make him an invaluable addition to this prestigious committee,” stated Executive Director Todd Schlekeway.

For more information on the ITAC, visit www.state.gov/international-telecommunication-advisory-committee/. To learn more about NATE, visit www.natehome.com.

NATE Member Business Meeting

All NATE Members are welcome and encouraged to attend the NATE Member Business Meeting on Monday, February 17 from 5:00 p.m. to 6:00 p.m. in Room 304 at the Raleigh Convention Center in Raleigh, North Carolina. The NATE Member Business Meeting is open to all NATE Members only and will address official business.

For a full NATE UNITE 2020 schedule of events, please see pages 26-27.
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• Complete a 100+ ft. competency climb
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• Utilize industry related hand tools
• Perform tasks on electronic handheld devices
• Hands on practice on capstan/hoist/rigging procedures/torque/tensioning

HELP VETERANS FIND THEIR CAREERS AFTER THE SERVICE

What Our Students Learn
• Proper installation techniques for booms, antennas and small cell devices in a simulated tower environment
• Proper climbing techniques as well as proper use of rigging to ensure safety
• Perform 100+ ft. competency climb
• How to properly utilize handheld devices for work related tasks
• Basic computer skills – navigation, app usage, excel, outlook
• Proper construction and tower safety standards

Our Student’s Certifications
• Competent Climber - SafetyLMS
• Competent Rescuer - SafetyLMS
• OSHA 10 HR Safety
• CPR/First Aid – American Heart Association
• Computer Literacy Certificate of Completion
• Soft Skills Certificate of Completion
• Handheld Device Competency
• Capstan/Hoist/Rigging Certification
• RF/EME Basics Certification - SafetyLMS
• Introduction to Small Cell/DAS – WIA

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Drone operating roles have greatly increased among numerous sectors - ranging from construction, agriculture to surveying and real estate. These industries have found that integrating drone technology has improved project speed, efficiency, data management, safety and of course reduced company costs. In 2018, research conducted by DroneDeploy, a leading drone software provider found that the construction industry alone experienced a 239% increase in drone use.

When it comes to tower inspections, drones most definitely have the ability to bring about such significant change as well. Follow us as we explore how.

Incorporating Drones

According to the Federal Aviation Administration, today there are more than 150,000 (Part 107) certified drone pilots in the United States.

Many of these certified pilots have a drone business of their own, offering a variety of services including aerial photography and construction survey. Others hold drone operating positions within larger organizations that have already integrated drone technology and are reaping the benefits of in-house drone operations.

There are many different ways in which companies can bring drones into the field. For the beginning stages of integrating drones into tower inspections, companies can hire freelance drone pilots for on-demand and/or long term projects. This will allow each company to get great value per project and scale when needed.

When hiring a drone pilot it is important to make sure they are FAA certified and insured.

When working with experienced pilots, companies will truly feel the immediate impact and benefit of drones.

Overtime, it may become a part of the company’s best interest to have an in-house drone pilot - whether that means hiring a full time pilot, or letting an employee begin the training process.

Why Drones?

Miles Abrams is Chief Pilot of Redwing Drones. Miles has years of experience conducting challenging inspections of critical infrastructure in controlled airspace.

He has experienced the benefits of inspecting a tower with a drone firsthand, and luckily for us, he has agreed to share his insights throughout this article. Miles believes that drones make a huge impact on the tower industry, and their potential is only starting to show!

Safety - Alleviating Human Risks

First and foremost, using a drone for an inspection provides a safer alternative to sending a human being on ropes. Teams using drones can investigate high and rather dangerous locations, without having to put crew members in harm's way.

Consistent and Thorough Results

“Drones can accommodate heavier payloads than a human being, and they can place those payloads in exactly the same place every time,” states Miles. Furthermore, drones can collect relevant data in less time, making it easier to use them frequently and repeatedly. Drones are also capable of capturing views at a ‘medium angle’ which are otherwise unreachable by humans.

Brandon Packman is the Head of Business Development at SkyWatch.AI in Palo Alto, California. He can be reached at 541-968-3856 or brandonp@skywatch.ai.
Cost Effective

Before drones, helicopters were another alternative to human inspectors. However, helicopters not only take more time to deploy, but their prices also make them accessible for only large scale operations. Drones work quickly, provide fast results, are easy to manage, and ultimately require less manpower and reduce company costs.

What Inspections are Currently Using Drones?

Preconstruction Analysis:
- Identifying LTE measurement for tower height.
- Analyzing new design for towers.

Structural Analysis of Tower Steel:
- Determining if a tower is overstressed, or if it can still accommodate additional antennas.

Baseline Documentation of Initial Installation

Periodic Structure Check-up and Maintenance

Thermal Inspection for Electrical Problems

Preplanning Repair Processes:
- Ensuring the right tools and equipment are used at the right time.

Post Disaster Inspection

How to Get the Job Done Right Safely?

Have the Right Equipment:
- For Miles's ongoing operations, he uses a DJI Inspire 2. This drone not only provides professional image quality and offers intelligent flight modes, it is also simple to control and operate.

Bring a Visual Observer:
- Having another set of eyes to support the pilot in maintaining visual contact with the drone during the operation can sometimes make all the difference.

Know Your Airspace:
- Learn the area you are flying in so that you can prepare accordingly.
- Obtaining a waiver beforehand is a must in the following cases:
  - Night time flying
  - Flights over people
  - Controlled air space

Stay Up to Date with Current Regulations:
- Certain temporary flight restrictions can impose operations and may require flights to be rescheduled.

Get Insured:
- Having drone insurance will allow you to operate commercially with peace of mind for you and clients.
- Ask yourself the important questions:
  - How important is this inspection?
  - Do I have the right liability coverage for this job?

Risk Analysis and Mitigation

As Miles puts it, the hazards fall into two categories; those that endanger the pilot (vehicular traffic or adverse terrain), and those that endanger the mission (weather, air traffic, and dense vegetation).

The wellbeing of pilots is a factor in both situations so pilots should always use the Aeronautical Information Manual's recommended IMSAFE checklist as part of the daily risk assessment report.

Formal risk assessment (as seen below), is used to identify the type of risk and then assign levels of likelihood and probability. Miles explains that if a diligent assessment is performed and the risks are mitigated, then the risk of significant injury or property damage will be low.
Doing a proper risk assessment is also crucial when it comes to getting hired for the job. Based on Miles’s experience, he has seen that having the proper drone liability insurance provides a competitive advantage as it serves as proof of risk assessment and safety.

What’s Next?

The use of drones in tower inspections has a long way to go as the transformation is still underway.

The industry has already shifted from strict physical inspections to pilot controlled remote inspections. As new technology develops, such as improved 4K cameras, thermal imaging, and processing software, we can be sure that the results will continue to improve. Additionally, we expect that artificial intelligence will also enter the field. Custom made drones, with sophisticated anti-collisions sensors and software, will utilize AI to help operators and stakeholders expand their resources and make better, more informed decisions.

“The ability to analyze large quantities of visual data will streamline numerous workflows, such as repair, preventative maintenance, and disaster response - and will ultimately become the greatest advancement to the industry.”

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With the national unemployment level at a 50 year low and the demand for 5G implementation increasing, workforce development has become a critical issue facing the nation’s tower contractors. FCC Commissioner Brendan Carr indicated recently that the industry will need to fill another 20,000 job openings to complete the country’s 5G build. While we struggle to fill our open positions, other industries compete for the same work talent. The energy sector, including wind energy and oil & gas, are facing similar challenges in developing their workforce.

While our industry is still growing and developing, the wind energy sector is an even newer entrant to the global market yet has surpassed us with formal training programs and college courses available nationwide. Based on statistics from the U.S. Department of Energy, there are over 190 formal wind training programs available through universities, colleges and other institutions in the lower 48 states, while fewer than 20 exist for the telecommunications industry. The Bureau of Labor Statistics notes that employment of wind technicians is forecasted to grow 57% between 2018 – 2028; much faster than national average. However, the growth of telecommunications technicians is projected to exceed 115% growth over the same time frame. Telecommunications services are grossly underserved relative to our competing industries. It is up to us as tower contractors and NATE members to work together to solve this pressing issue.

The NATE Workforce Development Committee has been working hard to provide resources to assist tower contractors with recruitment and training. A useful document is available on the NATE website to assist in implementing tower technician programs in schools throughout the United States.

Working for a company serving both the telecommunications and wind energy industries in multiple states, I have observed some key actions to help improve workforce development. How many of you have felt pressured to hire a candidate who has held 6 positions in the past year? Or felt the need to re-hire an ex-employee who you know is not an ‘A’ player? To meet client demands and work schedules, many of us will consider hiring choices that we would typically pass on in normal circumstances. Our industry needs to expand our workforce not only to serve the 5G demand, but to further spur innovation.

