

RE

RURAL ELECTRIC MAGAZINE



MAY 2019
AN NRECA PUBLICATION

TIPPING POINT

Is co-op broadband on the verge of a breakthrough?

Polar Vortex

How G&Ts battled this year's record cold p. 28

Artificial Intelligence

Utility AI may finally be ready for primetime p. 32

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the investment if
we are going to
make the growth."*

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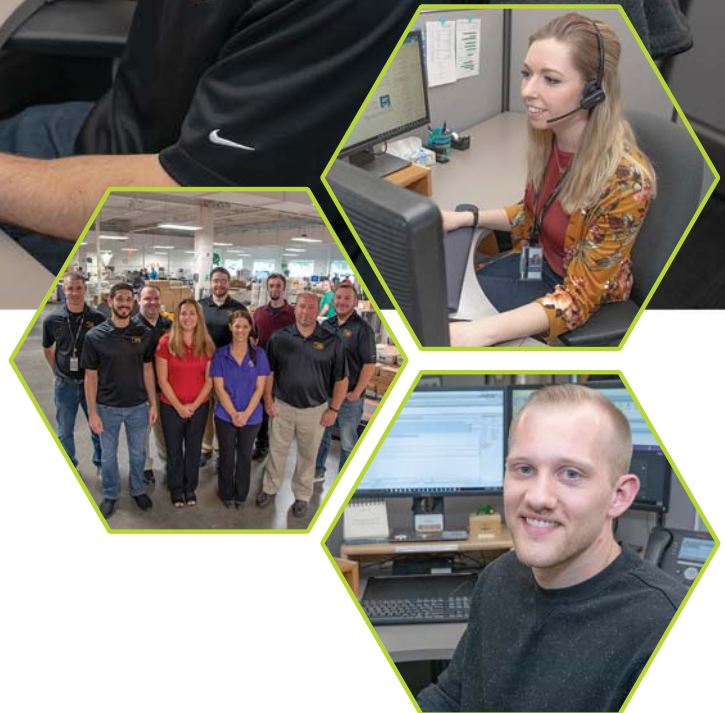
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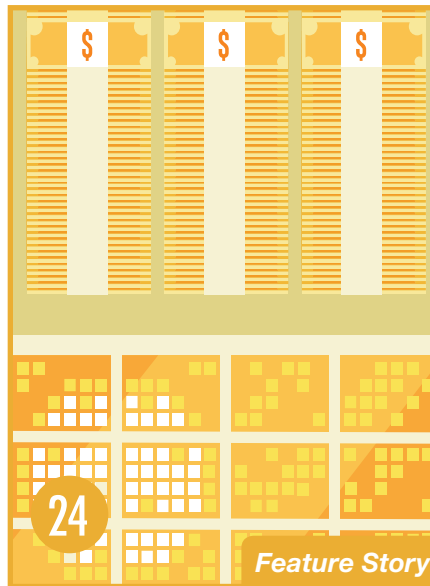
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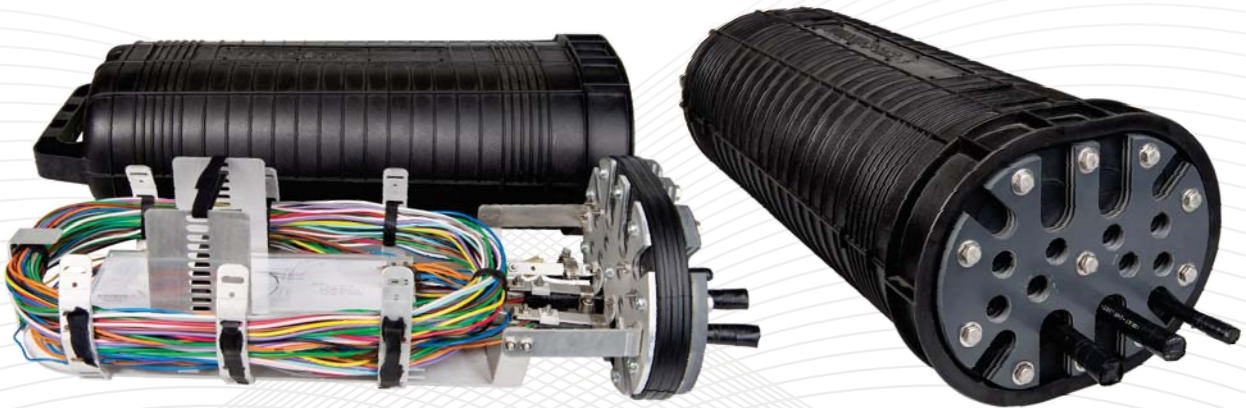
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THE CO-OP THAT STARTED WITH \$13.11

BY FRANK K. GALLANT



Photo by Big Country Electric

Big Country Electric's Roby headquarters

The counties surrounding Abilene were alternately known as west-central Texas or Texas Midwest until the *Abilene Reporter-News* held a "Name the Area Contest" in 1966. The winning moniker, "Big Country," came from *The Big Country*, a western starring Gregory Peck that was set in the area and drew crowds to movie theaters across the U.S. in 1958. And it was a natural choice years later when Midwest Electric Cooperative and Stamford Electric Cooperative consolidated and needed a new name.

Both distribution systems had their beginnings in the late 1930s, even though ranchers and other rural people in that part of Texas were wary of rural electrification. They saw central-station power as a luxury they couldn't afford.

But Fisher County rancher Sterling Willingham had a different view of the new government program. Willingham and an agriculture teacher, Cleveland Littlepage, hosted two public meetings in the summer of 1938 on how to start a co-op and apply for a loan through the federal Rural Electrification Administration (REA). Littlepage passed the hat at each meeting and collected a total of \$13.11.

They pressed on, and in late September, Littlepage and Joe Fender,
continued on page 142

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JIM MATHESON, CEO

In this issue of *RE Magazine*, a feature by NRECA's Derrill Holly looks at the impact of the record cold that hit the Upper Midwest this winter and the planning and work done by G&T cooperatives to maintain service to members in the region.

This severe "polar vortex" event generated high winds and a multi-day deep freeze that pushed the region's grid to the limit.

It's one of the many challenges that Mother Nature hurls at our systems.

Hurricanes. Wild fires. Tornadoes. Floods. Severe winter storms.

Even "bomb cyclones," which are not new, but seem to be occurring more



system. They can create fuel shortages, prompt automatic shutdowns at some power plants, cause mechanical failure at others, freeze cooling water sources, and bring wind turbines to a halt.

Despite these challenges, G&T co-ops managed the record cold through well-thought-out strategies that include maintaining generation assets that keep

much-needed coal and natural gas power plants in the mix; balancing demand through power purchases, peaking generation, and load management; and adjusting maintenance and planned outages when bad weather was imminent.

John Jacobs, Basin Electric Power Cooperative's

“Nothing underscores the value of strong preparation and a broad portfolio better than the way our G&Ts respond to extreme events.”

frequently. One in mid-March hit 25 Midwest states with 100-mph winds and heavy snow fall, grounding flights, stranding drivers, and leaving hundreds of thousands without electricity.

These events test our communities, but they also bring out the best in them.

An article on electric.coop tells the story of Torry Smith, a journeyman line technician at Oahe Electric Cooperative in South Dakota. Smith drove a co-op rough-terrain vehicle in whiteout conditions during the March bomb cyclone to rescue Zach Bruzelius, a state trooper who was stranded in four-foot drifts, unreachable even by snow plow.

There are numerous accounts of line-worker heroics each year.

But there are other heroics that occur within our systems regularly that don't get the acclaim they deserve. They happen in the control centers of our generation and transmission co-ops and power.

Waves of sustained frigid weather this winter tested the grid's resilience. Extreme cold can put particular stress on the

senior vice president for operations, said it well: "Each event has its own set of issues. You have to evaluate and prepare for anything that might come your way."

Nothing underscores the value of strong preparation and a broad portfolio better than the way our G&Ts respond to extreme events. In my three years at NRECA, we've worked with our members to advocate for continued operation of our diverse set of generation assets. We're also working with our G&T members to ensure that emerging regulations at the Federal Energy Regulatory Commission and other bodies recognize the co-op structure and the importance of local control of our resources.

With your help, we'll keep that fight going.

In the meantime, when Mother Nature sends challenges our way, and our co-op heroes brave the elements to keep power flowing, give a thought to the folks in the G&T control rooms. Their contributions often go unsung, but their work is absolutely vital to our mission. **RE**



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‘HIGH NOON’: PROMOTING CIVILITY THE CO-OP WAY

Distressed that the national freefall in public civility had encroached even upon his sparsely populated state, Wyoming Rural Electric Association’s Shawn Taylor could no longer be a bystander.

Last summer, Taylor played a behind-the-scenes role in the aptly titled *High Noon in America*, a 20-minute pilot documentary on the role that face-to-face conversations can play in sparking positive change. One of the filmmakers, a Wyoming native like Taylor, knew him from a family connection and heard he’d be a good sounding board and source of contacts.

Taylor didn’t disappoint. And, what’s more, he offered co-ops as skilled facilitators for bringing people together to work in their communities’ best interests.

“I gave them a whole host of names inside and outside the cooperative world,” says Taylor, the executive director of the Cheyenne-based statewide association. “I thought it was a great project and a great concept on how we might bring that idea of stability to the co-op family, the community, and the country. The co-op is a really good outlet to promote that.”

High Noon shows conversations between four state leaders on opposite sides of the political spectrum as they discuss major issues. The individuals—a law professor, a former member of Congress, a county commissioner, and a state legislator—meet in pairs, over coffee, in a parlor in the governor’s mansion in Cheyenne. They don’t spar or trade insults. They take turns exchanging different points of view in measured, calm tones.

“We must have talked to 50 or 60 people before we tapped the four” stars in the film, says filmmaker Bobbie Birleffi. “And they had never met each other, believe it or not.”

The first screenings of *High Noon* took place in multiple locations in Wyoming last fall, and Taylor showed the film at a recent meeting of the Rural Electric Statewide Managers Association. Birleffi and Beverly Kopf, founders of TVGals Media, are looking for producers in other parts of the country to continue their work.

For more on this story, visit cooperative.com.

—By Victoria A. Rocha



Wyoming state legislator Tyler Lindholm, a co-star in *High Noon in America* and formerly with Basin Electric Power Co-op, with filmmakers Bobbie Birleffi (left) and Beverly Kopf.

Photo courtesy TVGals Media



Photo by Jill Snyder

Greenfield, Indiana-based NineStar Connect created Idea Co-op, a coworking space with state-of-the-art technology where entrepreneurs can connect and collaborate.

A SECOND-TO-NONE COWORKING SPACE 'IN THE MIDDLE OF A CORNFIELD'

The new coworking space had everything John Mascoe needed for his agri-tech startup: Reasonable price. High-speed internet. Access to cutting-edge technologies for training and product development. And working farmland.

As founder and president of Indiana-based VanCoe Ag Technologies, one of Mascoe's must-haves was land to demonstrate new methods for boosting soil productivity using underground nutrient delivery systems and sensors to enable farmers to make crop management decisions remotely.

Another essential was broadband.

"Part of my mission has been trying to overcome the barriers of incorporating technologies into agriculture," says Mascoe, a soil and crop production scientist. "And one of those was ... wireless broadband access so that we could collect images from center pivots and irrigation systems, access remote-sensed images from satellites, drones, and airplanes, and then transmit them quickly to growers."

VanCoe Ag Technologies was the first tenant of Idea Co-op, a coworking office and technology campus created by Greenfield, Indiana-based electric cooperative NineStar Connect. It consists of 26 acres of tillable land and 18,000 square feet of available building space. Since its January opening, tenants have leased five of nine offices. One Saturday a month, students ages 7 to 17 flock to its education center for free coding classes.

"We want to create a forum where high-tech people could connect, collaborate, learn new things, and be around like-minded people," says Jill Snyder, director of business and economic development at NineStar Connect. "We also want to offer a space where entrepreneurs can launch new ventures."

Rural communities are looking at coworking spaces as a way to attract and invest in new businesses. The facilities fill certain gaps on rural Main Streets and provide a place for entrepreneurs, freelancers, and remote workers to bond.

"We have a second-to-none classroom and video conferencing and other types of things that are so unique to anywhere across the world, actually," Mascoe says. "And we're in the middle of a cornfield."

For more on this story, visit electric.coop.

—By Victoria A. Rocha

NRECA REPORT: CO-OPS SUPPORT 600,000 JOBS AND ADD BILLIONS TO GDP

In 2017, electric cooperatives

Contributed
\$88.4 billion
to U.S. GDP, including
\$40.4 billion
in labor income to
American workers.



Electric cooperatives have a broad financial impact on the United States, directly or indirectly supporting nearly 612,000 jobs each year and contributing hundreds of billions of dollars to the economy over a five-year period, according to a new analysis.

Between 2013 and 2017, co-ops employed an average of 67,800 people a year, hired about 100,600 contractors, and, by extension, helped provide jobs for about 170,300 people who supplied equipment and services, the report states. Another 273,100 jobs were supported through consumer spending by co-op employees, contractors, and suppliers.

"This report quantifies what many rural American families and businesses know well—electric cooperatives are powerful engines of economic development in their local communities," says NRECA CEO Jim Matheson. "Affordable and reliable electricity is a key ingredient for a successful economy. Because electric cooperatives were

built by, belong to, and are rooted in the communities that they serve, they play a vibrant role as economic cornerstones for millions of American families, businesses, and workers."

The study, *The Economic Impact of America's Electric Cooperatives*, was commissioned by NRECA and the National Cooperative Services Corporation, an affiliate of the National Rural Utilities Cooperative Finance Corporation (CFC), and conducted by FTI Consulting Inc. It used data from G&T and distribution cooperatives.

The analysis found that, from 2013 to 2017, co-ops contributed \$440 billion to the gross domestic product (GDP), \$881 billion to U.S. sales output, and \$200 billion to the nation's labor income.

In addition, people employed directly and indirectly by co-ops paid more than \$52 billion in federal taxes and nearly \$60 billion in state and local taxes over the five-year period, the analysis estimates.

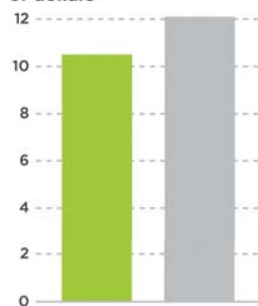
Electric co-op spending during the study period totaled \$360 billion. Nearly \$274 billion of that went toward operations, including employee salaries and fuel for power plants. Some \$60 billion was spent on capital investments and more than \$20 billion on maintenance.

"For decades, America's electric cooperatives have played a vital role in the U.S. economy," the report notes. "Electric co-ops ... are locally engaged in their communities, driving economic activity and fostering development."

Visit electric.coop to read the full report.

—By Erin Kelly

Taxes in billions of dollars



In 2017, electric cooperatives

Generated
\$22.5 billion
in federal, state and local taxes.

● **\$10.5 billion** in federal tax
● **\$12.0 billion** in state/local tax

In 2017, electric cooperatives

Supported
611,600
American jobs.

● **165,800** direct jobs
● **170,900** indirect jobs
● **274,900** induced jobs



AHEAD OF THE CURVE ON RENEWABLES



Both of Vermont's electric co-ops have crossed the first threshold—55 percent of power from renewable sources—of the state's Renewable Energy Standard (RES).

"Our core values as an electric cooperative are aligned with the RES," says Patty Richards, general manager of Washington Electric Cooperative in East Montpelier. "We seek to lower our members' carbon footprints while we provide power that is from affordable and clean, renewable resources."

"We've achieved this while also delivering on our core mission of safe, affordable, and reliable electricity for our members," says Rebecca Towne, CEO of Johnson-based Vermont Electric Cooperative. "It takes great partners and engaged members to continue to modernize our energy systems."

The two co-ops got the news late last year when Vermont's public utility commission announced that all of the state's electric utilities had met the RES's Tier-1 requirements. Subsequent goals are 59 percent by 2020, 63 percent by 2024, and ultimately reaching 75 percent in 2032.

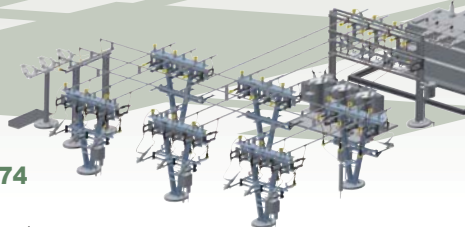
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NRECA INTERNATIONAL TO STUDY ELECTRIC CO-OPS IN NIGERIA, ETHIOPIA

NRECA International has been awarded a contract with the African Development Bank to study the feasibility of creating full-service electric cooperatives that could bring power to tens of thousands of households in Nigeria and Ethiopia.

A three-person team, led by NRECA International senior engineer Nick Allen, went to both countries in March to meet with government officials and evaluate how co-ops could play a greater role in expanding electric service for rural communities. The study, scheduled to be completed this month, is part of the bank's effort to achieve universal access to electricity throughout its member countries by 2025.

Only about half of Nigeria's 30 million households and about a quarter of Ethiopia's 22 million have electricity, says Dan Waddle, NRECA International senior vice president.

If those nations ultimately decide to develop co-ops and do so successfully, it could bring power to as many as 100,000 households in Nigeria and as many as 75,000 in Ethiopia over the next five years, Waddle says.

Both nations have electric co-ops, but they are limited in scope and are not full-service co-ops that own and operate power system infrastructure, purchase power, and commercialize it to their members.

"The electric cooperative business model is effective and operational in many developing countries around the globe," Waddle says. "We look forward to working with the African Development Bank to leverage our shared knowledge as we explore the best way to help them achieve their development goals."

Visit electric.coop for more on this story. **RE**

—By Erin Kelly



Photo courtesy ICHAUVEL/Getty Images

NRECA International will study the feasibility of creating full-service electric co-ops that could bring power to villages in Ethiopia (pictured) and Nigeria.

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BROADBAND **BREAKTHROUGH**

Electric cooperatives are increasingly seen as part of the solution to rural connectivity

By Cathy Cash



Photo courtesy: Tipmont REMC

“What we are sitting on is transformative.”

Ron Holcomb is on Capitol Hill in Washington, D.C., telling congressional staff about how a number of member-owned, not-for-profit electric cooperatives are embracing a new phase of their core business: improving the quality of life in rural America, this time through broadband internet access.

Earlier this year, Tipmont REMC in Lafayette, Indiana, accelerated its broadband commitment when it bought its local fiber competitor.

“If there is a better investment, I can’t think of one,” says Holcomb, Tipmont’s president and CEO. “An essential service co-op, that’s what we have to become.”

It’s an increasingly familiar refrain lately, as some electric co-ops across the country study, plan for, and initiate projects to bring broadband to their unserved or underserved communities.

More than 100 electric cooperatives are deploying broadband, and another 200-plus co-ops are exploring the option and conducting feasibility studies, according to NRECA research.

Several states have passed or are passing laws addressing potential legal hurdles for electric cooperatives to get into broadband. And many states offer loans and grants that co-ops can leverage for connectivity projects.

Huge new federal programs aimed at boosting rural broadband are making billions of dollars available to co-ops and other providers, while national media reports and access advocacy groups are referencing the promise of electric co-op engagement in rural broadband with increasing frequency.

“I do believe we’ve reached a tipping point for general acceptance of the potential role of co-ops in solving this problem,” says Brian O’Hara, NRECA regulatory issues director for telecom and broadband. “We’re very much considered a part of the equation.”

“That certainly doesn’t mean co-ops must be the solution in every case,” he adds. “But there’s been a noticeable realization at the local, state, and federal levels that what electric co-ops bring to the table is uniquely valuable in working to bridge the digital divide.”

The stakes are significant.

Lack of reliable high-speed internet access means many of the small towns, farm communities, and remote populations that co-ops serve risk being left behind in key areas like education, health care, jobs, and commerce.