To help expand our workforce options, we have developed a list of recommendations for tower contractors to consider.

1. Meet with your local technical school to learn about existing programs that may offer parallel skill sets that can be transferable to our industry (i.e., structural welding, wind energy, electronics and utility construction). VIKOR has had success developing a program in partnership with Southeast Tech in Sioux Falls, South Dakota. Sky Climber Telecom is also working with CiTi BOCES in upstate New York to develop a telecommunications training program. Many rural technical schools are eager to expand their course offerings. They just need subject matter experts to drive the development.

2. Consider recruiting at college job fairs where candidates may have two or four year degrees. I have had success recruiting civil and mechanical engineers from the Colorado School of Mines who have a desire to travel and obtain actual field experience prior to taking on a desk job. If these candidates are presented with a career development plan showing progression, many will strongly consider taking a starting position as a telecommunications technician. These candidates can bring additional skills and training that would be beneficial for the technical aspects of our projects like

Tom Warchol is a member of the NATE Safety & Education Committee and the General Manager of Sky Climber Telecom in upstate New York. He can be reached at 720-987-4051 or twarchol@skyclimber.com.
Class IV rigging picks, load calculations and safety assessments. Net take home annual pay is comparable to a traditional starting salary when overtime is considered as well.

3. Promote professionalism, safety and innovation. There can be perceptions that this is a cowboy industry; however we have made tremendous strides in developing enhanced technical standards, safety policies and workforce guidelines to improve jobsite safety and professionalism. Social media oftentimes glorifies the ‘good old days’ of free climbing and unsafe practices. It’s up to us to shed this image and present ourselves for what we are: a safety focused industry with tremendous potential in the one of the fastest growing segments of the U.S. economy.

4. Simplify the onboarding process for new hires. A burdensome onboarding process can dissuade new applicants from pursuing jobs with our companies. Having an efficient onboarding process that is smart-phone compatible and easy to follow helps speed along the process and secures the new talent before they become discouraged and find other options.

5. Clearly communicate expectations and define the career path potential at time of hire. It is important for new applicants to understand what value they will provide, their job expectations and what potential opportunity awaits them with your company 5 to 10 years down the road. We are not just hiring new climbers; we are hiring employees that will the face of our company in the field.

6. Hire Veterans. There is a large gap between the national unemployment rate and the veteran’s unemployment rate. Our veterans are often leaving service with relevant skills but struggle to find jobs. Programs like Warriors4Wireless work to bridge this gap. Seek out military job fairs and focus on veterans with prior radio technician experience. Also consider www.recruitmilitary.com as a resource for new candidates.

As we race towards the rollout of 5G technology, it will take a collective effort to enhance our workforce development initiatives and continue to expand our reach into the potential labor pool. Please consider reaching out to NATE for further guidance on workforce development training and tools to help in your search for new employees.

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NATE values and appreciates the role that our members play in the industry. This Member Anniversary Recognition feature appears in each edition of Tower Times in order to honor the companies who have been members of NATE for 15+ years.

The following companies first became members 15+ years ago during the months of January and February. Happy Anniversary and thank you for your loyalty and dedication to the Association!

American Tower Corporation
Advanced Tower Services, Inc.
AmChel Communications, Inc.

AT&T (Radio Operations West)
BETTER METAL, LLC.
CommScope
Dietz Brothers, Inc.
Dynamic Construction, Inc.
Enertech Resources, LLC
ERI Installations, Inc.
Front Range Wireless, Inc.
Green Mountain Communications, Inc.
Hy-Lander Tower Systems, Inc.
JDH Contracting, Inc.
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Kenwood Telecom
Lee Antenna & Line Service, Inc.
Midwest Antenna Systems Inc.
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N.E. Colorado Cellular, Inc. d/b/a Viaero Wireless
Northwest Tower
Patriot Towers Inc.
Primus Electronics
R & M Electrical Telecom/Maint., Inc.
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Timberline Communications, Inc.
Train’s Towers, Inc.
TUF-TUG Products, Deuer Developments
TWR Lighting, Inc.
Ultimate Tower Service, Inc.
Union Pacific Railroad
US Tower Services, Inc.
SIoux Falls, S.D. – On October 10, the South Dakota Board of Technical Education approved the creation of a Wireless Infrastructure Technician Certification program through a partnership with Southeast Technical Institute (Southeast Tech) and VIKOR.

VIKOR, formerly Sioux Falls Tower & Communications, is one of the leading providers of wireless infrastructure in South Dakota. The company saw a growing need to establish this educational program in order to keep up with the changing infrastructure of the wireless telecommunications industry. By developing a strong and skilled local workforce, it ensures Sioux Falls stays on the leading edge of technology and provides a pathway to becoming a 5G connected city.

"5G is expected to contribute $275 billion in new American investment, $500 billion in economic growth, and create three million new jobs," said U.S. Senator John Thune, Commerce, Science & Transportation Committee Member. "Winning the race to 5G requires world-leading technology, spectrum, and the ability to deploy and build-out wireless services."

According to the National Association of Tower Erectors (NATE), South Dakota could hire an additional 440 technicians in the next five years.

"NATE believes that the Wireless Infrastructure Technician program at Southeast Technical Institute will ultimately serve as a model to emulate nationally in order to promote the professional career path opportunities available in our thriving industry," said NATE Executive Director Todd Schlekeway.

This will be the only program of its kind currently in South Dakota and one of only two programs of its kind across the nation.

Southeast Tech will enroll its first 15 students in January 2020 for this hands-on educational experience, with subsequent certification classes beginning in the spring semester of each year. Students will split time between classes at Southeast Tech and training at the VIKOR facility.

"This new Wireless Infrastructure Technician certificate is a great example of higher education and private industry partnering to help meet the skilled labor shortage that limits future growth, in this case, the expansion of fifth-generation (5G) wireless technology. Our new Wireless Infrastructure Technician certificate is an effort to assist with 5G expansion," said Southeast Technical Institute President Bob Griggs.

"For many tower contractors like us, we are the institution that provides the training and the resources while on the job," said Craig Snyder, VIKOR CEO. "Having a program like this will provide the necessary training and resources prior to starting in the field which will only help to elevate the individual and the industry, and in turn will provide much greater outcomes for success for everyone across the board."

About VIKOR

VIKOR, formerly Sioux Falls Tower & Communications, was founded in 1989 and is one of the leading providers of wireless infrastructure, providing services in more than 30 states across the U.S. VIKOR self-performs the majority of its offered services including wireless, small cell/DAS, wind, utility, new construction, civil, maintenance, electrical, anchor inspections and more. With five offices covering more than 12 states, VIKOR is one of the largest privately owned teleconstruction companies in the nation. VIKOR has locations in Sioux Falls, SD; Rapid City, SD; Denver, CO; Orem, UT; and Missoula, MT. Learn more about VIKOR at www.vikorinc.com.

About Southeast Technical Institute

Southeast Tech is a career-focused learning environment for determined students who expect a life-changing education that gets results. Our faculty and staff are passionate about student success, and more than 70 associate degrees, diplomas, certificates and apprenticeships provide pathways to professional accomplishment utilizing skills-relevant facilities and Sioux Falls as an extended classroom. Southeast Tech is a smart investment for students to launch their in-demand, technical careers in two years or less. Learn more about Southeast Tech at www.southeasttech.edu.

For additional information contact Jennifer Lambley, Southeast Tech (Jennifer.Lambley@southeasttech.edu) or Michael Fowler, VIKOR (mfowler@vikorinc.com).
NATE IN ACTION

Former NATE Chairwoman Pat Cipov and NATE Board of Directors member Shama Ray represent the Association and wireless infrastructure industry at ACTE Workforce Development Through CTE Summit in Anaheim, California.

NATE Director of Legislative and Regulatory Affairs Jim Goldwater represented both NATE and the Tower Family Foundation at the NEDAS event in Washington, D.C.

NWSA President Don Doty from FDH Infrastructure Services, Kathy Gill from Tower Safety & Instruction and NATE Board of Director’s member Chris Mallon from TowerMRL, Inc. hit the stage to speak on the “Tower Safety” panel session at the AGL Local Summit in Dallas, Texas.

Bryan and Andy Lee from Lee Antenna & Line Service, Inc. represented NATE at the Radio Club of America 110th Annual Banquet in New York City, New York. Bryan is a member of the NATE Board of Directors and Andy is the Chairwoman of the Women of NATE Committee. Bryan and Andy are pictured here with Bruce McIntyre from Tower Innovations, Inc. (far left).