A recent NRECA study estimates about \$68 billion in economic value will be lost to the estimated 6.3 million co-op-member households without broadband if they remain unserved or underserved over the next 20 years. Similarly, a 2018 Purdue University study commissioned by Indiana Electric Cooperatives and Tipmont REMC and funded by CoBank found Indiana can expect to reap \$4 in economic gains for every \$1 invested in broadband.

Electric co-ops get that.

“They’re in a position, not unlike 80 years ago, to make a real difference in their communities,” O’Hara says. “Their success hinges on critical pieces coming together.”

Changing state laws

Co-ops and statewide associations in several states have worked to amend or rewrite outdated or inadequate laws that could hinder cooperative broadband projects.

In Indiana and Missouri, co-ops successfully pressed to change laws that could have forced them to revise easement agreements with landowners to include running fiber-optic cable over their existing infrastructure.

Passage of the easement bill was “a crucial step in bringing high-speed internet service to rural people across the state who desperately need it,” says Caleb Jones, CEO of the Association of Missouri Electric Cooperatives. “It took a true grassroots effort to make this happen.”

In fact, co-op clout is a key factor in paving the way for broadband access, says Scott Bowers, vice president of government relations at Indiana Electric Cooperatives.

“There is more hope that this problem is going to get solved because co-ops are leading and actively engaged,” he says. “We’re crossing obstacles off the list.”

This year in Mississippi, Gov. Phil Bryant signed a law that allows electric co-ops to pursue broadband. In a state that ranks near the bottom on internet access, the bill passed the legislature overwhelmingly.

After the bill was signed, nearly all of the state’s 25 electric co-ops indicated they would be looking at options for broadband.

“We’ve listened and paid attention to the fact that there is a great need not being met in the rural parts of our state and other states,” says Jason Siegfried, president and CEO of Southern Pine Electric in Taylorsville, Mississippi.

The 70,000-meter co-op is in the midst of a feasibility study that will inform a broadband strategy as early as this year.

“We recognize that co-ops are getting into the business in other states and having success,” Siegfried says.

Texas co-ops are pushing for legislation that, like in Indiana and Missouri, will address delivering retail broadband without revising easements.

“We can install fiber on the pole for electric system communications, but we can’t deliver broadband without obtaining a new easement,” says Darren Schauer, general manager and CEO of Guadalupe Valley Electric Cooperative. “If we can get legislation passed, we can take those resources and apply them to building additional fiber.”

The co-op began providing fiber-to-the-home to its south central Texas territory in 2013 and plans to serve 14,000 members by year’s end.

In North Carolina, dual easement use is just one issue electric co-ops want state lawmakers to address. A bill making its way through the legislature would alleviate the easement concern, lift the state’s 20-year ban on electric co-ops using U.S. Department of Agriculture (USDA) grants for broadband service, and allow co-ops to use their fiber networks to enable retail communications.

Nelle Hotchkiss, chief operating officer of the statewide North Carolina Association of Electric Cooperatives, says

constituent feedback during the 2018 elections has helped their cause.

“The legislators on the campaign trail last fall heard it loudly and clearly,” she says. “The consumers in rural North Carolina are tired of waiting for affordable, reliable, high-speed broadband.”

State funding programs begin

States have also begun to create broadband loan and grant programs to offset or defer the enormous upfront costs of building out fiber infrastructure.

In March, Tennessee Gov. Bill Lee awarded six electric co-ops nearly \$6.3 million in state broadband accessibility grants to connect rural residents.

“The biggest hurdle with broadband remains funding,” says Trent Scott, vice president of corporate strategy for the Tennessee Electric Cooperative Association in Nashville. “It’s expensive. Yet the co-ops are structuring projects in such a way that they can be successful. Grants and low-interest loans from the state or federal government will have a big impact on the speed at which we can deliver broadband to people in underserved areas.”

Indiana recently launched a \$100 million grant program to get broadband built in areas the state defined as unserved.

“Gov. [Eric] Holcomb’s announcement, as well as the significant support of the Indiana legislature, is pretty indicative of how Indiana policymakers view the role that electric co-ops can play,” says Bowers of the Indiana statewide. “They are looking to electric co-ops to help solve the connectivity problem and not just in Indiana.”

Federal initiatives grow

At the national level, the Federal Communications Commission (FCC) this year plans to auction about \$100 million from its Connect America Fund (CAF) to get internet access built in unserved or underserved communities. Another auction is slated for 2021.

The CAF program was opened to electric co-ops for the first time in 2018, and the FCC awarded 35 co-ops about \$225 million to be doled out over 10 years.

Electric co-ops’ efforts got another boost last year when the USDA created ReConnect, a rural broadband program that’s part of the Rural Utilities Service (RUS). Congress has allocated \$1.15 billion for ReConnect grants, grant-loan awards, and low-interest loans specifically for rural broadband.

Congress also authorized a new annual \$350 million grants-and-loans program for deploying rural broadband in the 2018 Farm Bill. Projects in areas with fewer than seven meters per square mile may qualify for grants covering up to 75 percent of the cost.

Agriculture Secretary Sonny Perdue traveled last year to

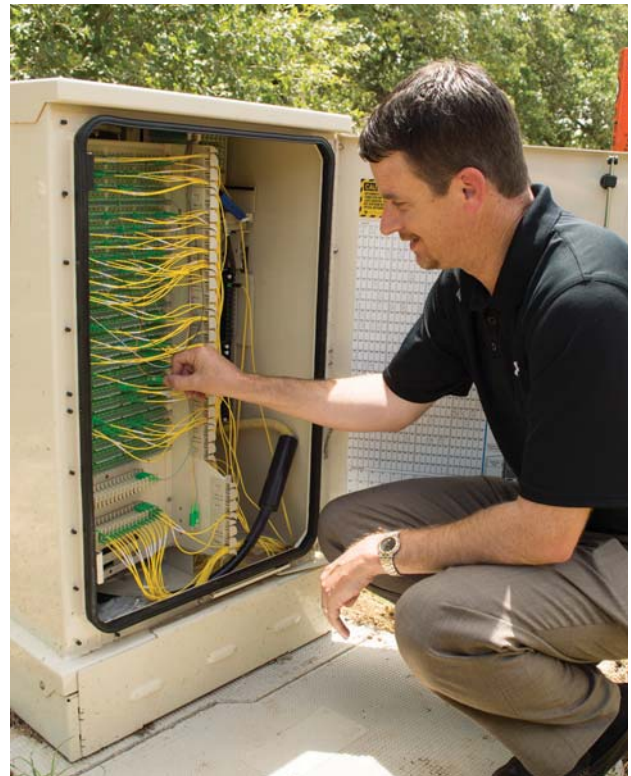


Photo courtesy GVEC

A Guadalupe Valley EC technician looks at the co-op's broadband infrastructure.

tiny Hamilton, Alabama, to present Tombigbee Communications, Tombigbee Electric Cooperative's broadband subsidiary, with \$2.98 million from the RUS Community Connect Broadband Grant Program. The co-op serves about 10,000 meters.

“To compete in today’s global marketplace, we must remove the infrastructure gaps in rural communities,” Perdue said at the event.

‘Well past experimental’

In a year tinged by weak agricultural commodity prices, trade tensions, and the historic federal government shutdown, farm loan defaults loom large over rural America’s economy.

Many co-op leaders believe broadband internet access is needed now more than ever, for everything from precision farming to online employment and purchases, in the communities they serve.

Waiting for third-party providers is often not an option.

“It is clear for the co-ops who want to go into the business and solve the issues of not having rural broadband that there are ways to do it,” says Gary Wood, CEO at Central Virginia Electric Cooperative, which received CAF funds for its upcoming fiber buildout. “It’s still up to the co-op.”

Michael Callahan, CEO of the statewide association Electric Cooperatives of Mississippi, says his state’s low population density has kept most broadband providers away. Some areas have only about two households per mile of line, far below the 35 one cable operator insisted on, he says.

So, since the enactment of the easements law, a handful of co-ops have been hard at work on fiber projects.

"I'm excited," Callahan says. "All across the spectrum, co-ops can participate and make broadband better in the state of Mississippi."

Likewise in Tennessee.

"Conversations are being had in co-op boardrooms across the state," says Scott of the Tennessee statewide. "All of our co-ops are looking at broadband to determine if that is the right thing to do to best serve their members."

Bowers at the Indiana statewide sees broadband as a way to stem a tide of outward migration from dozens of the state's rural counties.

"Strong communities must have good job and education opportunities. Broadband is an essential piece of that now," he says. "If you have a service territory without broadband, it can be very challenging to attract residents and keep the ones you have. If your customer base is shrinking, what is that going to do to your affordability component?"

Mike Williams, CEO of statewide association Texas Electric Cooperatives, is more blunt.

"You can't sell electricity to people who don't live there anymore."

He sees the economic benefits as a key factor in a co-op's broadband decision.

"In Texas, some family farmers have to work another job to continue to farm. Broadband gives you the opportunity to do that," he says. "We have communities that are not doing well. We can give them this critical infrastructure so residents can continue to live and work there."

"It might even encourage young people, who leave and have gotten used to Netflix, to come back and be part of their communities."

NRECA Chief Economist Russell Tucker says it's tempting to get caught up in the rush of co-op broadband, but he cautions a go-slow approach in most cases. He says a key entry point is investing first in backbone infrastructure and communications that will improve a co-op's system and can be leveraged, after careful study, to provide connectivity to members.

"When we talk about bridging the digital divide, it's certainly important to focus on the role of the electric co-op," he says. "Broadband backbones are necessary to optimize operations and adapt to changing consumer behavior. And if a co-op makes the decision to go forward with broadband, they can be a major step toward providing services either directly or through a third party."

So is co-op broadband at a tipping point?

Time will tell, but Bowers says he sees an increasing number of co-ops that are "well past experimental discussions."

"With the amount of investment and effort put in, I think this has become the reality for electric co-ops across the country."

Williams agrees. "Everybody's talking about broadband. Co-ops are doing something about it." **RE**



Tipmont REMC CEO Ron Holcomb

Photo courtesy Tipmont REMC

TIPMONT'S TIPPING POINT

AN INDIANA CO-OP ASKS, 'IS ELECTRICITY ENOUGH?'

BY CATHY CASH

Tipmont REMC is sending a clear signal: It's not just in the electricity business.

"Of course, electricity is vital to our security, comfort, and convenience," CEO Ron Holcomb says. "But is that where we stop? Is that enough?"

Tipmont, based in Lafayette, Indiana, recently purchased Wintek Corp., a local broadband provider, and launched a \$100 million fiber-to-the-home buildout for its 23,000 members.

Holcomb sees broadband as far more than a local issue.

"The gap in rural America is about our ability to compete," he says. "That's impacted by inadequate infrastructure."

In addition to acquiring Wintek, the co-op is partnering with Mulberry Telecommunications, a local telephone cooperative, to deliver video and voice services.

Holcomb sees electric co-ops collectively as "the biggest asset in rural America."

"We have the trust of the community. We are locally controlled. That makes us the most powerful entity in rural America."

"The question is, what do we do with that?" **RE**



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CO-OP PROGRAMS ARE TAILOR-MADE TO HELP LOW- AND MODERATE-INCOME MEMBERS
BY ADAORA IFEBIGH AND DEB ROEPKE

The nature of the regions served by electric cooperatives—with their challenging terrain, extreme weather, and far-flung membership—means innovation has always been an integral part of the co-op business model.

Another reality of serving rural regions, at least for the past several decades, is an economic landscape that encompasses some of the most impoverished areas in the country. A 2017 study from the U.S. Treasury Department found that electric cooperatives provide electricity in 364 of the nation's nearly 400 Persistent Poverty Counties.

Fortunately for these regions, co-op ingenuity and concern for community is manifesting in a range of products and services that aid low- and moderate-income (LMI) households.

"Innovation and community focus are in our DNA," says Jim Spiers, NRECA's senior vice president for business and technology strategies. "As times have gotten tougher in rural areas, co-ops have stepped up big time to bring new technologies and tailor-made programs that keep rates low, provides essential services, and actively reach out to lower-income communities to ensure they don't get left behind as our industry evolves."

Co-op initiatives that help low- and moderate-income consumer-members run the gamut from community solar projects, time-of-use billing, and efficiency programs to

on-bill financing for home upgrades, solar installations, and even electric vehicles.

"Electric cooperatives are community leaders and are well aware of the challenges many of their members face," Spiers says. "Their focus is always on ensuring that the full breadth of their membership has access to the benefits of any new innovations they deploy."

ON-BILL FINANCING

There are about 100 co-ops nationwide that offer on-bill financing programs, in which members receive a product or service and pay for it over time as a charge on their monthly bills.

Many co-ops report mixed results with their initiatives, but a handful are exploring adaptations that are showing more promise.

For several years, a group of cooperatives in South Carolina have run a successful on-bill financing program called Help My House, which helps members pay for efficiency upgrades. It differs from traditional financing programs by tying the loans to the meter rather than the resident, so loans don't need to be secured by good credit ratings. Co-op numbers show participants' energy bills drop by an average of 34 percent, or around \$288 per year. Capital for the pilot came primarily from a U.S.

Department of Agriculture loan, which was supplemented by funding from participating cooperatives.

“You save enough to pay for the work,” says John Norsworthy, a member of Santee Electric Cooperative, in a video posted on the Help My House website. “It doesn’t make sense to me that anyone wouldn’t do it.”

Lindsey Smith, vice president for education at the statewide association Electric Cooperatives of South Carolina, says Help My House is most effective when implemented in partnership with other local and state organizations and assistance programs that can address challenges like roofing and other structural issues.

Thanks in part to the success of the South Carolina initiative, federal efforts like the Energy Efficiency and Conservation Loan Program and the Rural Energy Savings Program are now helping cooperatives around the country to develop similar programs. The latter offers \$52 million in zero-interest loans to rural energy providers to make efficiency loans to homes and small businesses, and a portion of the funding is required to go to LMI members.

Other examples include programs at Ouachita Electric Cooperative in Arkansas and Roanoke Electric Cooperative in North Carolina, which both serve rural territories with high percentages of low-income members. Many are renters, and many live in energy-inefficient homes. Both cooperatives recently phased out their on-bill loan-based programs in favor of ones based on the pay-as-you-save (PAYS) model.

With PAYS, the member pays nothing upfront, doesn’t need a credit check, and doesn’t take on debt. The cooperative invests in energy efficiency upgrades for the home, and the member repays the cooperative through a fixed monthly tariff that’s calibrated to be less than the total energy savings. The tariff is tied to the meter rather than the member, which also makes it more attractive to renters who might not otherwise make upgrades to a home they do not own.

“The program is open to anyone, but it breaks down a lot of the barriers that have prevented low-income members from making energy efficiency improvements in the past,” says Marshall Cherry, chief operating officer at Roanoke Electric.

ENERGY EFFICIENCY AND WEATHERIZATION

The members who struggle to pay their power bills are often the least able to make energy efficiency

upgrades, and their homes tend to be the ones that could benefit the most from weatherization improvements.

More than 85 percent of cooperatives have financing initiatives that help members invest in efficiency measures while avoiding high upfront costs. Such programs typically start with an energy audit to determine options and potential savings. Remedies include replacement of heating and cooling systems; installing smart thermostats and load control water heater switches; sealing ductwork and weather sealing of windows and doors; and adding insulation. As with the PAYS model, upgrades are usually made only if the expected energy savings will be more than the monthly financing payments.

Once the work is done, cooperatives conduct a second audit to verify energy savings. Financing is done as a loan with on-bill payback or as a fixed monthly tariff.

Another successful model in Arkansas showcases the value of energy efficiency with a handful of lucky consumer-members. Statewide association Electric Cooperatives of Arkansas and its member co-ops run the annual Energy Efficiency Home Makeover Contest, where winners get a comprehensive upgrade on their house. Themes change year to year and focus on things like lighting, heating and cooling, thermal barriers and air sealing, and manufactured housing. In 2017, the contest saw 5,500 entries, and 10 were selected for makeovers.

“I was freezing in the winter and burning up in the summer,” says Petit Jean Electric Cooperative member Linda Moore, a contest winner who saw her bills drop from \$700 per month to \$380.

COMMUNITY SOLAR

Community solar is a concept that was started by electric cooperatives and remains largely a co-op initiative. More than 75 percent of all community solar programs nationwide are run by cooperatives.

With community solar, the utility builds an array and offers panels to be leased or owned by members, who receive credits on their electric bill for the power produced. Any member can buy in, even renters.

Until recently, community solar has been offered as a premium product that sometimes requires upfront investment. But cooperatives are finding ways to lower upfront costs and expand their programs’ reach.

In Colorado, seven co-ops have launched “PV for All,” which offers a sliding fee scale for joining a co-op’s community solar program—PV is short for photovoltaic

solar panels. Low-income households receive a 30 percent discount and pay no upfront or monthly costs.

The co-ops—Delta-Montrose Electric Association, Empire Electric Association, Grand Valley Power, Holy Cross Energy, Poudre Valley REA, Yampa Valley Electric Authority, and San Miguel Power Association—are working with the nonprofit GridAlternatives on the array build-outs as well as workforce development and community outreach.

“Cooperatives are great leaders in innovation and uniquely situated to put together new models that serve their members, especially those who struggle to pay their bills,” says Tom Figel, GridAlternatives’ policy and regulatory manager.

TIME-OF-USE RATES

At Garkane Energy in Utah, *when* you use power can be as important as *how much* you use. The co-op’s Half Price Energy time-of-use program lets members know when electricity is cheapest and gives them half off the amount they consume during that window. The co-op also tells folks when energy is most expensive and encourages them to defer use.

Windows are six hours and rotate from a morning peak in the winter to an afternoon peak in the summer.

“We looked at a lot of programs and realized that members didn’t understand peak demand,” says Neal Brown, Garkane’s member services and marketing manager. “We knew we needed a simpler message. We decided not to explain peak demand but instead focus on a program that would directly affect their pocketbooks by offering a lower bill.”

Participants can download a SmartHub app and monitor their daily power use. Brown says it gives members a sense of control and an understanding of what causes high bills and, on average, participants are seeing about a 15 percent reduction in their monthly charges.

“It’s been a way for us to work with members who struggle to pay their power bills,” Brown says. “Anyone is eligible to participate, but we’ve noticed the program attracts a lot of members that have limited incomes.”

PREPAY

Enabled by smart grid systems like advanced metering infrastructure (AMI) and meter data management, co-ops have found prepaid metering to be particularly helpful to low-income households, although the benefits are applicable across the membership.

Like certain mobile phone plans, prepay subscribers deposit money in an account and draw off of that balance when they use electricity. Modern grid communication and control allow the co-op to accurately track energy use

and instantly connect accounts when payments are made.

Programs vary, but generally, participants are not required to pay a security deposit or reconnect fees. They also tend to use less electricity as they become more conscious of how much they use.

Co-ops offer multiple payment options, including telephone, online, in-person kiosks, and pre-pay terminals at convenient locations like grocery stores and gas stations. Alerts through text or email tell a participant when their balance is running low. Such messaging platforms are frequently expanded to include weather alerts, school closings, annual meetings, and even off-peak pricing.

Roanoke Electric Cooperative implemented prepay to address high delinquency rates—25 to 30 percent. About 10 percent of its members use prepay, and of those, more than 90 percent are LMI households.

BROADBAND PLAYS A ROLE

Reliable, high-speed internet access can make participation in some of these programs easier and more efficient. The Federal Communications Commission estimates that 34 million Americans lack adequate internet access, and co-op service areas are especially hard hit. Some 39 percent of rural Americans lack access to broadband, compared to just 4 percent of urban Americans.

This so-called digital divide can have widespread negative impacts on communities and disproportionately affects low-income residents by driving away prospective employers, stifling growth, and compromising educational success and health care.

A recent NRECA survey found more than 100 co-ops are involved in efforts to provide broadband service to their members. Jo-Carroll Energy in Illinois was one of the first.