NATE Chairman Jimmy Miller and Executive Director Todd Schlekeway enjoyed visiting with hard working technicians from Microwave Transmission Systems, Inc. (MTSI) as they were deploying small cell infrastructure in downtown Dallas, Texas.

The MillerCo, Inc. golf team at the Louisiana/Mississippi Wireless Associations’ Charity Golf Outing.
NATE WIN Southwest Region Ambassador Dale Shumaker from Enertech Resources and NATE WIN Oklahoma State Liaison Christy Hall from Texoma Contracting, Inc. represented the Association at the AGL Local Summit in Dallas, Texas.

Denise Frey, Connecticut and Rhode Island NATE WIN Liaison, and Lee Morreale, Oregon NATE WIN Liaison, attend the New Jersey Wireless Association Holiday Social in Atlantic City, New Jersey.

Steve Wilder of CITCA, LLC and NATE WIN Director Scott Krouse put football rivalries aside at the Great Lakes Regional Conference at the Pro Football Hall of Fame.

Congressman Bill Johnson (R-OH) addresses attendees at the NATE WIN Great Lakes Regional Conference at the Pro Football Hall of Fame, Canton, Ohio.

NATE Board of Directors member Chris Mallon from Tower MRL, Inc. represented the Association at the AGL Local Summit event in Dallas, Texas.

A great delegation of NATE member company representatives from the Safety Equipment Manufacturers Committee (SEMC) presented and participated at the ANSI/ASSP Z359 meeting in Chicago, Illinois.
OSHA Sees Increase in Whistleblower Complaints

Introduction

From 2012-2018, the number of whistleblower complaints filed with the federal Occupational Safety and Health Administration increased by 74%. In 2019, as news coverage of anonymous government whistleblowers saturates the 24-hour news cycle, the Agency has seen more safety-related whistleblower complaints filed against employers across the country. At the end of 2019, OSHA investigates employee complaints brought under 23 separate statutes. About 62% of these claims are filed under Section 11(c) of the Occupational Safety and Health Act itself. Other whistleblower statutes address industries such as aviation, trucking, heavy equipment, railroads, pipelines, and barges. OSHA operates a dual structure, with (a) compliance safety and health officers investigating complaints and issuing safety and health citations and (b) employment investigators receiving and investigating a growing number of whistleblower statutes.

Elements of Prima Facie Case of Retaliation

The federal whistleblower statutes protect employees who have filed complaints with federal agencies, participated in federal investigations, or even filed internal safety complaints. These employees then allege that their employer issued them an adverse or negative employment action, such as a discharge or suspension, on account of the alleged protected activity. Accordingly, a prima facie case of employment retaliation generally requires (1) protected activity, (2) an adverse employment action, and (3) a causal connection between the protected activity and the retaliation.

Investigatory Process of an OSHA 11(c) Complaint

Employers who receive a whistleblower complaint will face a potentially disruptive and years-long investigation and enforcement process, regardless of the merits of the complaint. After receiving a complaint from a complaining employee, the OSHA retaliation investigator will first send a letter to the employer outlining that a complaint has been filed and providing a written summary of the online complaint or written transcription of a telephonic complaint. The letter will request a response letter to be filed within 20 days of the date of the letter. However, the Agency is almost always amendable to reasonable extensions of time.

Employers should strive to be truthful, complete, and persuasive in their response to the Agency -- employers may need to engage outside counsel and take more than 20 days to do a competent investigation and draft a persuasive response.

After receiving the employer’s response letter, OSHA will forward the letter to the complainant and ask for a response. Many complainants do not respond to OSHA’s follow-up inquiry, and the complaint will be summarily dismissed. In other cases, OSHA investigators read the response letter and convince com-

CONTINUED ON PAGE 56

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plaintants to voluntarily dismiss meritless complaints. Because of the backlog and limited resources to investigate and try retaliation cases, OSHA will make an effort to negotiate settlements with complainants. If the case proceeds, OSHA will conduct an investigation, request additional documents, and interview witnesses. Due to a large backlog in retaliation complaints, employers may not hear from OSHA for 18 months or more after filing their response letter. OSHA dismisses more than 95% of complaints. There is no private cause of action for employees to bring a claim under OSHA Section 11(c); OSHA’s attorney, the Solicitor of Labor, would bring any litigation in United States District Court.

**OSHA’s Desk Aid of OSHA Section 11(c)**

Earlier this year, OSHA released an updated Investigator’s Desk Aid to the Occupational Safety and Health Act (OSH Act) Whistleblower Protection Provision, intended as the Agency’s “summary of the scope of coverage and protected activity and procedures for handling investigations under Section 11(c) of the Occupational Safety and Health Act (OSH Act).” The desk aid is notable, as it reflects OSHA’s views on numerous hot-button issues surrounding whistleblower complaints.

**Forms of Protected Activity Presented in the Desk Aid**

OSHA’s desk aid provides a checklist for retaliation investigators and concentrates on the various forms of protected activity under Section 11(c):

A. Filing occupational safety or health complaints with OSHA or other agencies;

B. Filing occupational safety or health complaints with management;

C. Instituting or causing to be instituted any proceeding under or related to the OSH Act;

D. Providing testimony relating to occupational safety or health;

E. Exercising any right afforded by the OSH Act;

F. Refusing to perform a dangerous assigned task under certain circumstances;

G. Complying with and obtaining benefits of OSHA standards and regulations;

H. Participating in an OSHA inspection;

I. Requesting information from OSHA; or

J. Refusing to inform an employer of the identity of the person who complained to or contacted OSHA.

The broad, catch-all form of protected activity is (E) “Exercising any right afforded by the OSH Act.” OSHA understands this to include reporting an injury, requesting a safety data sheet (SDS), and communicating about safety and health issues included as part of the employee’s duties. Without citation to a recognized statutory section, OSHA takes the position that communication about health and safety matters with “co-workers” is protected activity. This means that an employee could file an OSHA claim premised only on complaints made to co-workers, of which no supervisor or manager was made aware. This is not a right “afforded by the OSH Act,” and is contrary to the requirement of employer knowledge necessary for alleged intentional retaliation and we believe this interpretation is not legally supported.

**Refusal to Perform**

OSHA’s desk aid importantly addresses whistleblower claims founded on an employer’s action against an employee who refuses to perform his job on account of an alleged safety concern. An employee’s right to refuse to perform is limited and specific -- it must be founded on an objectively reasonable belief that the action the employee refuses to perform represents a safety hazard. The Desk Aid further articulates necessary elements laid out in 29 C.F.R. § 1977.12(b)(2): “An employee has the right to refuse to perform an assigned task if he or she:

1. Has a reasonable apprehension of death or serious injury, and

2. Refuses in good faith, and

3. Has no reasonable alternative, and

4. Has insufficient time to eliminate the condition through regular statutory enforcement channels, i.e., contacting OSHA or a State OSHA, and

5. Where possible, sought from his or her employer, and was unable to obtain, a correction of the dangerous condition.

All elements listed above must be satisfied.” In practice, very few employees who refuse to perform satisfy each of these elements and do not have the basis for a whistleblower claim.
Right to File Complaint or Participate in OSHA Investigations

The Agency rightly includes in its list of protected activities the employee’s rights to file complaints and to participate in OSHA inspections, typically through on-site interviews. Employees have a right to file complaints and for this reason, the Company management should not investigate who filed the complaint that led to the inspection and should not make comments that give an appearance of impropriety with regard to an OSHA complainant.

In preparation for an interview during an OSHA inspection, employees should be reminded during preparation of their right to communicate with OSHA and that no negative outcome will occur as a result of their interview.

Takeaways

Much like other employment claims, OSHA retaliation claims are normally brought by employees and former employees disgruntled by an adverse employment action. To minimize OSHA retaliation liability, as with all other employment claims, employers must address and confront an employee’s grounds to allege pretexts. To do so, employers should document the bases for a discipline or discharge decision. If faced with retaliation complaints, employers should consider promptly contacting counsel to prepare a response to properly assert their defenses.

NOTE: If you wish to receive complimentary copies of this article and future articles on OSHA and employment law related topics, please contact Mark A. Lies, II at mlies@seyfarth.com or Adam R. Young at ayoung@seyfarth.com to be added to the address list.
Field service has a people problem.
An entire generation of technicians is nearing retirement age, and they’re taking with them decades of training and hard-earned field expertise.

According to a report by The Service Council, 70 percent of field service organizations expect to be burdened by the knowledge loss of a retiring workforce in the next five to 10 years.