More than a decade ago, Jo-Carroll started a wireless broadband business for its SCADA and AMI infrastructure and then leveraged it to provide internet service to its communities. Sand Prairie, the co-op’s broadband division created in 2008, began offering fiber-to-the-premises (FTTP) to its members in 2016. The co-op now serves over 2,000 members with high-speed internet service and is focusing on a system-wide fiber build out. **RE**



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Photo courtesy Basin Electric Power Cooperative

Severe cold during a polar vortex event in January forced many wind turbines in the upper Midwest to shut down.

BATTLING THE POLAR VORTEX

MIDWEST G&Ts TAPPED THEIR FULL PORTFOLIOS TO MEET DEMAND DURING RECORD-SETTING COLD TEMPERATURES

BY DERRILL HOLLY

In late January, as a severe polar vortex brought high winds and some of the coldest temperatures ever recorded in the Upper Midwest, residents who ventured out may have caught an unusual sight: The familiar distant turning of many of the region's ubiquitous wind turbines had ceased.

Plummeting thermometer readings—minus-25 degrees Fahrenheit in many areas with wind chills approaching 60 below—began to trigger fail-safes that shut down the turbines to prevent damage from icing and frozen internal lubricants.

"MISO [the Midcontinent Independent System Operator] lost most of its forecasted wind capacity in its northern zone," says Dan Walsh, NRECA's senior power supply and generation director.

Fortunately, the diverse portfolios of the region's power producers meant that even with the loss of wind, electricity supplies were adequate, and outages during the multiday

cold snap were minimal. But experts say it and other extreme-cold episodes this year have tested the grid's resilience and reliability and reinforced the need for fuel and generation diversity.

"Sustained periods of severe cold weather repeatedly spiked power demand across much of the nation," says Paul McCurley, NRECA's chief engineer. "The results should serve as a reality check for anyone who sees promotion of specific technologies and the exclusion of others as a realistic path toward energy security and independence."

In addition to lost wind generation, MISO reported fuel shortages and cold-related mechanical problems for some gas-fired power plants. Other independent system operators reported similar problems. Circulating pump problems caused by ice even shut down a nuclear plant in New Jersey.

Despite the challenges, G&T cooperatives kept power flowing using a combination of coal and natural gas

baseload generation, peaking plants, renewable energy, load management, and power purchased from other sources.

“The system performed reliably due to good planning and preparation and solid, real-time operations,” says Priti Patel, vice president and chief transmission officer of Maple Grove, Minnesota-based Great River Energy.

To concentrate resources, Patel says, planned maintenance and scheduled outages on some generation equipment were postponed, and routine transmission work was temporarily suspended.

Bismarck, North Dakota-based Basin Electric Power Cooperative, which serves 141 distribution co-ops, says its participation in the large, geographically diverse Southwest Power Pool (SPP) helped keep supply flowing and prices low.

“One of the advantages of the 14-state SPP market is the vast footprint and the diversification of weather events that it provides with more of a north-to-south diversity,” says Dave Raatz, Basin Electric’s senior vice president for asset management, resource planning, and rates. “Energy prices are set based on the total load in the entire market. The diversification of this load, along with the types and quantities of generation in the entire market, helps to temper energy prices during very cold snaps in the north.”

Natural gas-based generation functioned well during the cold snap, but sustained cold across the region drove above-average residential demand throughout the Midwest and boosted fuel prices. Great River Energy says its lignite-coal-fueled generation in North Dakota proved both economical and reliable.

“Coal Creek Station and Spiritwood Station operated well in the extreme cold,” says Rick Lancaster, Great River Energy’s vice president and chief generation officer. “Our crews worked through the night to ensure our generation facilities had ample fuel supplies to reliably operate the plants.”

Basin Electric coordinated with its plant operators during the event to monitor fuel stocks, including coal and natural gas supplies. John Jacobs, Basin’s senior vice president of operations, says coal-based generation played a particularly important role in meeting demand this winter.

“It’s the well-maintained, lowest-cost resources that are less susceptible to the elements that will be called on to run,” he says. “You can be the lowest cost, but if the wind isn’t blowing, or are not weatherized and well-maintained, you will not be available to generate during these times.”

G&Ts also got cooperation from industrial users, who curtailed some operations during the most extreme conditions to ensure that ample supplies of electricity and natural gas were available for essential uses. Residential load control programs, operated in conjunction with

distribution co-ops, also helped reduce demand.

Great River Energy dispatched load control for dual-fuel and peak-shave water heaters, which resulted in demand reduction of 359 MW on Jan. 29. Full load control for interruptible commercial and industrial users was implemented the following day, resulting in a 459-MW reduction in peak billing demand.

During the two coldest days, Great River Energy’s estimated load management impact was about 3,112 MWh, Lancaster says.

“That helped the cooperative avoid additional real-time purchases from the energy market, saving money for all of our member co-ops,” he says.

Energy managers agree that flexibility and adequate fuel supply are essential to getting through sustained severe weather.

“Each event has its own set of issues,” Jacobs says. “You have to evaluate and prepare for anything that might come your way.”

Basin Electric’s Raatz adds that G&Ts need “different types of generation resources that can be dispatched under different situations.

“It comes down to having a balance.” **RE**



Photo courtesy Basin Electric Power Cooperative

Turbines in North Dakota locked down when sustained winds exceeded 56 mph during a January polar vortex event.

MARCH 2019 PHOTO CHALLENGE WINNERS

Congratulations to Rob Roedel with Arkansas Electric Cooperatives Inc. in Little Rock, Arkansas, for “Ouida Cox, a True Electric Cooperative Trailblazer” (below), winner of the March 2019 *RE Magazine* Photo Challenge with the theme “Co-op Women.”

Congratulations as well to Angela Lyseng with Beltrami Electric Cooperative in Bemidji, Minnesota. Her photo, “Pole-Top Rescue” (right), earned runner-up honors in the competition.



Ouida Cox, a True Electric Cooperative Trailblazer

Ouida Cox joined Arkansas Electric Cooperatives Inc. in July of 1949 as one of the statewide’s first employees. She retired 63 years later, having worked mainly on the statewide member publication, including 34 years as its editor.

Photo courtesy Rob Roedel



The contest themes for 2019 are:

- **May:** Co-op Country: Your Territory's Most Beautiful Spots
- **June:** Co-ops and Education
- **July:** Engaging Young Adult Members
- **August:** Co-op Renewable Energy

Visit cooperative.com/REmagazine to see all the photos, read the contest rules, “like” your favorite shots, or enter some images of your own.



Pole-Top Rescue

Beltrami Electric Cooperative Lineworker Amy Pillsbury performs annual pole-top-rescue training at the co-op's headquarters in Bemidji, Minnesota.

Photo by Angela Lyseng



THE PROMISE OF ARTIFICIAL INTELLIGENCE MAY (FINALLY!) BE READY FOR PRIME TIME

By Reed Karaim

Powder River Energy Corporation has one of the nation's more industry-heavy loads. More than 80 percent of its power goes to 13 coal mines and extensive oil and gas development in Wyoming's rugged northeastern region.

The volatile nature of those industries, whose power use can shift significantly based on the commodities markets and other external circumstances, makes accurate load forecasting both challenging and a priority for planning.

As he considered ways to meet that challenge, Quentin Rogers, Powder River's vice president of engineering and technical services, began experimenting with using neural networks, which are part of artificial intelligence (AI) or machine learning, to improve load forecasting. Those experiments are "still in their infancy," he says, and the co-op is not using neural networks for now, partly because some federal and state agencies are unfamiliar with the approach.

But as he looks down the road, Rogers believes AI/machine learning is likely to be an important part of load forecasting and other electric utility operations.

"I think it's something exciting that a lot of co-ops will be involved in in the next 10 years," he says.

Industry analysts and other technology experts agree with that assessment. An old joke about AI is that it's

been "five years away" for the past 30 years. But in truth, it has steadily become more common in an array of U.S. businesses.

"Artificial intelligence is all around us. We just don't often realize it," says Jim Spiers, NRECA senior vice president for business and technology strategies.

From in-home devices like Amazon's Echo, which learns consumer interests and desires as it responds to queries, to business software that fine-tunes delivery networks by monitoring and adjusting to real-time results, AI is changing the way complicated systems are managed.

Yet, despite its growing importance, a degree of mystery still surrounds AI. Even experts don't agree on a precise definition. But in essence, it involves developing computer systems that can learn and mimic human decision-making by sifting through large amounts of data and recognizing patterns.

For example, when using neural networks—a set of algorithms modeled loosely after the human brain—for load forecasting, "you train them with known data, and then it becomes a kind of black box, where you put in your information, and the output on the back end should provide an accurate prediction of what's going to happen," Rogers explains.

Spiers notes that the use of AI is simply the latest step in a long history of automation replacing manual calculation.

“We’ve moved from counting things by hand through a whole series of steps where we’ve automated data collection and analysis,” he says. “You now have machines making decisions, but it’s based on a series of rules. ... The theory is that it’s using precisely the same logic that a human would use, just without human intervention.”

‘THE POTENTIAL ... IS HUGE’

AI is already being used in the utility industry, says Mark McGranaghan, vice president, integrated grid for the Electric Power Research Institute (EPRI). For example, General Electric has an initiative to use AI for advanced analytics on gas turbine generators. Another company is using intelligent software to improve the sun-tracking capabilities of large-scale solar arrays, resulting in up to 6 percent in energy gains.

McGranaghan says electric power utilities have yet to make widespread use of AI’s potential, but hopes a recent EPRI initiative to facilitate data sharing between utilities and AI vendors will help move the industry’s use of the technology forward.

“We are living right now in a world of engineering-based models,” he says. “But the potential to take the data and let AI learn from it and see what it can do in conjunction with engineering-based models, or in place of engineering-based models, is huge.”

NRECA is a partner in the Department of Energy’s Grid Resilience and Intelligence Project (GRIP), which is advancing the use of AI.

“The GRIP project exists to create a software platform and a set of intelligent applications to improve the resilience of the grid in the United States,” says David Pinney, analytics program manager in NRECA’s Business and Technology Strategies group.

Pinney, who is NRECA’s GRIP project manager, says load forecasting is one of the key areas where AI/machine learning can play an important role. Tools are already on the market that provide the neural net algorithms that can be used to develop different intelligent models that help with forecasting.

Rogers sees a related benefit in using a machine-learning algorithm to automate a level of demand-side management. AI could use shorter-term load forecasting to see a peak approaching “and give signals to members to where they could potentially back off load,” he says.

Anomaly detection is another area where Pinney sees promise.

“We’ve built some initial models here, and they’re very similar to load-forecasting models,” Pinney says. “The application is somewhat different. After you detect anomalies in load data, typically what you’re looking for are malfunctioning equipment or nontechnical losses, i.e. theft, or you might find load behavior that’s really strange, and you might be able to tell the member that you’re peaking at an odd time, that sort of thing.”

As AI algorithms learn, he adds, they could be used for predictive maintenance—helping co-ops get to equipment before it fails—and in root-cause analysis of outages. The system would use data on the age of assets, their maintenance history and reliability, and other factors to point toward lines, transformers, and other system components that should be considered for repair or replacement.

Load and generation disaggregation also presents an opportunity for AI/machine learning.

“You’re basically given a meter reading over time, and you want to know what it breaks down into—is it their HVAC, their water heater, their lights—what’s in that reading,” Pinney says. “Machine learning could help answer those questions.”

For load disaggregation, an AI model could be trained on meter signals that have known components, and then that model could be applied to a non-disaggregated meter signal to determine component use.

“For generation disaggregation, the technique is similar, except the components there are types of generation, such as solar, gas, wind, etc.,” Pinney says.

Spiers notes that emerging distributed energy management systems, or DERMS, provide a logical place to apply artificial intelligence. Rooftop solar and other distributed generation, storage, fluctuating demand, and other factors are interacting at a level of complexity that an AI system can handle more effectively than human operators.

“It’s now this multiple two-way flow of electrons, data, and money,” he says. “You’ve got all these things happening, and you’ve got to have a tool that will manage everything, that will get them to operate together in an optimal fashion. We are still a ways off from such a system, but research and development are pursuing the promise.”

The key in this area and others, McGranaghan says, is building out the large data sets that AI algorithms need to draw on if they are to teach themselves how to run an operation more efficiently.

“The technology itself for the artificial intelligence is there, and it’s open, and there’s lots of companies that are ready to apply it,” he says.

'WITHIN FIVE YEARS'

Both Spiers and McGranaghan see untapped potential for AI in anticipating the needs of consumer-members. The use of AI to analyze consumer data should take privacy concerns into consideration, but “the customer side is so ripe for services,” McGranaghan says. “And this is an area where change will happen quickly because there are so many customers that the return on innovation is very fast.”

Artificial intelligence could allow cooperatives to reinforce the value of their consumer-centric model, Spiers says.

“Cooperatives have a significant amount of data about consumer-members. But I think what we’ll end up doing, for some of our consumers—not

all—is buying data from others,” he continues. “There are consumer behaviors in other parts of their lives that help us to know that they might really like a particular product that helps them save energy or control their energy consumption, costs, and quality of life, for example.

“You’ll be able to mine other sorts of data in areas totally unrelated to the energy space to identify those consumers that might be good participants in co-op programs that also have huge value to the co-op and its consumer-members.”

On the national level, much of the focus on AI has been connected to cybersecurity and system resilience, using the capabilities of intelligent systems to identify potential threats or weaknesses that could disrupt the grid. But Spiers notes that the systems also hold the potential of increasing efficiency of the grid.

Utility use of AI/machine learning may be in its early stages, but McGranaghan believes the old joke about its widespread adoption forever being just five years away will soon be outdated.

“I think we’re on the verge of actually using AI for a lot of things,” he says. “In areas like DERMS and distributed resources, those are just starting to really be widely applied anyway. We’ll be using AI as the penetration gets larger—those things will kind of mature together.

“I’m saying it’s within five years.” **RE**



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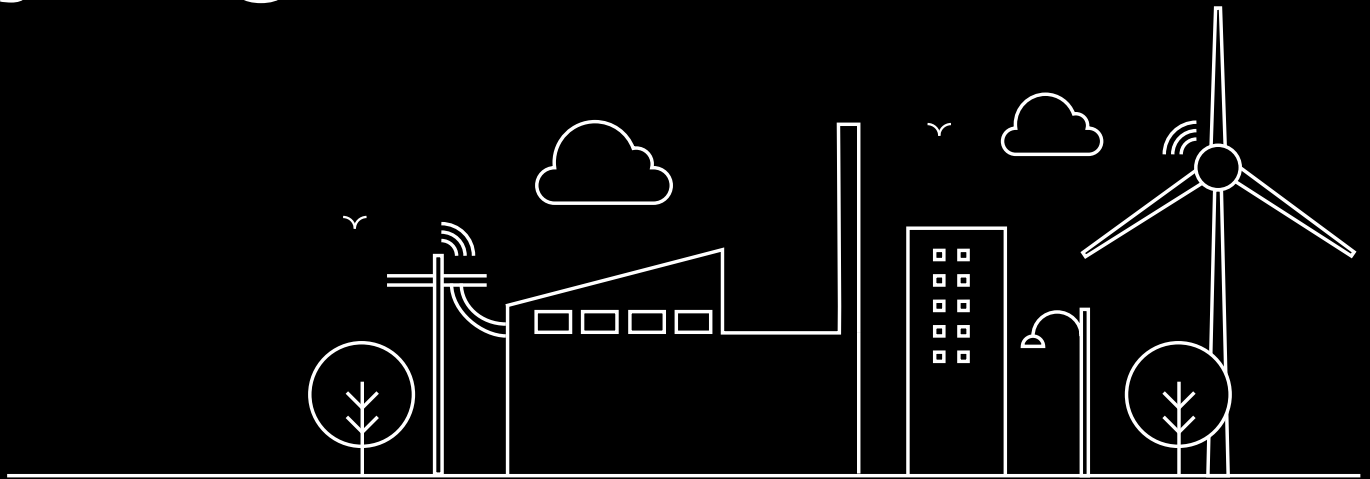


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Photo courtesy Carroll Electric Cooperative

Carroll Electric Cooperative's Ryan Butler (left) turned his bass fishing success into an opportunity to help sick children.

DREAM CATCHER

CARROLL ELECTRIC'S RYAN BUTLER SHARES HIS BASSMASTER SUCCESS

BY JOHN VANVIG

A talent for catching fish helped Ryan Butler land his dream. And now he's casting his net even wider, giving sick children and their families a hope-affirming experience through a faith-based charitable organization called, appropriately enough, "Catch-A-Dream."

Most days, Butler is busy managing new service connection projects for large consumers on the lines of Carroll Electric Cooperative Corporation, the Berryville, Arkansas-based co-op that just recently shot past 100,000 members.

"We're one of the largest co-ops in the state of Arkansas," he says. "There's a ton of growth in this area."

As the co-op's development design coordinator, he works with staff engineers, real estate developers, highway officials, and others to keep projects on track. A Carroll Electric employee for more than seven years, he also chairs the co-op's standards committee.

But on almost every day off, from March through

October, Butler's on the water, honing his skills as a semi-professional bass-catching expert. Last year, his mastery took him all the way to the GEICO Bassmaster Classic, an angler's version of the Summer Olympics and the World Series all rolled into one event.

Butler has made a name for himself in local and regional fishing tournaments, but when he qualified for the 2018 Classic at South Carolina's Lake Hartwell, he entered a whole new world of fishing.

"It's just incredible," he says. "There's two or three thousand people standing on the shoreline snapping pictures. There's helicopters flying all around. You get back at the end of the day, and people want your autograph."

"For those few days, you feel like a rock star. And I'm just a guy who works at the co-op."

While the newfound celebrity was fun, Butler saw it more as a chance to do some good.

"I told my wife, 'We're healthy; our child's healthy. I

feel like we're blessed to have what we have.' So when I achieved this and got a spot in the Classic, I said we have to use this opportunity."

Butler had heard about the Catch-A-Dream Foundation, a Mississippi charity that provides hunting and fishing experiences for youngsters with life-threatening medical conditions. For an angler making his move to the majors, it seemed like a perfect fit.

He wanted to use his new fame as one of bass fishing's best to generate contributions to Catch-A-Dream. He called Marty Brunson, the charity's CEO, who helped him design and launch a donor platform called Fishing for Dreams.

Brunson remembers that call the way an angler remembers landing a big one.

"He just sort of came out of the blue," Brunson says. "He'd been a follower of ours for quite some time, and when he got his opportunity on the big stage, he decided he wanted to help us out. It's hard to overstate the significance of someone like Ryan. It's invaluable and quite humbling to be involved with a guy like that."

Catch-A-Dream hosted Butler's Fishing for Dreams fundraising page on its own website, and the campaign was off. Butler's personal hope is to raise \$20,000.

"Ryan's effort has dwarfed the impact of any of our other social media-based platforms," Brunson says. "It's a testament to the power of the grassroots, to his community support, and to Ryan's persona and his integrity."

Butler is gratified by the generous response to his effort too.

"My co-workers supported this thing 100 percent," he says. When he looks over the campaign's donor list, "80 percent of those people I know." And at least one of them, neither he nor anyone else knows.

"There's a thousand-dollar donation in there, and whoever did it just did it anonymously. They're like, 'Here it is, and I don't need any recognition for it.'"

Butler went back to the Bassmaster Classic again this year, but this time as a spectator. He took along Alex Cook, one of Catch-A-Dream's kids who's been battling leukemia for more than a year and a half. Butler's status as a former competitor got them behind the scenes to meet the heroes of competitive angling, experts like Bill Dance, Michael Iaconelli, Brandon Palaniuk, Chris Zaldain, and Mike McClelland.

Butler saw it as a chance to again share his own good luck.

"Fishing the Classic was a dream of mine. And now we're using it for another kid's dream."

He says the Fishing for Dreams fundraising site will be an ongoing project and he plans to join Catch-A-Dream for upcoming trips in Missouri and Arkansas.

"I want to see these kids experience it, see the smile on their face, see their family," he says. "For that one week, they get to forget about the bad and focus on all the good in their lives." **RE**

Know someone RE Magazine could profile for our "Front Lines" column? We're looking for co-op operations and member services staffers, from meter readers to lineworkers to engineers, who make things work at electric co-ops nationwide. Contact us at remag@nreca.coop, or you can reach writer John Vanvig directly at johnlvnvig@yahoo.com or 360-624-4595.



Catch-A-Dream participant Alex Cook (left) got VIP access to the 2019 Bassmaster Classic as a guest of Ryan Butler (right).

Photo courtesy Carroll Electric Cooperative

BY TODD H. CUNNINGHAM



Photo courtesy Dominion Voltage Inc.

Choptank EC has had early success with its new VVO system.

WITH VVO, CO-OP TAKES 'NEXT STEP' ON GRID

Following its investment in advanced metering infrastructure, Choptank Electric Cooperative identified voltage optimization as “an obvious next step” in grid modernization, and the early results are in. After implementation of systemwide volt/VAR optimization (VVO), the Maryland co-op reported an average 3.1 percent voltage reduction during 2018, resulting in a 5 percent reduction in peak demand for circuits under VVO control.

“As an electric cooperative, we are always looking for ways to operate our system more efficiently and keep our rates low,” says Choptank Vice President of Engineering Todd Bireley. The impact of the EDGE VVO solution by Dominion Voltage Inc. (NRECA Associate Member; **dvigridsolutions.com**) exceeded expectations, reducing system peak and improving operating expenses through lower demand charges.

Dominion Voltage teamed with NRTC (NRECA Associate Member; **nrtc.coop**), its reseller for cooperatives, to propose the solution. “The business case for Choptank was very strong,” says Tim Bryan, CEO of the Dominion Energy subsidiary.

Contact: Choptank Electric Cooperative, 877-892-0001; Dominion Voltage Inc., Cora Argotti, 804-771-4921; NRTC, Chris Martin, 703-787-7288.

G&T BOOSTS CAPABILITIES BY ADDING TETRA SYSTEM

Cooperative Energy is bolstering both its internal operations and the services it provides member cooperatives with the deployment of a digital TETRA radio communications network. The Mississippi G&T's 58-site system will provide radio coverage and advanced communications capabilities for roughly two-thirds of the Magnolia State.

“Mission-critical communications that keep our employees connected at all times is essential to maintaining safe operations,” says Adolfo Bello, Cooperative Energy's director of communication systems. “The new system will also improve customer response and preparedness for emergencies and disasters.”

The G&T is partnering with PowerTrunk (NRECA Associate Member; **powertrunk.com**) for a TETRA solution addressing its unique needs. The system includes advanced dispatch capability, landline telephone integration and recording, a smartphone app, and AVL integration to optimize field operations and safety.

Bay Electronics (**bayelec.com**), which offers wireless network solutions, is working with PowerTrunk to provide the system, consisting of multiple radio sites with diversity receivers, redundant control equipment, antenna systems, mobile radios with integrated gateways to extend coverage, and the latest TETRA portable radios with built-in repeater capability.

Contact: Cooperative Energy, Christa Bishop, 601-705-6612; PowerTrunk, Keith Ammons, 201-630-4520; Bay Electronics, 920-743-0190.



Photo courtesy PowerTrunk

Cooperative Energy is rolling out a new Tetra communications network.



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BILL ALERTS HELP OEC STRENGTHEN MEMBER TIES

While Oklahoma Electric Cooperative (OEC) responded to the introduction of time-of-use rates with an effective education campaign to help members better understand their bills, the Norman-based co-op realized the effort was only the beginning.

They needed a communications channel that could integrate with its billing system to deliver accurate energy-use and billing data. And with rate increases looming, it needed to build strong member relationships and educate them on ways to save energy.

Enter Apogee Interactive (**apogee.net**). OEC opted for the company's mid-cycle bill alerts solution and home energy audit calculator. The alerts include a current bill estimate and predictive estimate based on past energy use and the weather, as well as a call to action that drives participation and awareness in a program or event.

"Sending the messages in the middle of the billing cycle and showing a predictive analysis puts members in control of their energy use," says Autumn McMahon, OEC's manager of marketing and member relations. "Members still have time to change their behavior and reduce their energy use before the high bill occurs."

Contact: Oklahoma Electric Cooperative, Autumn McMahon, 405-321-2024; Apogee, Stephanie Knight, 678-684-6840.

GROUNDBREAKING SOLAR/STORAGE PROJECT IN ARKANSAS

Ozarks Electric Cooperative, Today's Power, Inc., and the city of Fayetteville, Arkansas, have broken ground on a groundbreaking project: the state's largest solar power system on municipal land and the only one with on-site utility-scale storage.

The project, designed by Today's Power at Ozarks Electric's request, consists of three separate systems at two locations—the city's water treatment facilities—with a total capacity of 10 MW of solar generation and 24 MWh of battery storage.

When the electricity generated by the solar arrays exceeds demand, it will be net metered to the Ozarks Electric system or saved in the on-site battery storage systems.

Under the arrangement, Ozarks Electric will upgrade and maintain existing electricity connections at the sites, while Today's Power will own 99 percent of the solar systems and 100 percent of the storage systems and will operate both.

"This project is an example of how utilities and large-scale power consumers can meet the needs of the future through innovation and partnership," says Mitchell Johnson, president and CEO of Ozarks Electric.

The groundbreaking was in early March, and the project is slated for completion this summer.

Contact: Ozarks Electric Cooperative, Ashley Harris, 479-684-4956; Today's Power Inc., Jennah Denney, 501-400-5548; City of Fayetteville, Peter Nierengarten, 479-575-8272.

DAIRYLAND POWER BOOSTS SOLAR PORTFOLIO

Dairyland Power Cooperative will boost its solar energy portfolio almost seven-fold when the proposed Badger State Solar Project comes on-line. The G&T has finalized a 30-year power purchase agreement with the developer, Ranger Power, for the facility's entire 149-MW output.

"Resource diversification is foundational to Dairyland's commitment to a sustainable, future-facing power supply," President and CEO Barbara Nick says. "We look forward to Badger State Solar's benefit to our cooperative membership, local communities, and the environment."

Pollinator habitat is also planned for the 1,000-acre site, which is on the property of participating private landowners in Wisconsin.



Photo courtesy: Ranger Power

Dairyland Power Cooperative will purchase the output of the 149-MW Badger State Solar Project.

Brooklyn-based Ranger Power (**rangerpower.com**) is a utility-scale solar energy development company focused on bringing new investment and clean energy throughout the Midwest. Pending state and local approvals, its construction of the Badger State facility is anticipated to begin next year, with commercial operation commencing in 2022.

Contact: Dairyland Power, Katie Thomson, 608-787-1323; Ranger Power, Jeff Rauh, 262-853-6567. RE

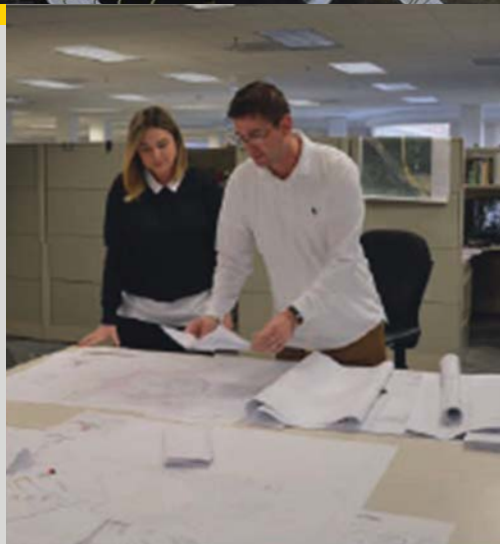
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Milwaukee Tool now offers the battery-operated *M18 SWITCH TANK Interchangeable Sprayer and Water Supply System*. The system delivers instant, constant, and adjustable pressure with no manual pumping. With an interchangeable tank system design, users can eliminate cross-chemical contamination. The 4-gallon backpack sprayer delivers pressure up to 60 PSI. The tank has a wide mouth opening for easy pouring and a strainer that filters debris.

Contact: Milwaukee Tool, Brookfield, Wisconsin, 262-790-6655; heather.mcgee@milwaukeekeetool.com; milwaukeekeetool.com.



DISTRIBUTION AUTOMATION SOLUTION

G&W Electric and **Survalent** have agreed to *bundle Survalent software with G&W's LaZer II and LaZer III distribution automation solutions*. The combination enables automatic power restoration in seconds to as many customers as possible in the case of a fault or loss of voltage on a feeder. Survalent provides advanced distribution management system software. G&W LaZer automation solutions are a family of pre-engineered solutions that can include switchgear, IEDs, communication equipment, protocols, software, integration services, and factory acceptance tests.

Contact: G&W Electric, Bolingbrook, Illinois, 708-388-5010; webmail@gwelec.com; gwelec.com; or Survalent, Brampton, Ontario, 905-826-5000; intlsales@survalent.com; survalent.com.

POLE CLIMBING PAD

Buckingham Manufacturing has launched a series of new products for linemen, including the *Heritage Cushion Wrap Pad* with insert, which is designed for use with the Buckalloy Climber. The wrap pads feature a 4-inch angled design and a metal insert to keep the climber shank stationary to reduce leg chafing. Also, the pads have a cinch loop, which allows users to secure and fasten them for a tight fit. In addition, the pads have a three-quarter-inch cushion padding for comfort and maximum adjustability, plus a rolled edge to prevent chafing.

Contact: Buckingham Manufacturing Co Inc., Binghamton, New York, 800-937-2825; sales@buckinghammfg.com; buckinghammfg.com.



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RIGGING BLOCK

Tallman Equipment Co. Inc. has released the new *DDIN DNRB-6 Rigging Block*, which features double-raced bearings and precision-machined parts that reduce side-to-side play. It has a working load limit of 5,000 pounds at a 5:1 design factor. It works with three-eighths-inch to 1-inch synthetic line and is ASME B30 compliant. It weighs 15 pounds, and each block is proof-tested and serialized for traceability.

Contact: Tallman Equipment Co. Inc., Columbus, Indiana, 877-860-5666; doug@tallmanequipment.com; tallmanequipment.com.

ENERGY APPS

Landis+Gyr is announcing *two new partnerships* that will expand smart grid and smart home apps. Partnering with **MicroEJ**, a developer of apps for utility distribution and edge devices, they will be creating *Gridstream Connect Apps* to enhance energy management for utilities and consumers. To enable utilities to provide a wide range of home energy management services to consumers, the company is also working with **Sense** to make *Sense home energy app* available within Landis+Gyr's Gridstream Connect IoT platform.

Contact: Landis+Gyr; Alpharetta, Georgia, 218-562-5195; dan.jacobson@landisgyr.com; landisgyr.com.



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Contact: RealWear Inc., Vancouver, Washington, 415-819-7791; aaron@realwear.com; realwear.com.



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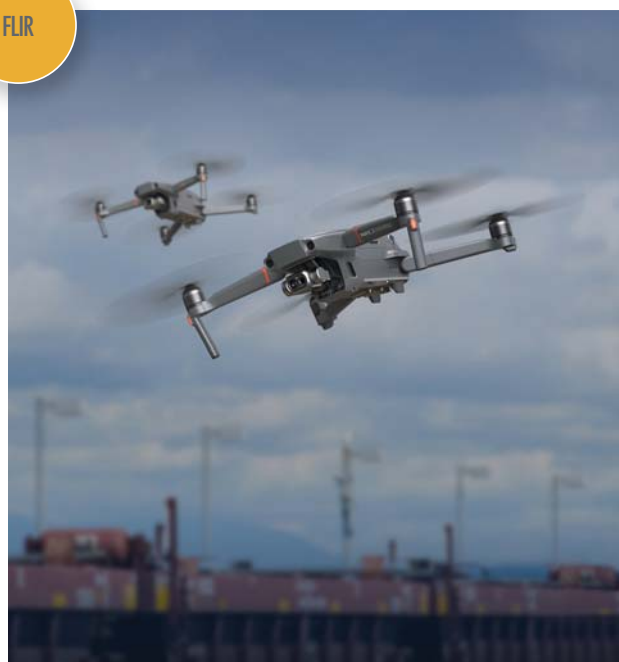
Contact: Cummins Inc., Columbus, Indiana, 812-377-5000; adam.sidders@cummins.com; cummins.com.



THERMAL IMAGING DRONE

FLIR Systems Inc. says **DJI** will integrate the *FLIR Lepton microthermal imaging camera* with its *DJI Mavic 2 Enterprise Dual drone*. This compact, gimbal-stabilized system will expand the close-range capabilities of commercial pilots with side-by-side thermal imaging and visible imagery. FLIR's patented MSX technology, or multispectral dynamic imaging, embosses high-fidelity, visible-light details onto the thermal imagery to enhance image quality and perspective.

Contact: FLIR Systems Inc., Wilsonville, Oregon, 800-322-3731; pr@flir.com; flir.com.





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A.I. AND VEGETATION MANAGEMENT

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Contact: IBM, Armonk, New York, 800-426-4968; mmedori@us.ibm.com; ibm.com.

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UTILITY BATTERIES

EnerSys is expanding the capacity range for its line of *PowerSafe DSG* batteries from 295-745 Ah to 295-1,600 Ah. Meant for demanding utility switchgear and control applications, the capacity range of 295-1,600 Ah is at the eight-hour rate to 175 volts per cell end voltage at 77 degrees F (25 C). The multi-cell construction of the batteries also lowers installation costs by requiring fewer units. The batteries have plated copper terminals with one- or two-post terminals in each cell to accommodate individual cell monitoring. They offer quarter-inch-thick positive plates that enable performance for long-duration discharge and complex duty-cycle requirements that are inherent in switchgear applications.

Contact: *EnerSys, Reading, Pennsylvania, 610-208-1991; april.lowther@enersys.com; enersys.com.*



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AriesPro	70
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NexGen Utility Solutions	96
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Michels Corporation.	92
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MacLean Power Systems.	90
MinMax Technologies, Inc.	94
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Nicopress (The National Telephone Supply Company)	96
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John Deere	88
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Powerfield Energy	99
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Electric Power Engineers, Inc	77
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Honeywell Smart Energy	84
Horizon Solutions	85
Itron, Inc.	87
QinetiQ North America	100
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Honeywell Smart Energy	84
Itron, Inc.	87

NexGen Utility Solutions	96
QinetiQ North America	100
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Davey Resource Group.	76
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FTI Consulting, Inc.	80
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MinMax Technologies, Inc.	94
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Lockheed Martin Energy	90
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PowerTrunk Inc	100
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Exelon Aerolabs	79
Futura Systems, Inc.	80
GISbiz, Inc.	82
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MinMax Technologies, Inc.	94
National Information Solutions Cooperative (NISC)	94
Nikola Power	96
On Now Digital	97
Smartenit, Inc.	105
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Symbiosa	108
Trilliant, Inc.	110
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Utilities International Inc.	112
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NewGen Strategies and Solutions, LLC	96
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John Deere	88
Michels Corporation	92
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John Deere	88
MacLean Power Systems	90
N-Dimension Solutions	95
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Powertech Labs	100
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QinetiQ North America	100
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V&S Schuler Engineering, Inc.	112
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Anixter	68
Critter Guard	75
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Elliott Equipment Company	78
GEOTEK—PUPI	82
Greenlee Communications	83
Huskie Tools, A Spartaco Company	86
ICORP-IFOAM Specialty Products	86
J. Ranck Electric	88
John Deere	88
Michels Corporation	92
MinMax Technologies, Inc.	94
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On Now Digital	97
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Pike Corporation	98
PLH Group, Inc.	98
Powertech Labs	100
Soltex Inc.	105
Sparks Energy Inc.	106

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AESI—US, Inc.	65
Anixter	68
Critter Guard	75
Delta Star, Inc.	76
Eaton	77
John Deere	88
Juniper Networks	88
Transgard Systems, Inc.	110
Ulteig	111
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Anixter	68
Ervin Cable Construction, LLC	78
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Horizon Solutions	85
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Horizon Solutions	85
IGS Energy	86
John Deere	88
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ABB	64
Anixter	68
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Horizon Solutions	85
Howard Industries, Inc.	85
POWER Engineers	99
Powertech Labs	100
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GEOTEK—PUPI	82
Honeywell Smart Energy	84
IDOM INC	86
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Itron, Inc.	87
Milsoft Utility Solutions, Inc.93
MinMax Technologies, Inc.	94
mPower Innovations	94
MultiSpeak.	94
NexGen Utility Solutions	96
On Now Digital	97
POWER Engineers	99
SkyHelm Technology	105
Spatial Business Systems, Inc.	106
Symbiosa	108
Ulteig.	111
Vertex Consulting, LLC	113
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Wireless Data Systems, Inc.	114

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T&D Line Construction/Maintenance Equipment

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Ervin Cable Construction, LLC	78
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Lockheed Martin Energy	90
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T&D System Equipment (Switchgear/Reclosers)

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GridLiance	83
Homewood Sales Corporation.	84

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3 Phase Associates is a full-service architectural and engineering firm offering a wide range of services: design engineering for substations, protection and controls, protective relaying, SCADA, telecommunications, smart grid and security, and including construction, implementation, testing, and project management. Our mission is to provide superior services of excellence by always exceeding our customers' expectations and to ensure that our clients succeed in every endeavor with highly competent and qualified staff. We put safety first in everything we do and strive to offer our clients very low, competitive rates while achieving 100 percent accuracy on all deliverables. Also available: turnkey solutions and engineering, procurement, and construction options for implementing power system improvements. We also provide architectural and engineering services for commercial, industrial, and manufacturing.

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3Degrees has over a decade of experience assisting co-ops and utilities across the country with all aspects of utility-led voluntary renewable energy programs, such as green power programs and community solar. We work closely with our clients to understand their goals and constraints, then we use our breadth of experience to design a renewable energy program that will achieve a successful outcome. In addition to program design, 3Degrees also provides subscription forecasting, program implementation, marketing, and customer acquisition services to our utility partners.

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ABB is a pioneering technology leader in electrification products, robotics and motion, industrial automation, and power grids, serving customers around the globe in utilities, industry and transport, and infrastructure. ABB enables the grid of the future, shaping a stronger, smarter, and greener grid.

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ABG Bag Inc. is a woman-owned (WBENC certified) North American product developer, manufacturer, and supplier of liftable, recyclable containment safety tools for the electric utilities industry.

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Accordant Energy is a fuel technology company offering an innovative, renewable fuel—ReEngineered Feedstock—to enable cleaner coal power generation with improved environmental performance.

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ACES is a nationwide energy risk management company helping its members and customers manage energy more efficiently and with less risk. ACES' members and customers operate in all of the major electricity markets in the U.S. and have a collective portfolio of over 50,000 MW of both load and resources. ACES provides services "as agent," representing its members and customers in the marketplace to help manage their energy risk. Because ACES does not buy or sell energy on its own behalf, it avoids conflicts of interest and ensures consistent and complete alignment with the best interests of the organizations it serves.

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Aclara, now part of the Hubbell Power Systems family of brands, is a world-class supplier of smart infrastructure solutions and installation services to 800-plus electric, water, and gas utilities worldwide, including 300 rural electric co-ops. Aclara offers smart meters, sensors, advanced metering infrastructure, software, and services that enable utilities to predict and respond to conditions, leverage their distribution networks effectively, and engage with their customers. Meter Reading Holdings LLC operates three sister companies—Aclara Technologies, Aclara Meters, and Smart Grid

Solutions—collectively as Aclara. Visit us at Aclara.com, follow us on Twitter @AclaraSolutions, or read our blog.

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ACRT Services offers expert independent consulting solutions to cooperatives, including vegetation management consultation and training, customized safety courses, technology solutions, and utility metering services. ACRT Services supports three wholly owned subsidiaries—ACRT, ACRT Pacific, and Bermex. We assess and monitor systems for liabilities, consult with decision-makers on planning and budgeting, represent cooperatives, and train personnel to be safety-focused leaders. Exclusively offering Arborcision, a proactive vegetation management tool that empowers cooperatives to prioritize workloads, analyze costs, and make more effective decisions to improve reliability.