At the same time, field service leaders are under pressure to integrate new technologies and meet rising customer expectations around the speed and quality of service.

It’s a complex issue without a miracle cure-all, but the first step is ensuring that new technicians have the tools, training, and support they need to hit the ground running and deliver outstanding service.

As field service organizations look to remain competitive in a changing industry, they need to answer the following questions:

- How can they minimize the impact of a retiring workforce?
- How can they build a new workforce, from recruitment to training and ongoing support?
- How can technology help onboard the next generation of field service technicians?

Powering the Next Generation of Field Service
Field service is changing. Gone are the days when organizations could manage their operations with paper forms and whiteboard schedules. There are too many sites to maintain, data points to analyze, and moving parts and people to coordinate.

Already, we’re seeing technology transform the way organizations schedule and execute work. Traditional break-fix models of repair are being replaced by predictive maintenance. Mobile apps are giving technicians easy access to everything from site histories to step-by-step mobile workflows.

Even the role of the technician is changing. As more smart meters and connected devices come online, organizations have greater visibility into the performance of each asset. Technicians no longer need to go out into the field to triage an issue and attempt a spot fix; instead, they can be dispatched as needed to execute a series of predefined tasks.

This is significant for two reasons. First, it lessens the impact of tribal knowledge. Field service leaders no longer need to rely on grizzled veterans who have seen it all and can solve any problem. Second, it helps ensure consistent service from all badged employees and contractors, increasing first-time fix rates and reducing the burden on the back office.

According to Justin Chase, president of Corona Contracting, LLC, new tools and training techniques are helping mitigate one side effect of increased technician workloads – a lack of specialization and deep technical knowledge.

“In the early days, a cell site technician knew everything about their sites, down to the specific frequencies used by a given radio,” he said. “Now that technicians are managing two or three times the number of sites, the only way to maintain networks effectively is by embracing new tools that keep expert information close to the technician’s fingertips.”

Millennials and the Future of Field Service
Millennials are going to be the next generation of field service leaders, but they don’t learn or work like previous generations.

More than other generations, millennials are prone to hopping from one job to the next. In fact, a recent Gallup poll found that more than one-third of millennials will look for a new job in the next 12 months, double that of any other generation.

For field service leaders, this raises two questions:
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How do you attract a new generation of tower climbers and field technicians?

How do you build an environment that engages millennials and motivates them to stay?

First, organizations need to educate new hires on the impact of their work. Field service keeps people in the daily rhythm of their lives, ensuring that everyone – even those in rural and underserved areas – have the coverage they need.

“Millennials want to feel like they are making a difference,” said Jordyn Ladner, operations manager at Miller-Co, Inc. “We motivate them to stay by treating them like family. Feeling like you are a part of something versus just working for nothing makes a huge difference in employee retention.”

Training approaches should also be tailored to their strengths and interests. Compared to other generations, millennials have shorter attention spans and prefer to hit the ground running. They also resist repetitive work, and want to learn through hands-on experience. Most importantly, millennials grew up around technology and expect it to be a part of their daily lives.

Implementing Gamification in Your Organization

One of the biggest trends in workforce development is the idea of gamification, or the application of typical gameplay elements (e.g., points, rules) to other activities. Companies such as Yahoo, LinkedIn, and Amazon have all used gamification to increase user adoption, reduce training costs, and ensure a consistent level of service.

In an industry where organizations are struggling to attract and retain new talent, gamification is an easy way to drive user adoption, reduce training costs, and ensure a consistent level of service.

Getting More Out of On-Demand Workforces

According to a report by The Service Council, 76 percent of field service organizations are already using third-party vendors to supplement their workforce.

This makes sense, especially in areas with lower population densities. There is an increasing volume of work to be done, and not enough employees in the area to handle it all.

Building a blended team of in-house and outsourced workers can help field service leaders stay ahead of the rising volume of work, whether it’s installing new small cell towers in preparation for 5G networks or leveraging the data coming from the field for greater operational efficiency.

Still, contractors present their own challenges. Subcontractors often prefer to use their own tools and standards, which can be a significant challenge when dealing with subcontractors across the country.

“Standardized work quality, communication, and documentation across teams has been a consistent challenge in our industry,” Chase said. “The ability to pull in extra resources when needed, train according to our standards, and keep quality up to par has been difficult, but these are normal operating conditions now. Managing resources and quality of work is key to success.”

Badged employee or not, these technicians are still an extension of your brand. Success is often determined by the ability to help them ramp quickly, work safely, and deliver a consistent standard of service.

Just look at the way Rob Hepplewhite, a district manager for Vans, described his approach to seasonal workers.

“The way I led my team was that everyone was served by the leadership team the same way, no matter the title, and no matter whether they were seasonal employees or not.”

That underlying philosophy of empathy and respect is one that would serve any organization well, whether they are trying to navigate the holiday shopping season or onboard a new generation of workers.
NATE Releases News Bulletin Video Featuring Oklahoma Congressman Markwayne Mullin

Video Highlights Prominent Role of Wireless Infrastructure and Workforce in Closing the Digital Divide; Emphasizes Importance of Communications Jobs Training Act of 2019 Legislation in Congress

(Washington, D.C.) - NATE recently released a News Bulletin video highlighting U.S. Congressman Markwayne Mullin’s (R-OK) recent site visit to an American Tower Corporation-owned communications tower located in Muskogee, Oklahoma. Congressman Mullin represents Oklahoma’s 2nd Congressional District and is a member of the influential House Energy and Commerce Committee where he has championed important communications and workforce development legislation.

The video shines a spotlight on the prominent role that telecommunications technicians, wireless contractors and vertical real-estate companies are playing in the country’s efforts to provide ubiquitous broadband coverage to rural and underserved areas and also deploy next generation technology essential for 5G. The informative video includes testimonials from participating companies at the event, including representatives from NATE, American Tower Corporation, B+T Group and Texoma Contracting, Inc. The video also provides a valuable platform to generate momentum for the bipartisan Communications Jobs Training Act of 2019 legislation that has been introduced in the 116th Congress by Congressman Mullin and Congressman Dave Loebsack (D-IA).

“The Second District of Oklahoma is the only congressional district in the country where broadband is available to less than half the population,” Mullin said.

“We must work to ensure rural areas are not stranded and that rural Americans are not left behind in the Internet economy. I appreciate NATE, WIN and American Tower Corporation facilitating the tour and NATE for producing this video so the nation can see firsthand the role wireless infrastructure plays in expanding broadband to the communities I serve,” added Mullin.

Visit https://youtu.be/uxRh1QUHupM to watch the NATE News Bulletin video. The Association’s Wireless Industry Network (WIN) is encouraging all companies, workers and stakeholders in the industry to contact their respective Members of Congress to urge support for the bill. U.S. Representatives can be located and contacted at https://www.house.gov/representatives/find-your-representative and U.S. Senators can be identified and contacted at https://www.senate.gov/senators/How_to_correspond_senators.htm.

Visit https://www.congress.gov/116/bills/hr1848/BILLS-116hr1848ih.xml to read the full text of H.R. 1848 - Communications Jobs Training Act of 2019. For more information on NATE, visit www.natehome.com today.
It’s a buzz word we’ve been hearing frequently, not only in our industry, but across multiple trades. It makes one wonder; how did we get here? How have we come up short with skilled workers?

I look back to the days when my grandparents were working, there weren’t the struggles we have today, there wasn’t a lack of individuals willing to roll up their sleeves and do whatever it takes.

Fast forward to today. I look around and am almost in shock from the lack of willingness of people wanting to get their hands dirty. We are seeing more and more light being shined on the topic of the trade’s skills gap these days. Why? We’ve grown up in a society where a college degree and white-collar jobs have been put on a pedestal. The one thing that makes this nation great is the people, all types of people, all types of work, all types of education, it takes everyone. This glorification of a degree wasn’t the case when grandpa and grandma where around. If you didn’t attend college, you went to work and were proud to do so.

Leveling the Field

Realizing a college degree isn’t for everyone is the first step. Don’t get me wrong, we need people with degrees, but it doesn’t have to be the only path. The last time I checked college tuition costs continue to rise. Often loans are used to finance this burden which leaves students coming out of school with a hefty financial deficit making it difficult to obtain loans for a home, car or even to get a credit card. The Department of Education reports that repayment of loans between $20,000 - $40,000 typically averages over a span of 20 years.