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 Holophane and American Electric Lighting provide lighting products and solutions for roadway, industrial, commercial, area, security, flood, and decorative lighting, giving our customers the greatest value through superior visibility, energy efficiency, reliability, quality, and service.

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ADTRAN has a unique understanding of the changing environment electric cooperatives face today. We believe amazing things happen when people connect, and as broadband continues to transform the way we all live, work, and play, ADTRAN is working with rural operators around the country to deliver the connectivity their communities need in order to grow.

NRECA Gold Associate Member

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ACS is a leading provider of grid control software solutions and advanced automation technology that enhances operational performance of the electric power industry. For 40-plus years, ACS has been a trendsetter in power grid control. As part of Indra-Minsait, ACS now offers the most complete end-to-end solution for utilities.

NRECA Silver Associate Member

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Advanced Energy's primary business is energy efficiency. We were organized to provide energy efficiency services to the electric utilities in NC, including our co-ops. Since 1996, we have been delivering energy efficiency services to utilities, manufacturers, and governments across the U.S. Advanced Energy has been providing energy efficiency services to cooperatives since 1980. Our primary services are program design, implementation, training, and consulting to multiple markets, including residential, commercial, industrial, renewables, and electric transportation.

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Advanced Media Technologies Inc. (AMT) is the performance leader among high-end broadband electronic equipment providers. As a value-added reseller of high-performance products from the most recognized manufacturers, AMT targets emerging technology applications in broadband with a complete line of RF and fiber distribution, video, data, OTT, IP, and HDTV products. AMT's complete portfolio includes products from ARRIS, Harmonic, Cisco, Ruckus, Nokia, Emcore, Amino, ATX and Blonder Tongue, to name a few, and is complimented by a sales and engineering team with hundreds of years of combined experience within the CATV, SMATV, IP, and TELCO industries.

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Aerial Solutions helps electric utilities provide safe, reliable service by side trimming trees along rights-of-way by using an aerial saw suspended under a helicopter and controlled by the pilot. While ground crews are hampered by steep terrain, wetlands, and inaccessible areas, the aerial saw can easily overcome these challenging conditions.

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Aerinet Solutions is an innovative software company who provides advanced Analytical and Benchmarking tools for evaluating outage data and distribution reliability metrics such as SAIDI, SAIFI and CAIDI for electric utility companies. We specialize in customized state-of-the-art tools that are powerful yet easy to use providing advance analysis and results in a short amount of time. Our unique "out-of-the box" tools are designed to import data seamlessly from almost any source, deliver reports and compare your company to nationwide benchmarking results in a matter of minutes via the desktop, internet and mobile apps.

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AES Distributed Energy Inc., a wholly owned subsidiary of The AES Corporation, is a trusted energy partner, delivering reliable and affordable solar power and storage solutions to our customers. We specialize in developing, owning, and operating utility and distributed generation solar photovoltaic (PV) projects on a stand-alone basis or paired with storage, through a mutually agreed upon power purchase agreement. We have broad access to global capital markets to offer efficient project financing structures. AES has more than a decade of solar, wind, and storage development and operating experience and offers a variety of financing solutions that address a wide range of PV and storage projects.

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As industry-trusted advisors, AESI delivers a range of engineering and management consulting services that support sustainable solutions and with knowledge-transfer. Key to our success is a holistic point-of-view to risk management that draws from specialists with practical utility expertise and proven project experience. For all projects, big or small, AESI subject matter experts remain technology- and vendor agnostic and deliver cost-effective, sustainable solutions that are client-centric and utility-specific. Count on AESI experts for your cybersecurity advice, energy solutions (micro-grid and distributed energy resource system), operational technology needs (SCADA, energy management systems, automated distribution management systems, advanced metering infrastructure), and NERC compliance (CIP and non-CIP) assistance.

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Electric utilities have relied on AFL for over 30 years. From transmission and distribution and substation accessories to complete solutions of aerial fiber-optic cable (OPGW, ADSS, and SkyWrap) and fiber-optic hardware, AFL's solutions improve the reliability of critical electrical and optical infrastructure used for the transmission and distribution of electricity. That same infrastructure also supports fiber-to-the-home networks for delivering new services to electric utility customers. AFL has the complete portfolio plus knowledge and experience to implement state-of-the-art fiber-optic networks on electrical and optical infrastructure. Let AFL show you how to follow the power.

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Alarm.com helps cooperatives define what a smarter home is while addressing new ways to improve energy efficiency and create new revenue streams through data beyond the smart meter. We create innovative technology that deepens the connection between people and the things they care about most—their families, homes, and businesses. Millions of people trust Alarm.com every day for better security, intelligent automation, and dependable service.

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The Aldrich Group includes a top 100 accounting firm nationally providing tax, advisory, and consulting services to businesses and individuals. We also work closely with business owners and individuals to manage their financial, wealth, and tax planning strategies. We serve clients with deep industry expertise in telecommunications and utilities, as well as a variety of privately held companies and individual clients. Our Utilities Services Group serves water, wastewater and sewer, solid waste, and electric throughout the West. We understand the challenges utility providers face in providing essential services to the public while maintaining rates at an affordable level.

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Designing Solar and Wind Solutions for America's Electric Cooperatives

Aggregating demand provides cost-effective, reliable, and safe renewable power.

by Cat Strumlauf, Manager of Corporate Communications, Apex Clean Energy

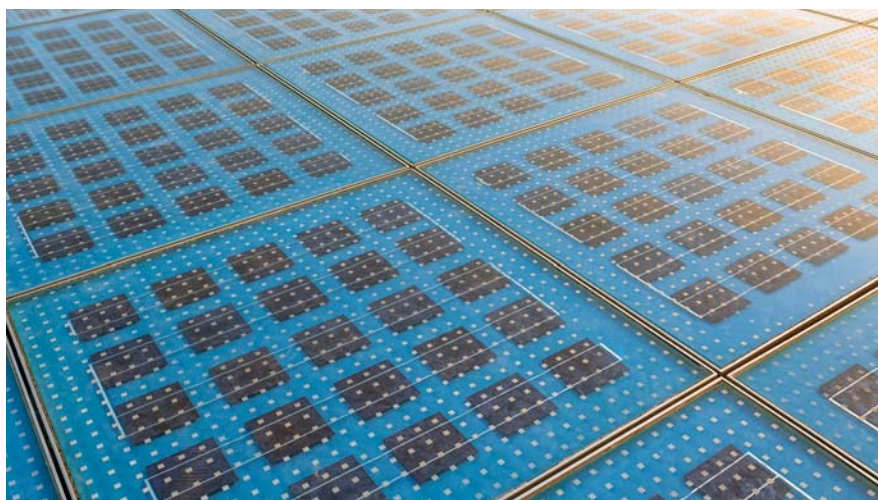
The demands on America's electric cooperatives continue to evolve and expand. One trend remains constant: consumers want affordable, clean, reliable power.

Across the country, consumers are increasingly recognizing that solar and wind energy don't just compete on price but, in many ways, are better than conventional sources of power. The levelized cost of renewable energy has fallen dramatically, and the recent and rapid deployment of renewables means that an increasing and significant source of power will come from renewable projects in rural areas. As a result, many co-ops are executing strategies to increase the share of solar and wind energy in their generation mix.

NRECA studies show that more than 90 percent of co-ops now provide power generated by renewable resources, and electric cooperatives' non-hydro renewable energy capacity has more than doubled since 2010. The good news? Co-ops that transition to a higher percentage of renewable energy can reduce emissions and save on costs.

Leveraging the Collective Buying Power of Co-ops

For some cooperatives, the size of a wind or solar project is a barrier to entry as they may not have enough load to justify participation



More than 90 percent of co-ops now provide power generated by renewable resources, and electric cooperatives' non-hydro renewable energy capacity has more than doubled since 2010.

in a large project. However, Apex Clean Energy's team is experienced in aggregating power purchasers—including government, municipal, co-op, and corporate customers—to enable all to benefit from the economies of scale in larger projects.

"At Apex, we're committed to developing flexible and inventive solutions to meet this rising demand, and we're uniquely positioned to do so," says Mark Goodwin, Apex president and CEO. "Our experienced and award-winning team has created innovative approaches and deal structures that have quickly become the new industry standard."

Apex's leading turnkey operations provide co-ops with the services they need to source power from exceptional projects. Beginning with project origination, the company provides best-in-class execution across resource assessment, engineering, construction, and asset management of clean energy projects. Apex's advanced, proactive

approach to operations and maintenance optimizes project performance, saving our customers, many of them repeat clients, millions of dollars—and counting.

“For an even more comprehensive approach to renewable energy procurement, leading power purchasers are considering wind and solar together to better match their energy consumption with purchased renewable generation,” says John Stone, Apex vice president of solar. “With a broad portfolio of projects spanning several dozen states, Apex has the ability to craft a solar, wind, or hybrid renewable energy solution uniquely tailored to each customer’s priorities.”

Solar and wind technologies continue to improve, and overall costs have declined while wind turbine and solar panel efficiency continue to rise. Advancements over the past several years now enable larger-capacity projects to be built on smaller footprints, and developers can site projects on land that was once considered unfeasible.

Because solar produces during the daytime, and for longer periods during the summer months, and wind often produces more during the nighttime and in the winter, a hybrid strategy that blends both technologies provides renewable power regardless of the time of day or year.

As more renewable energy projects reach maturity and their true cost savings come into focus, Apex is opening the market to buyers of all kinds. Gone are the days of access limited to large buyers. Now, when it comes to solar and wind power, electric cooperatives can achieve their sustainability goals, offer cost savings to their customers, and partner with fellow rural co-ops to obtain the best pricing and terms for clean power.

Mixing Solar, Wind, and Storage

A hybrid strategy can provide customers with a more balanced renewable energy procurement solution. Combining wind and solar technologies adds diversity to energy production and resiliency to the grid by making it less reliant on a single source of energy. Add battery storage to the strategy, and the wind and solar facilities can capitalize on their generation profile and capacity, leading to savings for the facility owner and consumers.

Apex has seen the hybrid model work firsthand. Leveraging an impressive pipeline of Texas projects and significant development and asset management experience in the Lone Star State, the company created a customized wind and solar solution to deliver energy independence for Fort Hood, the largest active-duty armored U.S. military garrison in the world.

Phantom Solar, located on-post in Killeen, Texas, and Cotton Plains Wind, sited about 350 miles away, generate over 65 megawatts of clean energy and supply nearly half of Fort Hood’s current annual energy consumption. Together, the wind and solar facilities are saving taxpayers an estimated \$168 million over the life of the project.

About Apex Clean Energy

Apex Clean Energy’s industry-leading development portfolio enables us to partner with electric cooperatives to develop solar and wind solutions that provide low-cost clean energy generation products for any customer’s needs, no matter how diverse or specific. To learn more, visit us at www.apexcleanenergy.com/solar.

Phantom Solar, a 15.4 MW_{ac} project, stretches across 130 acres of the Fort Hood military garrison.



Alianza makes cloud communications radically better for service providers. Our Cloud Voice Platform is a web-scale, turnkey virtualized software solution that enables cable, mobile, telco, and other broadband providers to rapidly customize, launch, and profit from VoIP and UC services. With our software-as-a-service solution, voice becomes a robust broadband application, and service providers realize massive simplification, new service possibilities, and a lower total cost of ownership. This new way to deliver voice untangles service providers from the restraints of old-school voice networks and accelerates innovation and growth.

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Founded in 1987, Allied Telesis is a leading global provider of networking infrastructure and interoperable network solutions. It provides video, voice, and data network solutions for markets including government, health care, defense, education, retail, hospitality, and network service providers.

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Altec is a leading provider of products and services to the electric utility, telecommunications, tree care, lights and signs, and contractor markets. We deliver products and services in more than 100 countries throughout the world. Altec Inc. is the holding company for Altec Industries, Global Rental, Altec NUECO, Altec Worldwide, Altec Capital, Altec Supply, and Altec Ventures LLC. Since 1929, Altec has been a company committed to excellence. Our products are the industry leaders and consistently raise the bar through innovative product design, integrated safety features, and continued dedication to total customer satisfaction.

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Since 1986 Altran has provided electrical, mechanical, civil/structural, and chemical engineering, design, and project management

services for our expanding customer base. Our areas of expertise include transmission and distribution; fossil, nuclear, and renewable power generation; process engineering; and facilities design. Our world-class Materials Science and Engineering Center offers forensic analysis and root-cause analysis of materials and mechanisms used in the energy industries.

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American Energy Services Inc. (AES) is staffed by people who have decades of experience in pole inspection and related maintenance fields. We helped pioneer the sonic-and-bore pole inspection method that is the backbone of many of America's power suppliers' pole maintenance programs. Since American Energy Services' first year, 1984, we have nondestructively tested millions of poles, saving our clients millions of dollars. This is due in part to the utility industry's growing acceptance of sonic testing and also because of vigorous efforts by AES to promote this alternative to hammer-sounding, excavating, and boring. One of the fastest growing areas of service is overhead transmission line inspection. American Energy Services has been doing this type of work for various utilities since 1987. This comprehensive overhead transmission inspection is accomplished by either climbing or using aerial trucks.

NRECA Silver Associate Member

American Tower Corporation

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American Tower is a leading independent owner, operator and developer of wireless and broadcast communications infrastructure and provides access to over 57,000 communications sites across the United States. We service wireless carriers of all sizes, TV and radio broadcasters, utility operators, government agencies, first responders, wireless internet service providers and other private industries. Our solutions include towers, managed rooftops, in-building and outdoor distributed antenna system networks and other right-of-way options, small cell and Wi-Fi networks, and services that speed network deployment.

NRECA Silver Associate Member

American Transmission Co.

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American Transmission Co. (ATC) is a Wisconsin-based company that owns and operates the electric transmission system in portions of the Upper Midwest. ATC is a member of the MISO

regional transmission organization and provides nondiscriminatory service to all of its customers, supporting effective competition in energy markets without favoring any market participant. As the nation's first multistate, transmission-only utility, ATC's sole focus is transmission. ATC serves utilities that procure primary network transmission service. Public power is represented on ATC's board of directors, and 22 of its 28 owners are public utilities. This model can benefit utilities nationwide.

NRECA Gold Associate Member

American Wire Group (AWG)

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AWG specializes in cable for renewable energy and electric utilities, offering a complete line of collection system underground cables in 15 KV to 35 KV TR-XLPE/EPR, overhead bare aluminum transmission and distribution conductors (ACSR/AAAC/AAC), industrial power cables, bare copper conductor, copper clad steel, static wire, guy wire, aluminum clad steel, substation control cables, and fiber. AWG is proud to offer our exclusive patented cable for the renewable energy industry, TowerGuard CCA 2 kV, which weighs and costs approximately 35percent of conventional DLO cables.

NRECA Silver Associate Member

Amino Communications

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Amino is an innovative global provider of modern, scalable media and entertainment technology solutions. With our award-winning IP/cloud video solutions and deep deployment expertise, we are the partner operators trust to design and deliver modern TV experiences that gain them an advantage in meeting the demands of today's connected consumer.

NRECA Silver Associate Member

Andax Industries LLC

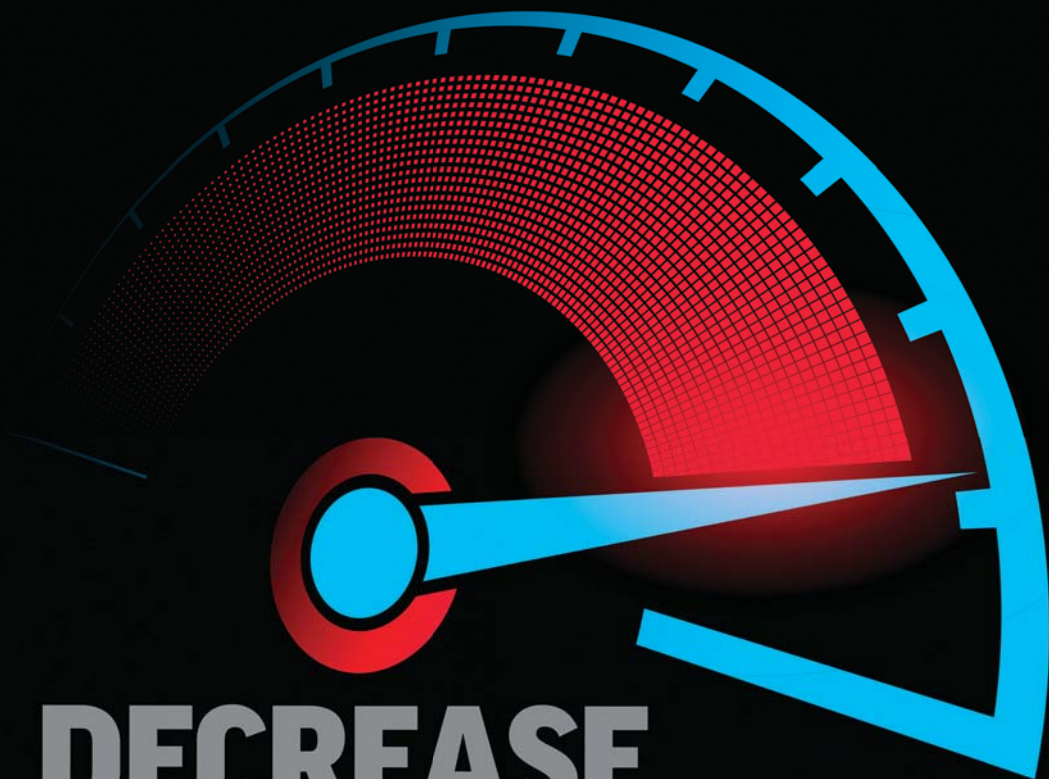
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Andax Industries LLC manufactures top-quality leak and spill control products and secondary containment systems for leaking pole- and pad-mount transformers, insulator bushing containment, and flange containment with remote monitoring. We are also a distributor for Streamlight flashlights; Pelican cases, flashlights and remote area lighting systems; and Surefire flashlights.

NRECA Silver Associate Member

Anixter

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NRECA Gold Associate Member

Apex Clean Energy

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Apex Clean Energy develops, constructs, and operates utility-scale wind and solar power facilities across North America. Our mission-driven team of more than 200 renewable energy experts uses a data-driven approach and an unrivaled pipeline of projects to create solutions for the world's most innovative and forward-thinking customers. For more information on how Apex is leading the transition to a clean energy future, visit apexcleanenergy.com.

NRECA Silver Associate Member

ArborMetrics Solutions LLC

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ArborMetrics (AMS) is a vegetation management mobile workforce focused on work planning, landowner notification, quality control, and right-of-way program management for electric cooperatives. ArborMetrics' proven vegetation management software, ArborLine, is bundled with professional foresters to capture all the right-of-way work requirements and can deliver the information into detailed map books or electronically to a smart device for a tree crew to execute the work. One of ArborMetrics' guiding principles is to implement the science of project management to ensure all projects meet defined scope, cost, and time constraints. AMS has offices throughout the United States and Canada.

NRECA Silver Associate Member

ARC Media

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At ARC media we understand the sizable task of building and maintaining the many miles of transmission lines that provide electricity to the homes, businesses, churches, and schools that are spread across our rural countryside. We admire these efforts and applaud the individuals who work hard day in and day out in to ensure our light turns on. Through creation, management, and placement of communication plans,

our goal is to help statewide electric associations, distribution cooperatives, and power generators convey their goals of safety, efficiency, public policy awareness, and, above all, member-owner activation. We have combined our decades of experience in #RuralElectric marketing and in digital marketing to help cooperatives and member-owners communicate with one another.

NRECA Gold Associate Member

AriesPro

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AriesPro is the leading systems integration and consulting services provider solely focused on the energy and utility sector. Our core expertise in engineering and operations data analytics, technical and non-technical loss analysis, outage and asset management predictive analytics, and cyber security lowers overall energy losses and enhances grid security, reliability, operational efficiency, and customer satisfaction. We offer a broad range of service, including technical and non-technical loss analysis, predictive asset and outage management analytics, cybersecurity assessment, advanced metering infrastructure analytics, grid and operational efficiency, mobile and social media solutions, customer engagement services, and renewables analytics.

NRECA Silver Associate Member

Art Advertising Inc./Labels and Decals

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Art Advertising Inc. is an industrial decal, label, and sign manufacturer. We have been in continual operation since 1969. We work with transformer manufacturers, electric cooperatives, utilities, and many other types of industrial clients. We specialize in harsh environment graphics. We also perform other services, including color printing, graphic design, website design, and marketing services.

NRECA Silver Associate Member

Asplundh Tree Expert LLC

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Celebrating its 90th year of proudly serving the utility industry, Asplundh continues to specialize in efficient, safe, and cost-effective vegetation management services. A family-owned and managed company, Asplundh employs over 34,000 men and women throughout the U.S. These services include scheduled tree pruning and removals, emergency storm restoration, right-of-way clearing and maintenance with specialized equipment, and integrated vegetation management with herbicides. Asplundh also offers infrastructure services through various subsidiaries, including power line and substation

construction, advanced metering infrastructure and automated meter reading services, testing/commissioning and maintenance services.

NRECA Platinum Associate Member

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For the past 22 years, Atlantic Engineering Group has exclusively focused on engineering and construction of telecommunications infrastructure. AEG has designed and/or built 100+ Fiber optic networks including 63 City-wide Fiber-To-The-Home (FTTH) systems with over 2.5 million homes passed. AEG has the experience and resources required to complete your project safely, on-time, on-budget, and of the highest quality. Regardless of the geography or density, AEG has the know-how to design and build a system that suits your unique needs. If you are new to this arena, AEG is more than just a contractor. We are your innovator and advocate.

NRECA Silver Associate Member

Avtec, Inc.

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Scout consoles offer a centralized communications platform for utility dispatch command centers. The pure IP platform provides reliable voice communications, dispatching, and data logging management. Scalable Design. Mission-Critical Reliability. Cybersecure. User Friendly Interface. Proven Performance. Simplify the challenges of technology convergence with an experienced partner. For more than 35 years, customers have chosen Avtec's award-winning technology and unblemished reputation for their mission-critical command control centers. Scout IP dispatch consoles supports the demands of widely distributed, utilities of all sizes while facilitating communication technology migration.

NRECA Silver Associate Member

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Azimuth Energy is an engineering, construction, and development support services company focused on the implementation of renewable energy solutions. As a licensed engineering corporation, we are committed to delivering solutions through our professionalism, attention to detail, and understanding of industry best practices. This process, along with our expertise as constructors, allows us to provide a variety of solutions in the design, development, and installation of distributed generation renewable energy systems. We take pride in being a cut above in our approach. Our departmental leaders are

veterans of both the solar industry and general building construction.

NRECA Gold Associate Member

B

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Global Commercial Banking (GCB) is one of the largest commercial banks in the U.S., serving more than 14,000 clients, which represents one in four U.S. companies with revenues of \$50 million to more than \$2 billion. GCB is organized by geography and industry to deliver both local coverage and industry expertise. Our unique client coverage model and close partnerships with other businesses across the company enable our commercial client teams to seamlessly deliver all of the company's capabilities as integrated solutions.

NRECA Silver Associate Member

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Founded in 1967, Beckwith Electric introduced the first solid state tap changer control in 1968 and was the first to develop the microprocessor protective relay in 1981. Today, Beckwith Electric has thousands of protection and control units in service worldwide, with a reputation for cutting-edge technology, defined by its customers and refined by Beckwith. This success starts with Beckwith Electric employees and their commitment to quality in the products, all 100 percent designed and manufactured in Largo, Florida.

NRECA Silver Associate Member

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When your business involves power transmission, utility, telecommunications, or solar, Bekaert can contribute to sustainable, safe, high-performance and cost-efficient operations. We offer American made products in aluminum conductor steel reinforced wire, guy strand, static wire, fasteners, or animal mitigation.

Bekaert is a global market and technology leader in steel wire transformation and coating technologies. To be the preferred supplier of steel wire products and solutions, we consistently deliver superior value to our customers worldwide.

NRECA Silver Associate Member

Bellwether Management Solutions

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Bellwether Management Solutions provides meter related services, including advanced metering infrastructure or automated meter reading implementation, meter audits and site surveys, contract manual meter reading, project management, inventory management, GPS data collection, and field services (disconnects, reconnects, and collections). Load management device installation services are also provided.

NRECA Silver Associate Member

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NRECA Silver Associate Member

Bierer Meters

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Bierer Meters is the world's leader in the manufacturing of high-voltage and phasing test equipment and the highest quality grounding and jumper assemblies. Founded in 1985, and located in Blythewood, South Carolina, Bierer provides the absolute value and performance in state-of-the-art portable test equipment for the electrical utilities, contractors, and industrial and commercial use worldwide. Bierer ensures product accuracy, efficiency, reliability, factory support, and most importantly—safety. Check out our full product line at BiererMeters.com or call our customer service at 803-786-4839, and someone will assist you in determining which Bierer meter appropriately fits your specific requirements.

NRECA Gold Associate Member

Big River Communications

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Big River Communications is a wholesaler of digital voice telephone service, managed services, and wireless solutions to the electric cooperative industry. Our cloud-based managed services allow our partners to quickly deliver a telecommunications offering to business and residential customers without the capital cost usually impacting a traditional telephone provider. If you are looking for a way to increase the revenue on your existing infrastructure, building a fiber-to-the-home service, or looking at a wireless offering to integrate into your network, then talk with Big River about how quickly you can get these services launched.

NRECA Silver Associate Member

Blue Line Innovations

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Blue Line is a leader in innovative home energy management, providing the best user engagement driven by real-time energy consumption information. The patented solution provides anywhere, anytime, real-time energy

consumption information, with whole-home and appliance-level reporting. The meter-agnostic, universal solution provides flexibility in working on mechanical, digital, and smart meters. Unlike other products in the industry, Blue Line's Energy-Cloud solution truly has an easy, do-it-yourself installation and does not require an electrician. This cuts the total cost of ownership to less than half of competitors' products and provides a much faster return on investment.

NRECA Silver Associate Member

Bluestem Energy Solutions

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Bluestem Energy Solutions (BES) is developer, owner, and operator of renewable assets. BES focuses on providing affordable, reliable, and sustainable solutions for our partners by identifying, developing, and implementing local energy solutions. The Bluestem business model is concentrated around value-based solutions that help improve the long-term economics of our partners' electric power distribution services and supply. The electric utility industry is experiencing rapid change through new opportunities, customer preferences, and technology options. Our model customizes specific solutions, unique to the situation of each one of our energy partners.

NRECA Silver Associate Member

BoardPaq

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BoardPaq is an affordable, easy-to-use, secure board of directors iPad and web (PC/Mac) app for planning, running, and managing board meetings. BoardPaq securely centralizes all board documents and information while encouraging effective member communication and collaboration before, during, and after meetings. BoardPaq gives directors the ability to annotate documents from their devices, securely view their agenda and board materials, and engage in discussion with their fellow board members.

NRECA Silver Associate Member

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Founded in 1954, Bolinger, Segars, Gilbert and Moss LLP (BSGM) has evolved into a multi-faceted organization comprised of over 70 people. From our firm in Lubbock, Texas, BSGM provides a wide range of accounting and audit services to customers in multiple industries throughout the nation, as well as tax and other services to individuals, businesses, partnerships, etc. Obtaining and retaining the confidence of

our clients and our peers is a fundamental goal of BSGM—one that has enabled us to achieve sustained growth for over half a century.

NRECA Silver Associate Member

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Boral Material Technologies (BMT) and its predecessors have over 40 years' experience in marketing and managing coal combustion products (CCPs) for the power utility industry. BMT is committed to promoting, preserving, and increasing the sustainable beneficial use of CCPs. BMT has engineered many collection systems, as well as designed and managed on-site landfill operations. BMT manages over 5 million tons of CCPs at more than 23 locations nationwide. BMT also maintains a 160-car rail fleet to support our customers' needs of maximizing off-site use of CCPs. It is our mission to support all of your CCP needs.

NRECA Silver Associate Member

Border States Electric

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Border States Electric is a wholesale distributor of residential and commercial electrical construction supplies; industrial automation and maintenance, repair, operation, and safety products; and electric, natural gas, and telecommunications utility equipment. The company specializes in distribution automation (smart grid), transmission, and substation materials. With more than 2,200 employee-owners, its mission is to provide value to its customers by delivering innovative product and supply-chain solutions. For more information on Border States Electric, visit borderstates.com.

NRECA Platinum Associate Member

Brooks Brothers Trailers and Equipment

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Our vast line of equipment includes pullers, pole trailers, and reel trailers of various types—from self-loading to multiple turret. Our combo trailers and reel trailers can be equipped with tensioning brake assemblies along with hydraulic drive retrievers that can be powered from a truck's hydraulic tool circuit. Or, if needed, we can provide the necessary onboard power pack. For pulling overhead and underground conductor, we offer a 3,500-pound single drum, turret puller, and four-drum pullers (2,000-, 2,500-, 3,000-, and 4,000-pound models) that can be paired with our standard or turret reel trailer models or our self-loading reel trailers.

NRECA Gold Associate Member

Burns & McDonnell Engineering Co. Inc.

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Burns & McDonnell is a 100 percent employee-owned engineering firm with deep roots in the power generation industry. We provide a full range of integrated energy solutions that take you from project financing, siting, and permitting to detailed engineering design, turnkey construction, and startup. Our portfolio of experience includes supercritical coal-fired, integrated gasification, combined cycle, gas turbine, and nuclear plant engineering. Renewable energy projects include wind, solar thermal, solar photovoltaic, biomass, and geothermal. Burns & McDonnell has significant expertise in high-voltage transmission line design, as well as substations and distribution and telecommunications systems.

NRECA Silver Associate Member

C**Calix**

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Calix is a leading global provider of broadband communications access systems and software. Electric cooperatives leverage Calix fiber access expertise to become the broadband service provider of choice to their subscribers. The Calix Unified Access portfolio allows service providers to connect to their residential and business subscribers and deploy virtually any service over fiber- and copper-based network architectures. With a growing customer base whose networks serve over 100 million subscriber lines in total, Calix is at the forefront of enabling the innovative ways that communications service providers deliver advanced broadband services and value to their customers.

NRECA Gold Associate Member

CallNet Call Center Services Inc.

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CallNet Call Center Services partners with electric cooperatives and municipal utilities nationwide to provide after-hours and 24/7 outage-call taking and crew dispatching. Our team has over 40 years of combined service. We can integrate with your outage management system, IVR, and SmartHub, and we can also take outages via email, SMS, and web forms. Now with two locations. Call us for a free quote.

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Cambium Networks

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Cambium Networks is a leading global provider of wireless broadband solutions that connect the unconnected. Through our extensive portfolio of reliable, scalable, and secure Wi-Fi and wireless broadband point-to-point and point-to-multipoint platforms managed by cloud-based software, we make it possible for companies to build powerful communications networks, reach users, and intelligently manage their infrastructure through end-to-end network visibility and actionable analytics.

NRECA Gold Associate Member

Camcode Division of Horizons, Inc.

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Camcode has helped utilities catalog assets in conjunction with Maximo and other leading asset management solutions, making us the leader in the design and manufacture of bar coded utility marketing products. Never re-label again because our proven technology lasts 20-plus years in even the harshest environment. Utilities have proven that data collection using bar code is faster, less expensive, and more accurate than manual data collection. From meter tags used for meter maintenance systems to pole tags used to track inspection and treatment, utilities rely on Camcode's highly durable anodized aluminum bar code labels.

NRECA Gold Associate Member

Captive Drone Technologies

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Captive Drone is dedicated to developing in-house drone programs for companies of all sizes by providing the right equipment and specialized training.

NRECA Silver Associate Member

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Carina Technology Inc. is a Huntsville, Alabama-based technology company focused on providing energy intelligence solutions through its patented hardware and software products. Carina empowers energy providers of any size with actionable, real-time solutions for remote metering, disconnects, prepay, outage management, broadband advanced metering infrastructure, and various demand response applications. We are committed to providing unmatched

customer support, and the direct utility experience of our leadership team brings a real-world knowledge of industry needs and a commitment to delivering not only products but also end-to-end cutting-edge technical solutions for our customers.

NRECA Silver Associate Member

CDW

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Headquartered in Vernon Hills, Illinois, CDW is a leading provider of technology solutions for business, government, education, and health care.

NRECA Platinum Associate Member

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Center Phase Energy LLC is a family-owned business headquartered in Oklahoma City, specializing in emergency power restoration and damage assessment for independently owned utilities, cooperatives, municipalities, and other industry participants.

NRECA Silver Associate Member

Central Service Association

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Since 1938, Central Service Association (CSA), a member-owned information technology cooperative, has provided core services to its co-op members. Today, CSA has grown into a leading provider of software for billing, financials, meter data management, geographic information systems, web, and more. CSA's family of solutions serves over 160 utilities across the U.S.

NRECA Service Member

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CenturionCARES Call Center software and IVR integrates seamlessly into billing, outage management systems, and phone systems. CARES works as a complement, not as a replacement, to your existing infrastructure. CARES helps you lower costs by dramatically reducing the number of calls sent to a third-party contact center and by bringing operational efficiency to your organization. Ultimately, CARES helps your contact center enrich members' experiences.

NRECA Silver Associate Member

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Chain Electric provides superior utility services with uncompromising safety, quality, and efficiency. Chain Electric specializes in overhead and underground distribution construction and maintenance, transmission construction and maintenance, emergency storm restoration, and marine work.

NRECA Silver Associate Member

ChargePoint Inc.

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ChargePoint brings electric vehicle (EV) charging to more people and places than ever before with the world's largest and most open EV charging network. We design, build, and support all of the technology that powers this network, from charging station hardware to energy management software to a mobile app. Our work transforms transportation and energy use by helping more people choose to drive electric.

NRECA Gold Associate Member

CHR Solutions

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CHR is a leading provider of engineering, B/OSS software, and managed IT and NOC services to electric co-ops across North America. We're focused on helping rural electric cooperatives bring fiber-to-the-x (FTTx) to rural communities and have proprietary billing software to enable you to bill customers and operate the network. Our engineering services include front-end feasibility studies, flexible outside plant, and FTTx engineering design, build management, and regulatory guidance to meet your project needs. We can help with all your network planning and delivery needs to connect all available devices, applications, and content to provide a superior customer experience. Visit www.chrsolutions.com.

NRECA Silver Associate Member

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Cintas helps businesses of all kinds and sizes get ready for the workday. We do this by providing a wide range of products and services that enhance our customers' image and help keep their facilities and employees clean, safe, and looking their best. Cintas is the largest provider of managed flame-resistant clothing (FRC) programs. Over half a million wearers choose

their FRC program from Cintas—making us the most trusted source for FRC in North America. With unparalleled service and diverse options, we offer FRC products from manufacturers who engineer them to be more durable, more comfortable, and lighter than other garments of their type.

NRECA Silver Associate Member

Clevest

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Clevest provides software that connects the mobile workforce to office operations. Built for utilities, our innovative solutions optimize any field activity or process, improving outage response times, worker productivity, and safety and helping utilities reduce their carbon footprint. Clevest's solutions have been used to deploy over 35 million smart meters and serve over 100 million consumers. Clevest is Multi-speak-compliant and integrates with 250 enterprise systems, and it offers configurable solutions that can be deployed on-premise or in the cloud. Clevest's growth has been recognized by Deloitte Fast 50 and PROFIT500, and our products have won awards from Microsoft and Esri.

NRECA Platinum Associate Member

Climate Master

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ClimateMaster's role as a domestic energy and geothermal heating and cooling leader extends back to the late 1950s, when the company was founded in Florida. ClimateMaster was later relocated to New York, where it started manufacturing water loop heat pump systems, and it finally moved its headquarters to Oklahoma City, where it continues to thrive today. Throughout its history, ClimateMaster has continued to invest in the value of its U.S.-patented technologies and expansion of its American manufacturing facilities. Today, the company remains committed to its "engineered and assembled in the USA" heritage by operating a 510,000-square-foot cutting-edge plant in Oklahoma City.

NRECA Gold Associate Member

Coates Field Service Inc.

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Coates has been providing land acquisition and right-of-way services to energy providers, utilities, municipalities, DOTs, and oil and gas companies since the company opened for business in 1950. The first firm of its kind, Coates is a leader in the land and right-of-way acquisition industry. Employing an average of 250

right-of-way professionals, Coates has the depth of knowledge and the agility to respond to client needs in all 50 states. Coates is headquartered in Oklahoma City, Oklahoma, and has project field offices nationwide. Additionally, the Coates operations group is located in Oklahoma City, Oklahoma, and regional offices are in Texas, California, Florida, and New York.

NRECA Silver Associate Member

CoBank

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CoBank is a national cooperative bank serving vital industries across rural America. The bank provides loans, leases, and other financial services to agribusinesses and rural power, water, and communications providers in all 50 states. CoBank is a member of the Farm Credit System, a nationwide network of banks and retail lending associations chartered to support the borrowing needs of U.S. agriculture and the nation's rural economy. In addition to serving its direct retail borrowers, the bank also provides wholesale loans and other financial services to affiliated Farm Credit associations serving more than 70,000 farmers, ranchers, and other rural borrowers in 23 states around the country.

NRECA Service Member

ComRent Load Bank Solutions

Sales, Load Bank Expert
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ComRent is your single source for electrical and thermal load testing. Load bank testing is the most flexible testing method to validate the operating condition and output of diesel and gas turbine generators, UPS, batteries, and CRAC systems. Look to us for: resistive load tests that mimic the operational load that a power source will see in the actual application; reactive load tests, which provide a lagging load to accurately simulate electric motor and pump function; and capacitive load tests, which provide a leading power factor to compensate for power factor correction on the utility. The bottom line: ComRent can test any load from 50 or more MW to less than 1kW at low or medium voltage.

NRECA Silver Associate Member

Conexon LLC

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Conexon works exclusively with rural electric cooperatives to bring fiber-to-the-home (FTTH) to rural areas and communities. We work with our clients to analyze economic feasibility, secure financing, manage construction, train employees, optimize business performance, and determine optimal partnerships. We will be with you from project conception through long-term sustainability. Conexon counts among the projects of its rural electric cooperative clients:

the first to provide rural gigabit service; the first to build FTTH to all members; the first FTTH network built completely with no government assistance; and the first FTTH co-op networks operating profitably. Join us and connect rural America.

NRECA Gold Associate Member

Convergent Energy + Power

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Convergent Energy + Power provides energy storage solutions to reduce operating costs, guarantee power quality and reliability, and solve infrastructure problems. Are you experiencing one or more of the following challenges: costly upgrades to meet new peak load or to replace aging infrastructure; budget constraints and increasing capital investment requirements; or regulatory and technology uncertainties that complicate long-term decision-making? Convergent Energy + Power offers energy storage assets to solve expensive and time-consuming infrastructure problems; firm, dispatchable capacity to manage system peak loads and reduce market costs; full development scope; and risk management solutions.

NRECA Gold Associate Member

Cooperative Building Solutions

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Cooperative Building Solutions (CBS) was established to provide a complete turnkey approach to the planning, design, and construction of rural electric facilities. Backed by over 50 years of unique industry experience, Gary Hobson leads CBS and his team of industry professionals.

NRECA Gold Associate Member

Cooperative Care Planning Services, LLC

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Cooperative Care Planning Services provides long-term care programs for members and associate members of NRECA. Community-based long-term care specialists conduct board presentations, employee meetings, and consumer seminars, as well as individual planning sessions for those interested in a customized proposal. Discounts are available for members.

NRECA Silver Associate Member

Cooperative Leadership Network (CLN)

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The Cooperative Leadership Network (CLN) provides a network for rural electric cooperative directors and industry members to share ideas, industry information, and experiences with their peers to better serve their members and communities.