It Takes Everyone

Think of society or any ecosystem as a machine with gears. Everyone has their place; everyone is a tiny little gear in this big machine. Each gear is important. If one is missing, the whole machine doesn’t work. Let’s take this article as an example. If we reverse engineer it, we can see the gears. You’re probably reading this in one of two ways, either digitally on a phone/laptop or in a hard copy magazine. Let’s focus on the magazine. The magazine showed up in your hands from a delivery driver, who drove in a truck from a factory, down a road that was built by a construction worker, that driver received it from a distribution center, which received it from a printer. All trade types of jobs. This way of thinking can be applied to several scenarios or ecosystems including the wireless industry emphasizing that everyone’s role is important.

A Diamond in the Rough

The tower worker is that gear in the wireless machine that isn’t so easy to find sitting on the shelf. Why? I believe it is a combination of things: One being the glorification of white-collar jobs and two being the demanding combination of skills and willingness to work away from home for stretches of time. It takes a rare breed to fit the mold. These men and women who build our infrastructure and make it possible for the nation to call, text, tweet, dm, post, and whatever all the kids are doing these days are the ones that have a ton of weight put on their shoulders. Not only are they a tower worker, they are an iron worker bolting together steel, an electrician wiring up systems, a technician testing sweep, PIM, fiber, RET’s, and setting azimuths, a student learning industry standards, carrier standards, tower owner standards, all while braving the elements of a blustery winter or scorching summer while away from home. Oh… did I forget to mention, all of this is being performed at their office in the sky, hundreds of feet off the ground, knowing how to keep themselves safe and rescue themselves or co-workers? There are several roles within the field that are critical.
Educating the Diamonds Consistently

Apprenticeship programs are needed now more than ever. Last time I looked, the number of devices and demand for wireless speeds wasn’t declining, and the networks won’t build themselves. That tells me it’s critical now more than ever that we need to change our mindsets, embrace the trades, educate the tradesman and develop ways to ensure our critical infrastructures are being built by skilled workers. “It takes an army” is how the ol’ saying goes and I believe it’s true. It takes teachers, counselors, professors, parents, and anyone with a bit of influential blood in them to encourage our youth that trades careers are just as valuable as a degree and accept the fact that we need everyone. It takes you reading this to get engaged. There are a lot of opportunities out there, including great apprenticeship programs or technical schools that can make a difference, but it all comes back to you. It takes an army... how can you help? Roll up your sleeves, like grandpa and grandma did, and let’s get to work.

NATE Online Poll Question

How many national and regional wireless carriers does your company count as customers?

A. One
B. Two
C. Three
D. Four or More
E. Not applicable – our company performs other services and does not have wireless carriers as customers.

The NATE online poll question is located on the NATE website homepage at www.natehome.com
Drones are becoming an essential tool for the tower inspection industry, improving safety and efficiency while providing better quality data. As the National Association of Tower Erectors experiences more drones being used on the job, Women and Drones is ready to help encourage and support more women in the industry.

The Federal Aviation Administration officially sanctioned commercial drone operations in 2016 and ever since there has been tremendous growth.

According to the Federal Aviation Administration, there are more than 400,000 drones being used in commercial operations, including tower inspection.

Like WON, the core mission of Women and Drones is to increase female participation. The Women and Drones community includes a growing network of more than 6,000 women using the platform to connect, collaborate and discover new opportunities. Women and Drones has become the centralized resource for women and companies in the Unmanned Aerial System (UAS) and Urban Air Mobility (UAM) industries.

The centerpiece of Women and Drones is the We Are All Awesome Project, which involves sharing inspiring stories of women who work or enjoy a hobby in the drone industry. We invite members of WON to be featured by Women and Drones as part of Share your Story (https://womenanddrones.com/share/).

For example, one of our stories is that of Assel Ayapova, who oversees the drone program for the Fortune 500 power company AES. The AES Corporation is a global power company that owns and operates a diverse and growing portfolio of electricity generation and distribution businesses, improving the lives of millions of people by safely delivering reliable and sustainable energy solutions in 15 countries in more than 100 power plants. After successful completion of two highly visible Power Plant Construction

Dr. Tulinda Larsen is the Membership Advisor for Women and Drones and Sharon Rossmark is the CEO of Women and Drones. They can be reached at Hello@WomenandDrones.com.
projects in AES Kazakhstan, Ayapova joined the AES Headquarters team in the United States.

“One of the most promising technologies in our line of business is drones. We saw the potential to improve safety and avoid more than 30,000 hours of high-risk activities per year,” she explained. “The last 3-4 years were dedicated to the testing of different technologies and building internal programs. Currently, we have at AES 150 internal drone pilots,” said Ayapova.

In addition to sharing success stories, Women and Drones is proud to sponsor the Women to Watch Awards. More than 450 nominations were submitted for the 2019 awards, resulting in five outstanding women being honored. Additionally, the Corporate Innovation award was created in 2019.

Balancing the gender equation in any technology industry is a big job. Studies show early exposure is key, which is why Women and Drones provides “kindergarten to career” support.

STEM materials and STEM programs focused on introducing young girls to drones is part of the mission. Women and Drones was on hand recently for the Girl Scouts of Utah Girls and Drones Day, where more than 100 Girl Scouts and their leaders learned about drone technology and the career possibilities.

The newest ventures for Women and Drones include expanding the network through a Membership Program and adding an Employment Board.

We are learning from WON how to develop a Membership Program and appreciate the opportunity to collaborate. Women and Drones membership is open to individuals, military, first responders, students, training companies, educational programs, affiliated organizations, small businesses and corporations. Members have access to group programs including insurance, plus discounts on products and services. We have a newsletter which we will be expanding, and we will be adding an eMagazine.

The Employment Board includes full-time, part-time and internship positions. Applicants can search jobs and post resumes. In addition, the Employment Board provides valuable information for both applicants and companies on tools to support balancing the gender equation. Scholarship links and information on training and educational programs are also provided.

Women and Drones looks forward to finding ways to collaborate with the Women of NATE!
Imagine waking up to the distinctive smell of smoke, seeing the flicker of an orange flame and realizing your house is on fire. What you do in the next few precious seconds can determine the future and well-being, of you AND your family. Are you prepared? Do you know what to do?

It’s this type of urgent mental scenario/stress tower climbers will face when one of their own needs rescue. This PAN is intended to provide an overview of why rescue planning, communication, and training is a critical skill set that tower climbers need to possess and utilize.

Remember, the most important part of rescue planning is to remind everyone not to put themselves in a position to need rescue.

Sure, we’ve all seen the dramatic videos or read about firefighters performing high-angle rescues of a tower worker in need. After all, drama is what news stations (and YouTube viewers) thrive on. Although we greatly appreciate what our brothers and sisters in red, white and blue do to keep the public safe, tower rescues can put fire fighters, medical first responders, and law enforcement at risk. In many cases, their excellent training does not cover towers and the equipment that is necessary to properly perform a rescue from a tower. It should be noted that the National Fire Protection Association (NFPA) 1607 and 1006 provides tower rescue guidelines to firefighters, but this is on top of so many other things that they must be prepared for. Firefighters should be able to look at tower rescues as a low frequency event that they support because our industry can properly equip and train for rescue.
Another problem is civic budgets, as properly trained and equipped high-angle rescue teams are not everywhere and are expensive to outfit with equipment properly. The planning for RF and other hazards associated with working at heights is well known to people in our industry. Many times, firefighters can be exposed to unnecessary risks. Further, the infrastructure that we install, modify, upgrade, and maintain are often located in rural areas where the closest team could be hours away. In a time of a true emergency when a worker needs both rescue AND medical attention, minutes matter. We need to have the support of emergency services and work with them to ensure rescue and treatment. To effectively accomplish this, our teams must be prepared to perform the rescue while communicating with emergency services for additional support.

The tower crews performing the work at heights have a distinct advantage over many high-angle rescue teams. We work at height daily, have completed our JHA (Job Hazard Assessment) and are familiar with the exposures and other hazards that may be present on the specific job site. The JHA allows us to ensure that we have assessed the structure and addressed any hazards on the site. Our JHA properly completed ensures all members of our team are on the same page. We rig structures with wire and synthetic ropes to hoist objects, and we are used to working on and around all types of structures, antennas and obstructions. We have been trained to understand the exposure concerns with RF and can manage and mitigate these hazards in a way that others simply cannot. We even have our own ways of communicating based on the SOW, hazards, and people on the site. Therefore, tower crews are naturally better suited to perform safe, prompt, and efficiently executed rescues from these structures on which we are building and maintaining the networks of today and tomorrow.

Remember the fire scenario from the beginning of this article? Proper preparation for the unexpected, be it a house fire in the middle of the night or a coworker rescue off a tower in the middle of the day, can save lives. Being truly prepared for the rescue of a coworker or employee involves much more than holding a laminated Competent Climber/Rescue card or the filling out of a generic rescue pre-plan form downloaded from the internet and kept in file cabinet. Being truly prepared for rescue requires commitment at all levels from the employers, the competent person and any authorized person(s). It should be noted that the effort to plan and be prepared for rescue does not always mean the job will take longer. In fact, it has been observed that when a team plans properly all work on the site is completed in an efficient manner with quality and safety achieved.

Our friends at OSHA require employers to provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves (OSHA 1926.502(d)(20)). But successfully executed rescues require more than just the proper gear and initial training. To truly provide prompt rescue, an employee must not only be trained and equipped, they need to also mentally prepare themselves for the possibility of a rescue each and every day. It is this mental preparation that enables the team to be focused on the first rule of rescue; never place yourself in need of rescue. This cannot be overstated; it is not effective to attempt a rescue creating a need for an additional rescue. When we approach rescue with a mind to avoid the need of rescue, we are in fact working to ensure the rescue plan is there to support the fall protection plan without needing to be used. Every good rescue plan must deal with the obvious, however none of us know when, or who, or how a team member will need to be rescued. Therefore, training to a mental process and methodology can be more critical than listing out the specifics of different types of rescues. Again, no one knows when the
unexpected is going to happen, so the most detailed rescue plan on the planet can be shot full of holes in seconds if even one small detail differs from the plan. Ensuring that the entire crew is on the same page for every single job and that they all share the same rescue preparedness mindset will allow for a successful approach versus one of panic in a time of crisis.

This rescue mentality can be broken down into a few simple steps: Prepare, Assess, Communicate, Equip, and Execute.

**Prepare**

Before a foot is stepped onto a job site, rescue training is required for climbers and is available from several training companies. The most important aspect of this training is that it is applicable to the scenarios one will encounter in the field. Annual re-fresher training is also required and must be documented. The NATE Climber Training Standard is available to all and is a great resource on what specifics shall be covered for rescue training. As part of the Job Hazard Assessment (JHA), a site-specific rescue plan must be discussed and documented with the entire crew. This plan should cover emergency contacts and where team members will be working based on the SOW. It should also include how to utilize available resources and equipment to execute a rescue.

**Assess**

Before a finger is even lifted, just STOP and assess the situation. Often when a rescue needs to be performed, panic sets in. Not thinking clearly, understanding what has occurred and how as a team the situation can be responded to will be the proper way to execute.

**Communicate**

As a part of planning avoid assigning tasks to specific individuals, this is where a wrench can get thrown in and people panic—or worse, do nothing. Instead, approach the process of rescue in a way that makes rescue EVERYONE’S responsibility. Verbally walk through the work scenario, and openly discuss how rescues would need to happen at each location. Discuss the need to clearly understand the rescue needs through assessment with awareness of the equipment and other team members available. If a rescue is required, ensure that communication is ongoing throughout the entire rescue. This is often overlooked in rescue training. Stop, assess, understand, communicate and then as a team execute a rescue utilizing the proper equipment.

**Equip**

Ensure the proper equipment is available and has been assessed. Just like most PPE, rescue equipment over the years has evolved to become safer and easier to use under the guidance of standards such as ANSI Z359.4. This standard exists to ensure equipment used during a rescue meets several specific testing criteria for not only strength requirements but ease of use under stressful situations. Safety features like an anti-panic feature on a rope descend device exemplify this critical difference in equipment used for daily work versus that used for rescues. The anti-panic feature was born from real world scenarios where panic and adrenaline kicked in during rescues. Due to technology advancements items that were once common are now non-compliant such as figure 8’s and fisks. Advancements were often the result of feedback from the industry or from root cause analysis of workers injured, or cases where the rescue was overcomplicated which happened even during rescue training. It is important to note that our industries feedback as end users to equipment manufacturers is crucial and has influenced product design, thereby helping us to work and rescue more safely and efficiently.

In addition to evolved safety features for descent control devices, new mechanical advantage devices have surfaced creating in many cases a 60% or greater mechanical advantage for scenarios where an injured or unconscious worker must be lifted. These devices combined with certain descent devices, proper training and a rescue mentality can be the difference between a successful rescue or a botched rescue attempt.

It is important to remember that when it comes to rescue equipment and pre-planning, one size does NOT fit all. The equipment lists needed for rescues varies with structure types, scopes of work, training of team members, and working environments. Therefore, pre-work planning for rescue is just as important as bidding the job properly. There may be a specific piece of equipment that is required to safely provide rescue to team members on a non-standard site. Because there are all different types and flavors of equipment, training based on crew experience and equipment is crucial to success.
Execute

This is the most critical part. A rescue is often accompanied by adrenaline, sometimes panic, and quite possibly a crushing fear of our own mortality. Obviously, we never want to see a coworker injured or in a spot where a rescue is needed. It is however, a possibility that we must address, and should be prepared mentally to accept the chaos but stay cool, calm and collected. This will avoid additional harm or making a situation worse by overthinking the situation. Sometimes it takes slowing down to go faster and taking your time to ensure everyone remains safe. Remember the old saying, “Slow is smooth, and smooth is fast.”

Our industry is supporting telecommunication infrastructure from initial install, to maintenance and disaster response. As a part of this it is critical that we as an industry never lose sight of the dignity of each and every person involved. To ensure that we are planning, training, and equipping our team members properly is critical. Remember to keep things simple; over complicating systems is a recipe for a bad day. Get the proper training, have a plan on every site, communicate with each other on your rescue plans and processes and stay cool.

NATE Online Marketplace

As a benefit to members, NATE offers an online “Marketplace” as an avenue for members to buy and sell used equipment. Although anyone is allowed to view the online classified ads, only NATE members may post an ad. This online “Marketplace” is available for members to place an ad at no charge.

www.natehome.com
The intent of this TIF White Paper is to educate and promote the sharing and availability of information among stakeholders within the telecommunications industry. After reading this White Paper, each stakeholder should better understand their role and responsibility regarding the installation, modification, or maintenance of a new appurtenance on a structure. This White Paper communicates best practices to avoid Installations that cause damage to the structure, climbing facilities, safety climb (if present), or any other known system installed upon a structure affected by the Installation.

The working group of the Telecommunications Industry Foundation (TIF) that developed this White Paper included members from each of the industry stakeholders, as defined in this White Paper. The intent of the working group was to create a white paper that would foster communication between the stakeholders by providing an improved understanding of the roles and responsibilities for each stakeholder. By providing instruction, advancing communication and presenting feedback solutions, this White Paper endeavors to support the telecommunications industry and each of the individual stakeholders in preserving the integrity of climbing facilities. This White Paper is not intended to amend replace or interpret ANSI / TIA 222 Rev. H.

This document is available for download at the TIF Website at https://tifonline.org/.


How long have you worked in the tower industry? 18 years.

What is your favorite part of the job? Getting to work outside and in the air everyday.

Why did you choose a career in this industry? I honestly happened into this industry and stayed.

What type of work do you perform? L & A installations, modifications, rawlands.

What is your most memorable view or experience? I was on a tower in North Carolina at 1200 feet when a fog bank rolled in off the ocean. It looked like a white wall of cotton balls.

What is the most rewarding part of your job? Knowing that I go home safely after every job.

What challenges do you face? Weather.

Do you have a safety tip to share? Stay 100% tied off.

What do you like people to know about being a tower technician? There are good and bad times being a tower technician. You just have to push through the bad and enjoy the good.
Carbon Monoxide (CO)

Carbon monoxide is a clear, odorless gas which is created by inefficient combustion emissions. The most common sources in industry are gasoline or diesel powered pressure washers, air compressors, forklifts or other petroleum fired machinery.

The chemical makeup of CO is a carbon molecule linked to an oxygen molecule. Carbon monoxide kills by binding up the hemoglobin in the blood. CO has an affinity for hemoglobin several hundreds of times greater than the oxygen that is ever present, that being about 200,000 parts per million in normal air. Therefore it takes only a small amount of CO to bind up a large amount of hemoglobin. This decreases the amount of oxygen delivered to the tissues and without oxygen, you will slowly suffocate to death.

What does this mean for workers?

Carbon Monoxide will affect workers as follows:

■ Slight headache and dizziness
■ Nausea
■ Drowsiness and an euphoric feeling
■ Unconsciousness
■ Death

The level of CO mandated by OSHA as the maximum allowable for eight hours is 50 parts per million. This is an extremely small amount of CO. To put this into perspective, think of a room that holds one million ice cubes and then remove 50 cubes from the room. Those 50 ice cubes are the maximum amount allowed by OSHA for workers to be exposed to over an eight hour period.

What to do to prevent CO overexposure?