NRECA Silver Associate Member



Cooperative Response Center Inc. (CRC)

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CRC offers utilities across the country seamless contact-center and alarm-monitoring solutions, including call management; line crew dispatch; advanced metering infrastructure, customer information system, and outage management system integration; CRCLink outage communication software; and alarm monitoring. CRC also offers outage texting services, video monitoring of substations, and a Payment Card Industry (PCI) compliance solution that uses live agents for billing calls. From outage calls to billing calls, disconnects to emergency locates and more, CRC is there for its membership 24/7/365. By partnering with CRC, members find peace of mind as well as a cost-effective solution to their call-handling needs.

NRECA Platinum Associate Member
NRECA Service Member

Corning

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Corning is one of the world's leading innovators in materials science. For more than 160 years, we have applied our unparalleled expertise in specialty glass, ceramics, and optical physics to develop products that have created new industries and transformed people's lives. Within the telecommunications industry, our optical fiber, wireless technologies, and connectivity solutions enable high-speed communications networks. With global demand for bandwidth exploding, we are leading the way in connecting businesses, buildings, homes, and people at the speed of light.

NRECA Platinum Associate Member

Coronal Energy

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Coronal Energy, powered by Panasonic, is a leading provider of solar energy solutions tailored for diverse enterprise customers across North America. It unites the financial strength of a Fortune Global 500 company (No. 110)

and Panasonic's award-winning history of solar innovation and sustainability leadership with the project development, finance, engineering, construction, and asset management experience of Coronal Energy. The result is smarter solar that translates to smarter business for customers. The collective experience of Coronal Energy, powered by Panasonic, includes projects in 40 states totaling 2.3 GW, with more than 3.4 GW of greenfield and brownfield projects in development.

NRECA Silver Associate Member

Critter Guard

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Critter Guard manufactures animal prevention products to protect substations and transformers from critter-related power outages. Many utilities have standardized on Critter Guard for its effectiveness and proven reliability in all weather conditions. Critter Guard BLOCKS points of entry—critical components aren't simply covered up. No need to de-power the line for installation or substation maintenance. Nothing to replace or lose during service. Easy installation. Critter Guard's product line consists of Line Guard, Pole Guard, and Raptor Guard. All of these systems are defined by one characteristic—no access.

NRECA Silver Associate Member

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We are an exceptional team of professionals supporting electric utilities nationwide. We support all aspects of transmission and distribution systems, including line design, station design, 3D modeling and visualization, LiDAR, geospatial, asset management, automation, right-of-way acquisition, construction management, EPC, environmental, compliance, planning, and analytical solutions, such as rate design and cost of service. We strive to provide world-class service with a down-home feel and exceed expectations in all we do.

NRECA Silver Associate Member

CrowdFiber

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CrowdFiber is used by more than 20 electric cooperatives to manage demand for broadband services. Specifically, cooperatives use our platform to go faster from interest to order taking, with contextual address data, order management, and multi-channel sales and marketing tools. Cooperatives are able to expand their order-taking hours, provide improved customer experience with product

bundle builder, electronic signatures, FCC Services audit, surveys, and real-time tracking of area updates and goals.

NRECA Silver Associate Member

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MARKET LEADERSHIP: Cypress Creek Renewables is a national provider of local solar with well over \$1.5 billion raised and invested and over 4 GW of local solar farms deployed or in development. **LOCAL STEWARDSHIP:** We partner with communities and utilities to provide widespread access to clean energy. Our local solar farms produce energy at or below market costs, making solar power an option for everyone. **EXECUTION EXCELLENCE:** As the fastest-growing developer of local solar farms, our development methodology is proven, repeatable, scalable, and actualized by one of the most experienced teams ever assembled.

NRECA Gold Associate Member

D

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For over 40 years, Daffron has been providing cooperative software solutions. Our enterprise-wide utility solutions include customer information systems and billing, customer self-service via the web and mobile apps, financial management, materials and workflow management, prepaid metering, meter data management, and field solutions. In addition to providing application and data hosting and IT services, Daffron offers consultation services to prepare you for the next five, 10, and 15-plus years. Our customers choose Daffron for our process-driven user interfaces and highly integrated, functional systems that help reduce manual processes and overall costs.

NRECA Platinum Associate Member

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Davey Resource Group strives to be on the cutting edge of tools and technologies used to manage assets and enhance reliability. We provide clients with solutions through innovation and expertise. Our customized services include geographic information system (GIS) inventory and verification, joint-use facility inspections, remote sensing and GIS solutions, compliance and program management, reliability services, disaster recovery assessments, consulting forestry, and ecological consulting.

NRECA Gold Associate Member

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Daymark Energy Advisors Inc. is a leading provider of integrated policy, planning, and strategic decision support services to the North American electricity and natural gas industries. We work closely with each client, applying our knowledge, experience, and technology to deliver the highest quality, actionable analysis, and advice to support efficient and sustainable decisions under uncertainty.

NRECA Silver Associate Member

Delta Star Inc.

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Delta Star has been proudly serving the electrical manufacturing industry for over 100 years. We pride ourselves in creating quality power transformers and mobile substations that provide our customers with long-term service and valued investments. Delta Star is capable of constructing transformers that are 315,000 volts and below in both single- and three-phase ratings through 900 BIL rating. Performance, reliability, and durability are attributes addressed in every product design and at all levels of the manufacturing process. Each transformer is handmade by craftsmen who understand that quality is what makes Delta Star the choice for power companies around the world.

NRECA Silver Associate Member

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Dentons is the world's largest law firm, delivering quality and value in more than 158 locations serving 66 countries. Dentons has a top-ranked global energy practice, named Energy Firm of the Year by Who's Who Legal for 2017, 2016, and 2015. With more than 1,000 energy lawyers worldwide, we are truly a one-stop shop for clients seeking a talented, globally seamless team of energy professionals. And with our extensive experience with all types and stages of power project development, acquisition and financing, including strategy-setting, capital raising, deal structuring, and regulatory compliance, we provide added value while offering our services on a very cost-efficient basis.

NRECA Silver Associate Member

Dimension Renewable Energy

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The Dimension Renewable Energy team has more than a decade of experience developing renewable energy projects around the world. Since 2014, we have originated, developed, constructed, and financed more than 1,000 MW of solar projects across the United States. We know what works and how to create high-performing renewable energy assets that produce years of benefits for all stakeholders. From concept to ribbon-cutting, the Dimension Renewable Energy team leverages its deep knowledge of the latest technology, energy markets, land use, regulatory issues, and tax policy to maximize the value of your land and produce a safe, clean, reliable power resource for your community.

NRECA Gold Associate Member

Diversified US

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Diversified builds artfully designed and comprehensively managed network and media technology solutions. If your company can visualize a media integration scenario, we can create a masterpiece for you.

NRECA Silver Associate Member

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Experience Doosan Bobcat and our industry-leading support and service. Whatever the job, we have the solution. From our comprehensive range of air compressors, lighting systems, and generators to our durable and reliable Bobcat lineup of excavators, track loaders, skid-steer loaders, Toolcat, utility vehicles, and genuine Bobcat attachments, we have a solution to fit your needs. When you need to accomplish more, don't settle for less.

NRECA Silver Associate Member

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Dorsey and Whitney's cooperative law practice group consists of more than 60 lawyers with 20 years' experience in solving simple to complex problems for cooperatives and other ag-related businesses. Our practice with farm supply and agricultural co-ops helps us provide unique experience and deeper knowledge of rural concerns. Our team approach enables us to draw on a wealth of experience and knowledge throughout our firm while keeping one person responsible for ensuring that the clients' needs are met, at a reasonable cost. Services include project development and finance; mergers; acquisitions, joint ventures, and securities;

antitrust; cooperative tax issues; employment and employee benefits; e-commerce; trademarks; environmental; and land use and permits.
NRECA Silver Associate Member

Dow Chemical

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Dow is a leading global provider of materials for the manufacturing of cable systems and accessories. Our broad portfolio of solutions and industry expertise enables us to deliver comprehensive systems solutions for transmission, distribution, low-voltage, and fire-resistant applications. Understanding that collaboration is essential to success, Dow works together with cable makers, co-op utilities, industry suppliers, testing institutes, and industry associations to help develop solutions and create mutual value that will sustain the industry for years to come. For more information, visit www.dow.com/electrical.

NRECA Silver Associate Member

Duncan and Allen

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For 40 years, Duncan and Allen attorneys have successfully assisted and represented electric cooperatives and public power entities in entity formation and organization; joint ventures; planning, resource acquisition, contracts, and rates for power supply, transmission, and distribution; financing; regulatory proceedings and compliance; and litigation, arbitration, and administrative proceedings. We apply thoroughness, excellence, and dedication to our clients' missions.

NRECA Silver Associate Member

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Since its founding in 1971, Duncan, Weinberg, Genzer and Pembroke PC has provided a broad range of counseling, regulatory, litigation, and legislative services to clients in every region of the country. The firm's principal office is in Washington, D.C., and also maintains an office in Sacramento, California. The firm's practice includes energy and utility law, environmental law, communications law, municipal law, and intellectual property law. The firm has attained a prominent and highly regarded position in these practice areas by developing innovative approaches and achieving precedent-setting results for its clients.

NRECA Silver Associate Member

Dur-A-Lift Inc.

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If your job requires you to reach really high, you might as well get there quick. If you need to go up, up, and around, it should be a smooth ride. And if you need to reach really far, you'll want a strong foundation. Dur-A-Lift gets you exactly where you have to go with all of the tools you need to do the job right, because every lift that leaves our floor is custom-built to be all yours, from the ground up. Contact Dur-A-Lift about manufacturing a bucket truck that will help you work beyond your limits. Our personnel- and material-handling lifts are built with the kind of care and attention to detail you would expect from a company with decades of engineering experience.

NRECA Gold Associate Member

DVI Grid Solutions

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DVI is a leading provider of grid analytics and control technology, providing solutions for energy efficiency, demand response, volt/VAR control, and system reliability.

NRECA Gold Associate Member

E

Eaton

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Eaton's Electrical Automation Solutions division provides a range of power delivery and reliability, automation and control, and advanced metering and demand response solutions. It also provides engineered systems and turnkey solutions integrated with enterprise-level software and secure communications, enabling customers to manage energy consumption, increase productivity, optimize asset efficiency, improve system reliability, and reduce costs while keeping personnel, equipment, and data safe. Eaton's EAS division serves customers in the utility, commercial, and industrial markets. For more information on Eaton's end-to-end smart grid solutions, visit www.eaton.com/smartgrid.

NRECA Platinum Associate Member

EDF Renewables

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EDF Renewables is a national leader in renewable energy that offers a turnkey service for cooperatives. Our strength is grounded in the extensive experience gained over 30

years—we have developed over 10 GW of wind, solar, storage, biomass, and biogas projects throughout North America.

NRECA Silver Associate Member

eFormsPilot

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eFormsPilot is a platform built for utility service providers who rely on data collection, and its accuracy, integrity, and most importantly, security. Our platform allows users to create digital checklists, conduct field audits, manage inspections, and audit reports in real time. eFormsPilot eliminates paper from your workflow by replacing traditional form-filling processes to our digital format, reducing time and improving efficiency by 80 percent.

Electric Power Engineers Inc.

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Electric Power Engineers Inc. (EPE) is a full-service power engineering firm. EPE provides engineering and consulting services to generation owners and developers, municipalities, electric cooperatives, and investor-owned utilities, both in the United States and internationally. Our services include transmission and distribution planning, smart grid development interconnection testing and commissioning, North American Electric Reliability Corporation compliance services, energy market analysis, system design, and integrated resource planning. When it comes to delivering excellence to our generation, transmission, and distribution clients, we make not only engineering sense but also economic sense. Simply put, we treat each project as our own.

NRECA Gold Associate Member

Electricom

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Electricom's Power Division has been constructing facilities since its inception in 1960. Our highly trained crews and experienced supervisors offer safe, reliable power builds that yield superior quality and performance. Electricom takes great pride in both the safety and training of its workforce. We have a staff of four safety professionals and a full safety department. Electricom also has a Telecom Division, specializing in building both buried and aerial fiber networks, and a right-of-way division, which helps to minimize service outages. We realize the importance of becoming certified tree care experts. We also have several certified arborists on staff. The storm team is only a phone call away.

NRECA Platinum Associate Member

ElectSolve Technology Solutions and Services Inc.

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ElectSolve's flagship product, uCentra, is a proven vendor-neutral, next-generation data management and integration platform for managing and integrating the following products: advanced metering infrastructure, automated meter reading, SCADA Historian, customer information systems, outage management systems, EA/geographic information systems, CVR, demand response, distribution line management systems, and other utility operational systems. Interfaces to over 50 of the most common third-party vendor solutions used by utilities today. ElectSolve's uCentra platform includes the following core functionality: meter data management, operational data management, utility data analytics, utility system interoperability and integration framework, and web services brokering and transformation.

NRECA Silver Associate Member

Electrical Utility Distributor Association (EUDA)

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EUDA members are well-known for their disaster relief efforts for their local co-op utilities. Each EUDA member has access to over \$200 million worth of combined stock of the EUDA group. This helps EUDA members get their co-op utilities' needs met in their most needed times.

NRECA Affiliate Member

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Elliott Equipment Company, founded in 1948, is a family-owned manufacturer of telescopic truck-mounted aerial work platforms, cranes, and digger derricks. We engineer, build, and support heavy-duty, multifunctional machines that let you do more with a single piece of equipment. We can satisfy your needs by drawing on the largest range of product offerings in the industry or by developing a custom solution to fit your application.

NRECA Silver Associate Member

Energy Systems Group

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Energy Systems Group (ESG) has developed diverse energy efficiency, renewable energy, and capital improvement projects throughout the United States, including the U.S. Virgin Islands.

ESG develops and implements turnkey, comprehensive energy efficiency projects, distributed generation, cogeneration, or combined heat and power projects and waste-to-energy solutions.

NRECA Gold Associate Member

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EnerNex provides consulting and engineering services to the electric power industry. EnerNex is known for its trusted advice and work in grid modernization, studies, microgrid analysis, and distributed and renewable energy resource integration.

NRECA Silver Associate Member

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EnerVision provides tailored energy solutions to electric utilities. Our spectrum of services includes planning for and meeting consumer-members' total energy needs, encompassing power supply, demand response, and energy efficiency. Other services include strategic planning, smart grid technology, and rate strategies and designs. EnerVision has successfully assisted clients in over 30 states to effectively resolve energy industry issues, lower their operating costs, and increase their value to their consumer members.

NRECA Silver Associate Member

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ENGIE Distributed Solar's development team focuses on ground-mounted, utility-scale solar development, with a particular focus on distribution-scale installations, community solar gardens, and direct power purchase agreements. ENGIE's team of regionally focused project developers work in concert with cooperatives, municipalities, and communities to bring your ground-mounted solar projects to fruition. ENGIE has operating or development relationships with more than 25 cooperatives and municipalities.

NRECA Silver Associate Member

Environmental Consultants LLC (ECI)

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Environmental Consultants LLC (ECI) has, for 45 years, led the utility vegetation management industry in North America. ECI provides

cooperatives with ISA-certified foresters to help manage and develop your right-of-way program. ECI has about 450 contract foresters, environmental specialists, I.S. architects, and geographic information system technicians. ECI has conducted utility arboricultural research for the Electric Power Research Institute, NRECA, and CEATI, and helped write the NRECA Vegetation Management Manual. ECI provides highly experienced, impartial services that are focused on your cooperative's goal of providing safe, reliable, and cost-effective electric service to your members.

NRECA Silver Associate Member

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ERMCO is an American manufacturer of distribution transformers. We manufacture single-phase and three-phase pole-mount and pad-mount transformers. We also produce small KVA-specialty transformers and a full line of transformer components.

NRECA Service Member

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Ervin Cable Construction LLC (ECC) is a full-service provider of phone, cable TV, and fiber optics. ECC has expanded its capabilities significantly in the phone, cable, gas, and electric industries, having installed over 15,000 miles of plant wiring, completed over 200 engineering projects, worked in 28 states, and successfully expanded into the federally funded fiber-to-the home (FTTH) and RUr/ARRA project arenas. With national capacity, large bonding capabilities, experienced management, and time-tested procedures, ECC is the turnkey provider that will complete your project on time, on budget, and with unsurpassed quality.

NRECA Silver Associate Member

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Location powers the co-op of the future. Esri enables co-ops to use the power of location to save time, lower costs, and satisfy members. ArcGIS technology delivers powerful tools that help manage, update, and analyze information about members, network assets, work orders, and more. The ArcGIS platform can be deployed in every organization from an individual desktop to a service-oriented architecture and a globally distributed network. Use, make, and share maps from any device, anywhere, anytime. Esri developed the ArcGIS Data Model for MultiSpeak, a ready-to-use geodatabase template that conforms to the latest release of the widely used,

industry-standard MultiSpeak specification.

NRECA Platinum Associate Member

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ETI, often known as Equipment Technology, is a rapidly growing U.S. manufacturer of aerial lifts, headquartered in Oklahoma City. Our growth is a direct result of our commitment to meeting and exceeding customer expectations. As a manufacturer of both aerial devices and utility truck bodies, we can offer higher quality units because of the integrated design process. ETI is growing into a commanding force as a member of the Palfinger family. Palfinger is a leading manufacturer of hydraulic lifting, loading, and handling equipment that has 4,500 employees worldwide and 2010 sales of \$900 million.

NRECA Silver Associate Member

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Sutherland Asbill and Brennan LLP has a nationally recognized electric cooperative practice, working on the leading edge of this rapidly changing industry to solve challenging business problems. We have experience in all areas of importance to electric cooperatives, including capital markets, Rural Utilities Service, and all other financing; indentures; construction and joint ownership; power supply and power marketing; renewable energy; renewable energy credits and carbon credits; natural gas supply; mergers; asset acquisitions; new wholesale power contracts; diversification; energy litigation; tax planning and controversy; Dodd-Frank implementation and compliance; reliability compliance; and Federal Energy Regulatory Commission and state regulatory and enforcement matters. Representative clients include numerous G&Ts and distribution cooperatives, investment bankers, lenders, and other industry participants.

NRECA Silver Associate Member



Evluma

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Evluma is committed to developing affordable, long-lasting, and environmentally low-impact LED lighting solutions that fundamentally change the landscape of outdoor utility lighting. Evluma's high standard of customer service and background in innovative lighting technologies, automation, and software design creatively ideate

and inform its made-in-Washington products. Are we the biggest LED utility light manufacturer out there? Not by a long shot. Our approach to solving problems and making our products easier to use and better overall is our point of pride. So, while Evluma products are not always the cheapest on the market, they are undoubtedly the most cost-effective over the long term.

NRECA Platinum Associate Member

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Exacter's patented technology and proprietary analytics provide a variety of unique solutions that allow utilities to achieve long-term improvement in system performance and reliability. Our solutions follow a predictive process that accurately identifies problematic conditions related to equipment degradation, contamination, and failure.

NRECA Silver Associate Member

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We have decades of experience as the nation's leading energy provider that runs deep in every stage of the energy ecosystem, with a robust inventory of drones, robotics, and sensors to perform any inspection.

NRECA Gold Associate Member

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Since 1993, Exponential Engineering Company has provided electrical engineering consulting services to co-ops across the country.

NRECA Silver Associate Member

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EZ-Spot-UR is the manufacturer of rotating skid steer and heavy-equipment attachments with a dedicated line to the utility industry. From setting poles to pulling poles and augering holes to spooling up wire, we have an attachment to meet your needs. Our attachments are proven in the field to increase safety and productivity and are built to withstand the abuse of all weather conditions. Please visit our website, ezspotur.com, or call 877-433-5733 to make your work EZ.