1. Inspect the jobsite and remove any internal combustion machinery located near a hatch or other opening that may cause exhaust fumes to enter the space.
2. VENTILATE, VENTILATE, VENTILATE!
3. Frequently monitor workspaces for CO with testing equipment and observe employees for signs of CO exposure.
4. Train workers about the early symptoms of CO exposure.

For more information: [www.toolboxtopics.com](http://www.toolboxtopics.com)
When you look at your investment portfolio, how does it make you feel? Do you see the companies you are invested in contributing to make the world a better place? With sustainable investing, you can put a focus on investing primarily in companies with practices and policies you believe in.

Follow along to learn more about making your investment choices more sustainable.

Sustainable Investing is Going Mainstream

Not long ago, discussions about sustainability focused primarily on recycling bins and renewable energy. These days, sustainability reaches to all parts of the economy and our lives, including our portfolios. And unlike impressions from the past, sustainability and profitability are far from mutually exclusive as many investors believe sustainable considerations can positively affect long-term value.

Sustainable investing refers to a range of investment approaches that include environmental, social and governance factors as part of the overall investment process and approach. Such factors include environmental effects, worker treatment, product sourcing practices and corporate governance, among others.

The overall objective of taking this approach is to gain a fuller understanding of investments, in an effort to change the world for the better in the long-term.

The expectation is that you should not have to give up returns to invest sustainably -- rather, sustainable investments should perform comparably to or better than conventional equivalents. Worldwide, 50 percent of investors expect higher returns with sustainable investments and 32 percent expect equal returns, according to UBS Investor Watch, “Return on values.” With the right direction and focus, sustainable investing allows you to build a portfolio you can feel good about.

Implementing Sustainable Investments

If sustainable investing sounds like something you want to implement in your portfolio, consider which of these broad approaches resonates most with you. Keep in mind that sustainable investing is not philanthropy -- the objective is to generate competitive returns, not give away money.

Exclusion Investing: Exclusion is an approach that removes exposure to specific companies or industries that don’t align with your values. Common exclusions include alcohol, tobacco, weapons manufacturers and gambling related businesses.

Integration Investing: Integration approaches focus on incorporating environmental, social, and corporate governance (ESG) factors into the investment process, with the objective of enhancing one’s assessment of risks and opportunities. Integration investing may result in exposure to companies that

This article was provided by Michael Cole, Vice President Investments, Wealth Strategy Associate for UBS Financial Services, Inc. in Sioux Falls, South Dakota. This article has been written and provided by UBS Financial Services Inc. for use by its Financial Advisors.
don’t necessarily have a stated ESG focus, but which exhibit strong performance on environmental, social or governance metrics.

Impact Investing: An expanding set of investment strategies aim to achieve intentional and measurable positive social or environmental change while delivering market rate or better returns. This investment style, called impact investing, is typically achieved through active fund manager involvement with companies—whether private or public—to achieve targeted change and deliver returns.

Investors can adopt full sustainable investing portfolios or incorporate individual equity or fixed income strategies into their existing portfolios over time. They can use any combination of the above sustainable investing approaches to shape portfolios in a way that meets their individual goals.

Building a Portfolio You Can Feel Good About

Sustainable investing is growing in popularity. A 2017 McKinsey and Company study found that more than 25 percent of all managed assets are invested with sustainability in mind and that the use of ESG integration specifically is growing at a rate of 17 percent per year. Fifty-eight percent of investors believe sustainable investing will be mainstream in 10 years, and adoption of sustainable investing is expected to grow significantly, from 39% of investors today to 48% over the next five years, according to UBS Investor Watch, “Return on Values.”

Sustainable investing is not an all-or-nothing proposition. You have the choice to take small steps toward sustainable investing with a few small changes in your portfolio or dive in with a more extensive approach.

But one thing is certain, your portfolio won’t become more sustainable unless you take action. UBS is here to help.


In addition to cold stress, there are other winter weather related hazards that workers may be exposed to when performing tasks such as driving in the snow, removing snow from rooftops, and working near downed or damaged power lines.

- Winter driving
- Work zone traffic safety
- Stranded in a vehicle
- Shoveling snow
- Using powered equipment like snow blowers
- Clearing snow from roofs and working at heights
- Preventing slips on snow and ice
- Repairing downed or damaged power lines
- Working near downed or damaged power lines
- Removing downed trees

**Winter Driving**

Although employers cannot control roadway conditions, they can promote safe driving behavior by ensuring workers: recognize the hazards of winter weather driving, for example, driving on snow/ice covered roads; are properly trained for driving in winter weather conditions; and are licensed (as applicable) for the vehicles they operate.

Employers should set and enforce driver safety policies.

Employers should also implement an effective maintenance program for all vehicles and mechanized equipment that workers are required to operate. Crashes can be avoided.

Employers should ensure properly trained workers’ inspect the following vehicle systems to determine if they are working properly:

- **Brakes**: Brakes should provide even and balanced braking. Also check that brake fluid is at the proper level.
- **Cooling System**: Ensure a proper mixture of 50/50 antifreeze and water in the cooling system at the proper level.
- **Electrical System**: Check the ignition system and make sure that the battery is fully charged and that the connections are clean. Check that the alternator belt is in good condition with proper tension.
- **Engine**: Inspect all engine systems.
- **Exhaust System**: Check exhaust for leaks and that all clamps and hangers are snug.
- **Tires**: Check for proper tread depth and no signs of damage or uneven wear. Check for proper tire inflation.
- **Oil**: Check that oil is at proper level.
- **Visibility Systems**: Inspect all exterior lights, defrosters (windshield and rear window), and wipers. Install winter windshield wipers.

An emergency kit with the following items is recommended in vehicles:

- Cellphone or two-way radio
- Windshield ice scraper

For more information: [www.osha.gov](http://www.osha.gov)
Snow brush
Flashlight with extra batteries
Shovel
Tow chain
Traction aids (bag of sand or cat litter)
Emergency flares
Jumper cables
Snacks
Water
Road maps
Blankets, change of clothes

Work Zone Traffic Safety

Workers being struck by vehicles or mobile equipment lead to many work zone fatalities or injuries annually. Drivers may skid, or lose control of their vehicles more easily when driving on snow and/or ice covered roads. It is therefore, important to properly set up work zones with the traffic controls identified by signs, cones, barrels, and barriers, to protect workers. Workers exposed to vehicular traffic should wear the appropriate high visibility vest at all times, so that they can be visible to motorists (OSHA Letter of Interpretation, dated, August 5, 2009).

Stranded in a Vehicle

If you are stranded in a vehicle, stay in the vehicle. Call for emergency assistance if needed, response time may be slow in severe winter weather conditions. Notify your supervisor of your situation. Do not leave the vehicle to search for assistance unless help is visible within 100 yards. You may become disoriented and get lost in blowing and drifting snow. Display a trouble sign by hanging a brightly colored cloth on the vehicle’s radio antenna and raising the hood. Turn on the vehicle’s engine for about 10 minutes each hour and run the heat to keep warm. Also, turn on the vehicle’s dome light when the vehicle is running as an additional signal. Beware of carbon monoxide poisoning. Keep the exhaust pipe clear of snow, and open a downwind window slightly for ventilation.

CONTINUED ON NEXT PAGE
Watch for signs of frostbite and hypothermia. Do minor exercises to maintain good blood circulation in your body. Clap hands and move arms and legs occasionally. Try not to stay in one position for too long. Stay awake, you will be less vulnerable to cold-related health problems. Use blankets, newspapers, maps, and even the removable car mats for added insulation. Avoid overexertion since cold weather puts an added strain on the heart. Unaccustomed exercise such as shoveling snow or pushing a vehicle can bring on a heart attack or make other medical conditions worse.

**Shoveling Snow**

Shoveling snow can be a strenuous activity, particularly because cold weather can be taxing on the body. There is a potential for exhaustion, dehydration, back injuries, or heart attacks. During snow removal in addition to following the tips for avoiding cold stress, such as taking frequent breaks in warm areas, there are other precautions workers can take to avoid injuries. Workers should warm-up before the activity, scoop small amounts of snow at a time and where possible, push the snow instead of lifting it. The use of proper lifting technique is necessary to avoid back and other injuries when shoveling snow: keep the back straight, lift with the legs and do not turn or twist the body.

**Using Powered Equipment like Snow Blowers**

It is important to make sure that powered equipment, such as snow blowers are properly grounded to protect workers from electric shocks or electrocutions. When performing maintenance or cleaning, make sure the equipment is properly guarded and is disconnected from power sources.

Snow blowers commonly cause lacerations or amputations when operators attempt to clear jams with the equipment turned on. Never attempt to clear a jam by hand. First, turn the snow blower off and wait for all moving parts to stop, and then use a long stick to clear wet snow or debris from the machine. Keep your hands and feet away from moving parts. Refuel a snow blower prior to starting the machine; do not add fuel when the equipment is running or when the engine is hot.

**Clearing Snow from Roofs and Working at Heights**

Employers must evaluate snow removal tasks for hazards and plan how to do the work safely. Workers should be aware of the potential for unexpected hazards due to the weather conditions, for example, layers of ice can form as the environmental temperature drops, making surfaces even more slippery. A surface that is weighed down by snow must be inspected by a competent person to determine if it is structurally safe for workers to access it, because it may be at risk of collapsing. Snow covered rooftops can hide hazards such as skylights that workers can fall through. Electrical hazards may also exist from overhead power lines or snow removal equipment.

Employers can protect workers from these hazardous work conditions, for example, by using snow removal methods that do not involve workers going on roofs, when and where possible. Employers should determine the right type of equipment (ladders, aerial lifts, etc.) and personal protective equipment (personal fall arrest systems, non-slip safety boots, etc.) for the job and ensure that workers are trained on how to properly use them.

**Preventing Slips on Snow and Ice**

To prevent slips, trips, and falls, employers should clear walking surfaces of snow and ice, and spread deicer, as quickly as possible after a winter storm. In addition, the following precautions will help reduce the likelihood of injuries:

- Wear proper footwear when walking on snow or ice is unavoidable, because it is especially treacherous. A pair of insulated and water resistant boots with good rubber treads is a must for walking during or after a winter storm. Keeping a pair of rubber over-shoes with good treads which fit over your street shoes is a good idea during the winter months.

- Take short steps and walk at a slower pace so you can react quickly to a change in traction, when walking on an icy or snow-covered walkway.

**Repairing Downed or Damaged Power Lines**

Repairing and/or replacing damaged power lines in severe winter weather conditions are especially hazardous. A major hazard is snow, because the moisture can reduce the insulation value of protective equipment, and could cause electrocution. In these conditions de-energized work is safer, but if energized work must be done, qualified workers and supervisors must first do a hazard analysis that includes evaluating the weather conditions and identifying how to safely do the job.

Other potential hazards include:

- Electrocution by contacting downed energized power lines, or contacting objects, such as broken tree limbs, in contact with downed energized power lines.

- Fires caused by an energized line or equipment failure.
- Being struck or crushed by falling tree limbs, collapsing poles, etc.

When working on downed or damaged power lines, electrical utility workers should use safe work practices, appropriate tools and equipment (including personal protective equipment (PPE)). Extra caution should be exercised when working in adverse weather conditions.

**Working Near Downed or Damaged Power Lines**

Assume all power lines are energized and stay clear of any downed or damaged power lines. Establish a safe distance from power lines and report any incidents to the responsible authority. Only properly-trained electrical utility workers can handle damaged power lines.

**Removing Downed Trees**

Clearing downed trees is a critical job during severe winter weather conditions. It is usually urgent to remove downed trees that block public roads and damage power lines. Emergency crews are often tasked with clearing downed trees.

Potential hazards include:

- Electrocution by contacting downed energized power lines or contacting broken tree limbs in contact with downed energized power lines. Falls from heights.

- Being injured by equipment such as chain saws and chippers.

Workers should wear PPE that protect them from the hazards of the tree removal tasks. Workers using chainsaws and chippers to clear downed trees should use: gloves, chaps, foot protection, eye protection, fall protection, hearing protection and head protection.

Only powered equipment designed for outdoor and wet conditions should be used. Use all equipment and tools (saws, chippers, etc.) properly and for the purpose that they are designed for. Ensure that equipment is always maintained in serviceable condition and inspected before use by a knowledgeable person that can identify any problems with the equipment. Do not use equipment that is not functioning properly. Equipment must have proper guarding (as applicable); safe guards must never be bypassed. All controls and safety features must function as designed by the manufacturer.

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- Long-lasting powder-coated aluminum
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What To Do in Case of An Accident

Even companies with the best safety records know they need to be prepared and have a well-developed plan of action to follow should the unlikely event of a serious, or even catastrophic, accident occur.

Being prepared means having immediate access to the necessary support to ensure that the best possible care is readily available, it also means making certain that all parties in the company know what to do and when it should be done.

It is important to read and understand the laws that are in place regarding accident reporting and the availability of medical services and first aid. These regulations include CFR 1904.3 “OSHA Reporting,” and CFR 1926.50 “Medical Services and First Aid.”

To assist NATE members with developing their own accident contingency plans, the NATE Board of Directors and Safety & Education Committee have developed the following list of suggestions. This list is not intended to be an exhaustive compilation of all possible actions, but is intended to act as a guideline for member companies to develop their own plan of action. The items below are not presented in any particular order.

**Emergency Checklist**

1. Check the injured individual(s) immediately and assess his/her condition. Apply first aid, if necessary.

2. Call the nearest Emergency Medical Services (EMS), if necessary. As per your company safety program, make certain that all crew members are capable of giving clear directions to the site, and that all crew members have easy access to the EMS phone number. Site directions and the EMS phone number must be easily and readily accessible to all crew members.

3. After calling the EMS, phone the home office and give them as much detail as time allows. An office representative will fill out the required forms.

4. Secure the site so that nothing related to the accident is moved by anyone until the investigation is complete.

5. Before the EMS leaves, be sure that you have their company name and know where they are taking the injured individual(s).

6. The home office should appoint a temporary spokesperson. Only the spokesperson is allowed to make any statements.

7. OSHA and police officials have the authority to question witnesses. Refer to your company policy for guidance. If the police do not arrive to secure the site, then a company representative should remain there.

8. Take pictures of the accident site as soon as possible following the accident, making certain to include any equipment involved, the perimeter and entrance facing the accident scene, and close up pictures of any important items.

9. Office personnel will contact the families of the individual(s) involved in the accident when they have enough information to pass along. How to tell loved ones is a delicate situation, and, if deemed appropriate, clergy may be preferred. Under no circumstances should employees contact family members of other employees.

10. Office personnel must advise the insurance carrier of the accident. This will enable the insurance company to begin its own investigation procedures.

11. The office needs to determine who is going to conduct the company’s investigation and if that person is not on site, then they need to be mobilized immediately.

12. The office needs to develop a file on the accident containing all photos taken at the accident scene, copies of all witness reports, copies of all initial written documents, copies of all files concerning personnel at the accident site, copies of all information used on the site, and copies of all contracts, job orders, and correspondence concerning the site.

13. The customer, tower owner, and landowner may need to be contacted per your company policy and/or contract. A company representative should interview witnesses and involved personnel and gather all relevant information.

14. If OSHA conducts interviews, the company representative must obtain permission from the employees to be in attendance (this may vary from state to state, so check with your attorney). Employees may be asked to sign a statement and/or note taken by an OSHA representative. Advise your employees that they are under no obligation to sign anything. If, however, they do choose to sign, then encourage them to review their statement carefully, and remind them that they are entitled to ask for a copy. Additionally, if the employee so chooses, he or she may provide a copy to their employer.

15. No work should be continued until all necessary information has been gathered, and the safety of the work site confirmed.

16. A company may provide counseling before returning to work.

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**PLEASE NOTE:** NATE maintains a list of law firms who have experience involving a wide variety of tower industry and labor related issues. In addition to assisting with issues that arise in the day-to-day operations of the Association, these firms are available for hire by member companies as industry-related and company specific legal concerns arise. Please contact the NATE office at 605-882-5865 or nate@natehome.com to receive a listing of these law firms.
How long have you worked in the tower industry?
10 years.

What is your favorite part of the job?
Variety of work in the telecom industry.

Why did you choose a career in this industry?
It was by chance not choice necessarily. Industry was booming when I graduated college.

What type of work do you perform?
Safety Manager for a large general contractor.

What is your most memorable view or experience?
Visiting a job site, Christmas Tree Pass, in Nevada and having a high altitude view over the whole Las Vegas valley.

What is the most rewarding part of your job?
Working in a niche industry and seeing familiar faces wherever I go for work.

What challenges do you face?
Helping to shape the safety culture of the industry.

Do you have a safety tip to share?
Get involved with NWSA!
### Classified Ads

- **Firefly Bird Diverter**
  - 866.915.8225
  - www.birdbusters.com
  - jackwagner@birdbusters.com

- **RF Protection**
  - UniTech Services Group
  - www.unitech-rf.com
  - (800) 344-3824 x148

### Advertiser Listing

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- #RealTowerClimber

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