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The Federal Agricultural Mortgage Corporation, commonly known as Farmer Mac, was created by Congress to establish a secondary market for agricultural mortgage and rural utilities loans to increase the availability of long-term credit at stable interest rates to segments of rural America. As a stockholder-owned, publicly traded corporation, Farmer Mac (along with its subsidiary, Farmer Mac II LLC) conducts these activities through three programs: Farmer Mac I, Farmer Mac II, and Rural Utilities. Farmer Mac is not a direct lender; rather, it works with lenders that work directly with borrowers throughout the United States.

NRECA Platinum Associate Member

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Fastenal is an industry-leading full-line national industrial supplier with locations in the U.S., Canada, and Mexico. Fastenal offers over 500,000 products in 20 maintenance, repair, and operations categories online at www.fastenal.com and through local service from our 2,600 stores. Fastenal has a fleet of trucks and delivery vehicles to offer the highest level of service in the industry. Fastenal operates 14 major distribution centers and delivers to our stores four to five days per week. The Fastenal business model is built on customer service and value-added programs, including vendor-managed inventory; industrial vending; and industrial services, including custom manufacturing and e-business initiatives.

NRECA Silver Associate Member

Federated Rural Electric Insurance Exchange

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Federated Rural Electric Insurance Exchange is the leading provider of property and casualty insurance for rural electric cooperatives in 42 states. Our primary goal is to offer our members affordable coverage over the long term, so they can focus on serving their communities and making them better, safer, and more vibrant places to live.

NRECA Service Member

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Felling's Utility and Telecom Division provides trailer solutions for a broad customer base that includes major and regional electric, natural gas, water, and telecommunication companies. From standard models to custom designs, the result is a trailer that meets your needs. Felling has been providing innovative trailer solutions to the transportation industry for over 40 years. With over 100 years' combined industry sales experience, we have the answers to your specialized trailer needs. Felling manufactures 5,000-plus trailers a year, ranging from a 3,000-pound utility trailer to a 120,000-pound-capacity hydraulic gooseneck trailer, with 240 standard models. Felling Trailers Inc. is an ISO 9001:2015 certified company.

NRECA Silver Associate Member



Fiber Instrument Sales (FIS)

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FIS is a manufacturer and full-line distributor of communication fiber optics: test equipment, connectors, cable and cable assemblies, tools and tool kits, fiber-optic consumable products, Category 5e and 6 cabling products, active network equipment, and fiber-optic security systems and components. FIS serves over 11,000 customers from all segments of the fiber-optics industry, including telecommunications, contractors, resellers and distributors, researchers, government, education, cable TV operations, and telephone research and development facilities. FIS is international in scope, serving customers in 110 countries.

NRECA Silver Associate Member

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Finley Engineering Company, established in 1953 in Lamar, Missouri, is a multidiscipline organization offering professional engineering, surveying, mapping, environmental, and right-of-way services to the electric utility, communications, and related industries. The management and professional staff have extensive experience with public, private, and government organizations. Finley has offices in Lamar, Missouri; Bismarck, North Dakota; Slayton, Minnesota; Johnston, Iowa; Kansas City, Missouri; Lexington, Kentucky; Omaha, Nebraska; Minneapolis, Minnesota; and Springfield, Illinois, with a staff of more than 300 full-time professional technical, and field personnel.

NRECA Gold Associate Member

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At Firmatek, we believe that your ever changing environment can make decision-making difficult. We are here to provide you with insights and confidence that will help you improve your operational efficiencies. Our mission is to give you—the companies who build the world—supreme confidence. Firmatek has provided a variety of geo-spatial data processing solutions and field mapping services to clients for more than 30 years. Over the years we have continued to implement new technologies, from stationary lasers to mobile lidar to drones. We believe in using the right tool for the right job. We will work with you to determine what will work best on your site based on your requirements.

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NRECA Silver Associate Member

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Flagger Force specializes in short-term traffic control and safety services. Various companies and contractors need access to work while impeding on normal traffic patterns. Flagger Force meets that need with our safety-driven approach to traffic control, which distinguishes us in our safety record, commitment to quality, and emphasis on professional personnel backed with extensive training and experience. Every Flagger Force professional field worker exceeds state training requirements and completes our rigorous in-house training program, Flagger Force Academy, prior to their first field assignment.

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Ford Motor Company is a global automotive and mobility company based in Dearborn, Michigan. With about 203,000 employees and 62 plants worldwide, the company's core business includes designing, manufacturing, marketing, and servicing a full line of Ford cars, trucks, and SUVs, as well as Lincoln luxury vehicles. To

expand its business model, Ford is aggressively pursuing emerging opportunities with investments in electrification, autonomy, and mobility. Ford provides financial services through Ford Motor Credit Company. For more information regarding Ford and its products and services, please visit www.corporate.ford.com.

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FTI Consulting is an independent global business advisory firm dedicated to helping organizations manage change, resolve disputes, and create stakeholder value in the face of uncertainty and complexity. Our power and utilities team provides cooperatives, transmission owners, and public and investor-owned utilities with a comprehensive suite of advisory services that includes regulatory strategy and representation, financial and investment advisory, capital planning, system planning, litigation, corporate strategy, market analysis, and operational advisory for the utility of the future.

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Fujitsu helps co-ops expand, modernize, and build communications networks with secure, reliable, standards-based solutions that reduce the total cost of ownership. As a network integrator, we'll work in step with you or alongside the consultant you've engaged to develop, refine, implement, and maintain the right network for you. We combine the best of wireline, wireless, and software technology with multivendor services to deliver a custom end-to-end network. We're experts in sourcing best-of-breed equipment, managing complex deployments, and providing a suite of professional services. Our vendor-agnostic approach provides the best possible solutions for smart grid and fiber-to-the-x implementations.

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Futura Systems provides Core-Esri enterprise geographic information system (GIS) solutions to hundreds of distribution utilities across the United States. As an Esri Gold Business Partner, Futura Systems excels at employing the ArcGIS foundation to develop mapping, staking, and outage management tools that deliver powerful, user-friendly functionality. Futura's suite of tools extends the level of collaboration between GIS and customer information systems by providing intuitive, single-screen access to

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NRECA Silver Associate Member

G

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G&T Communications Inc.—the go-to people in co-op communications—is a full-service public relations and advertising firm that specializes in working with cooperatives across the nation. With an almost 20-year history of award-winning service and results, we provide a wide range of communication support, based on strategic planning, creativity, and a focus on results. Clients include distribution cooperatives, G&Ts, and statewide associations.

NRECA Silver Associate Member

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Since 1986, Utility and Energy Consulting (GDS) has been providing solid engineering and energy consultant services to electric cooperatives throughout the U.S. GDS offers a broad range of service expertise focused on electric, gas, and water utilities, including power supply planning, rate services, energy efficiency, transmission, forecasting, renewable energy, distribution line design, etc. Our consultants are focused and dedicated to our clients. We're ready to show you the difference that over 30 years of experience can make. Our mission: help our clients succeed by anticipating and understanding their needs and by efficiently delivering quality services with confidence and integrity.

NRECA Silver Associate Member

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GE Power is a world energy leader that provides technology, solutions, and services across the entire energy value chain, from the point of generation to consumption. We are transforming the electricity industry by uniting all the resources and scale of the world's first digital industrial company. Our customers operate in more than 150 countries, and together we power more than a third of the world to illuminate cities, build economies, and connect the world. For more information, visit the company's website at gepower.com. Follow GE Power on Twitter@GE_Power and on LinkedIn at GE Power.

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Generac Power Systems (NYSE: GNRC) is a leading manufacturer and marketer of power equipment serving residential, light commercial, industrial, and construction markets. Under the Generac brand, the company sells portable and stationary backup power systems from 100 W to 9 MW. Generac's Guardian Series is the No. 1-selling residential backup power system on the market. Generac power systems are available through a broad distribution network of more than 4,000 dealers, including several electric and gas utilities.

NRECA Gold Associate Member

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GEOTEK—PUPI

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PUPI (Pultruded Utility Products Incorporated) has manufactured crossarms and components used by electrical utilities around the world since 1990. Products are engineered for superior load capacity and are differentiated within the fiber-reinforced polymer market by a thermally bonded ultraviolet coating and internal torque-resistant bushings. Leading utilities choose PUPI fiberglass components for consistent performance and long-term return on investment.

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Geronimo Energy is a full-service renewable energy development company headquartered in Minneapolis, Minnesota, with satellite offices in southwest Minnesota, North Dakota, South Dakota, Illinois, New York, and Michigan. Geronimo Energy provides custom renewable energy solutions for utilities and corporations looking to harness renewable energy for business growth. Geronimo Energy has developed over 1,600 MW of renewable energy projects that are operational or under construction. Geronimo Energy has a multi-gigawatt development pipeline of wind and solar projects in various stages of development throughout the United States.

NRECA Silver Associate Member

GE's Distributed Power

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GE's Distributed Power business is a leading provider of engines, power equipment, and services focused on power generation and gas compression at or near the point of use. We offer a diverse product portfolio, including efficient, fuel-flexible industrial gas engines generating 200 kW to 10 MW each of power for numerous industries globally. In addition, the business provides life-cycle support for more than 34,000 gas engines worldwide to help you meet your business challenges and success metrics. Backed by our authorized service providers in more than 170 countries, GE's global service network connects with you locally for rapid response to your service needs.

NRECA Silver Associate Member



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GISbiz provides iPad- and iPhone-based field inspection and mobile workforce solutions to electric utilities. Our solutions enable co-ops to streamline their field inspection activities and improve communication across the enterprise with mobile devices while monitoring and maintaining mobile activities with dashboard applications. Uses include line inspections, pole inspections, service order creation and tracking, storm damage assessment, and more. Co-ops are calling geoOrganizer "the most user-friendly field inspection tool" they've

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Granite is the largest wholesaler of managed voice and data services for North America. We provide immediate and ongoing return on investment to existing telecom services without any downtime or interruptions to business. Granite consolidates all telecom invoices into one compatible file into any accounts-payable software. We're a one-stop shop of all your telecom needs.

NRECA Silver Associate Member

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Graybar, a Fortune 500 corporation and one of the largest employee-owned companies in North America, is a leader in the distribution of high-quality electrical, communications, industrial, security, and networking products

and specializes in related supply chain management and logistics services. Through its network of more than 290 North American distribution facilities, it stocks and sells products from thousands of manufacturers, serving as the vital link to hundreds of thousands of customers. For more information, visit graybar.com or call 1-800-GRAYBAR.

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Greenlee Communications offers a complete line of innovative and industry-leading test and measurement solutions for communication service providers, utilities, and governments. Our innovative test solutions address all stages of network deployment, enabling the development, installation, and maintenance of cable, Ethernet, fiber optic, SCADA, TMS transmission, DS1-DS3 transport, xDSL, and wireless networks. With over 150 years of manufacturing, research, and development experience, Greenlee has emerged as the leading provider of next-generation test and measurement solutions in the global communications industry. We serve customers across the globe from the Americas, Europe, Africa, and Asia.

NRECA Silver Associate Member

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GridLiance partners with electric cooperatives, municipal utilities, and joint action agencies to identify and implement unique electric transmission solutions that benefit your customers. We're the first independent transmission company primarily focused on collaborating with electric cooperatives.

NRECA Platinum Associate Member

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Guernsey is a multidiscipline firm, employing engineers, architects, planners, consultants, environmental scientists, designers, analysts, accountants, and managers. Because we offer all these services under one roof, we are able to collaborate efficiently, giving you access to expert advice in cost of service; rate analysis; power system planning; fuel and load forecasting; substation, transmission, and distribution engineering; acquisition and contract negotiation; cybersecurity; security

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Hannah Solar is a full-service solar integrator dedicated to providing the very best in engineering, products, installation, and operations and maintenance of solar arrays, electric vehicle charging stations, Tesla Powerwall 2 storage systems, and Generac backup generators. Our team is composed of NABCEP-certified solar experts; licensed master electricians in Georgia, Alabama, Mississippi, North Carolina, South Carolina, and Tennessee; project management professionals, business development managers, designers, and installers—working together to serve our clients as a reliable and experienced resource in sustainable energy integration.

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Harris Public Safety and Professional Communications is a leading supplier of communications systems and equipment with over 80 years of experience. Harris is a leading supplier in the utility market providing complete communications system support from needs analysis, procurement, and commissioning to follow-on maintenance support. Harris works with cooperatives to provide a migration path from older analog land mobile radio systems to affordable, secure, and feature-rich digital platforms that provide the gateway to state-of-the-art features, including enhanced security of critical infrastructure, location of assets, high-speed and secure SCADA networks, smart grid, and advanced metering infrastructure solutions.

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Havis, Inc. an industry leading American Manufacturer of mobile office solutions for electric cooperative utilities. Products include rugged mounting, equipment consoles, computer & tablet docking stations and cradles, and power management solutions. Havis has a legacy dating back over 80 years as a trusted provider of mission critical equipment with a focus on the customer. Built on a tradition of supporting the public safety sector under the Havis-Shields nameplate, the brand has grown and transformed significantly to a complete line of products that maximize mobile worker productivity with comfortable solutions, built to the highest safety standards, with a focus on quality.

NRECA Silver Associate Member

HD Electric Company

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HD Electric Company (HDE) offers test, measurement, and control solutions for everything on the electrical power system. For over 85 years, HDE has provided the electric industry with a complete range of quality, field-proven, and dependable products. Our test, measurement, and safety products are a comprehensive range of products for testing electrical apparatus like voltage detectors, voltmeters, phasers, ammeters, capacitor testers, and transformer testers. Our controls and system-monitoring products include capacitor controls that provide control and measurement of electricity with precision and accuracy in real-time field conditions.

NRECA Gold Associate Member

Henkels and McCoy Group Inc.

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Henkels and McCoy Group Inc. (HMG) is a leading utility construction firm providing critical infrastructure for the power, oil, and gas pipeline, gas distribution, and communications markets throughout North America. Founded in 1923, HMG adapts 90-plus years

of experience to the dynamic and evolving infrastructure needs of today. HMG's subsidiary, Henkels and McCoy, Inc. (H&M) consistently ranks in the top 10 of Engineering News-Record's specialty contractors and has been recognized with an E. I. DuPont Safety Excellence Award. HMG is also a founding member of the Electrical Transmission and Distribution Partnership.

NRECA Silver Associate Member

Highway Manufacturing

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Highway Manufacturing is the producer of pressure digger and foundation drilling equipment. We supply both mechanical and hydraulic drive units that can be mounted on single and tandem rear-axle chassis as well as custom carriers and come with digging depths up to 60 feet and auger capacities up to 72 inches.

NRECA Silver Associate Member

HomeServe USA

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HomeServe is a leading provider of utility-sponsored home repair solutions, serving over 3 million customers across North America. Started in 2002, HomeServe protects homeowners against the expense and inconvenience of gas line, electrical, water heater, HVAC, and other home emergencies by providing affordable coverage and quality local service. Our customer focus and best-in-class repair plans drive positive brand attribution to our 500-plus municipal, utility, and association partners. For more information visit www.homeserveutility.com/nreca.

NRECA Gold Associate Member

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Homewood Sales Corporation specializing in the manufacture and sourcing of genuine Westinghouse industrial and power distribution products.

NRECA Silver Associate Member

Honeywell Smart Energy

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Together, Honeywell Smart Energy, its partners, and its customers are fundamentally reshaping the way the world uses energy.

Honeywell Smart Energy is enabling utilities to deploy advanced capabilities that transform operations, reliability, and environmental sustainability while also providing solutions to engage their customers in a more meaningful way. With the acquisition of Elster, Honeywell is now more than ever a global leader in connected solutions, from generation to consumption, delivering advanced capabilities and services that enable energy companies and their customers. Honeywell Smart Energy dynamically manages energy, improves efficiency, and reliability cost-effectively.

NRECA Gold Associate Member

Horizon Solutions

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Horizon Solutions is a wholesale distributor serving industrial, commercial, and institutional customers. Horizon Solutions enables customers to be more productive, efficient, and safe through our deep domain expertise and best-in-class electrical, industrial, automation, safety, and energy solutions. Our customers include industrial end-users, electrical contractors, equipment manufacturers, and commercial, institutional, and municipal facilities across New England and upstate New York. Additional information is available on our website at <https://hs-e.com>.

NRECA Silver Associate Member

Howard Industries Inc.

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The Utility Products Division of Howard Industries is a leading manufacturer of electrical transmission and distribution equipment used by utilities and by commercial and industrial companies worldwide. Our products include distribution transformers, substation power transformers, medium-voltage dry-type transformers, voltage regulators, switching/sectionalizing cabinets, junction enclosures, and OEM transformer components.

NRECA Gold Associate Member

Hubbell Power Systems Inc.

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Hubbell Power Systems Inc. is an international manufacturer of mission-critical components, products, and solutions to support electric, water, and gas utility infrastructure. Through its portfolio of quality brands and the recently acquired Aclara, Hubbell provides grid modernization solutions that integrate sensors, communications, and control technologies to improve grid reliability, resiliency, and safety; maximize grid capacity; and

increase utility operations and maintenance efficiency. Stay connected: Visit hubbellpowersystems.com or read our blog.

NRECA Platinum Associate Member

Hughes Brothers

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Hughes Brothers stands for quality in American manufacturing. As a leader in the electric transmission and distribution industry, HB knows the meaning of reliability, strength, and resilience. A century of service, experience, and innovation is reflected in every HB product. HB honors hard work, accountability and community. It is evident in the pride employees take in forging the tools that power America. It shows in their commitment to the integrity of HB products. The distinguishing presence of HB defines Seward, Nebraska. Three generations, one family, century tested, here to serve. We are HB.

NRECA Silver Associate Member

Hurtado and Associates Inc.

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NRECA Gold Associate Member

Huskie Tools, A Spartaco Company

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For 40 years, Huskie Tools has provided the utility industry with hydraulic cutting and compression tools. Our battery-operated tools are among the lightest, fastest, and most ergonomically designed on the market. We have tools for overhead, underground, substations, distribution, and transmission projects.

NRECA Silver Associate Member

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ibV Energy Partners is a utility-scale solar photovoltaic developer and investor, with a focus on electric cooperatives and small- to medium-sized utility customers. We provide customized solar power plant solutions to deliver optimized systems to our offtake clients. We use our own capital and deploy in-house project development, finance, and technical and engineering teams to develop and construct our highly efficient power plants.

NRECA Silver Associate Member

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ICF (NASDAQ:ICFI) is a global consulting services company with over 5,000 specialized experts, but we are not your typical consultants. At ICF, business analysts and policy specialists work together with digital strategists, data scientists, and creatives. We combine unmatched industry expertise with cutting-edge engagement capabilities to help organizations solve their most complex challenges. Since 1969, public and private sector

clients have worked with ICF to navigate change and shape the future. Learn more at icf.com.

NRECA Silver Associate Member

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IPOLE offers solutions to fix structural damage caused by woodpeckers to wood poles, as well as other pest-deterrent solutions for substations and transmission and distribution networks. IPOLE-WPK uses a fiberglass-reinforced expanding epoxy concrete to structurally repair and strengthen damaged wood poles. Through an exclusive patented process, it kills decay and prevents its continued deterioration. Then its encapsulated proprietary essential oil blends confuse woodpeckers, termites, and virtually all other pests from returning without harming them or utility crews. In addition, it's climbable, requires NO bulky mechanical equipment, and can be completed single-handedly within minutes.

NRECA Silver Associate Member

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IDOM is an independent company providing integrated professional services in the fields of engineering, architecture, and consultancy, with 3,000-plus employees worldwide. One-hundred percent of firm's capital is distributed among employees, who have expertise in state-of-the-art technologies like renewable energy, storage, microgrids, transmission, distribution, and conventional power generation, including nuclear. IDOM provides to the power delivery sector full engineering assistance in 30-plus states in the U.S. and four Canadian provinces, including feasibility studies, preliminary design, environmental, detailed design, procurement support, works supervision, quality control, project management, etc.

NRECA Silver Associate Member

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The IFD sensor is a simple, cost-effective internal fault detector installed in pole-top and pad-mounted distribution transformers. By detecting and indicating the presence of an internal transformer fault, the IFD helps prevent linemen from re-energizing faulted transformers. It's a unique device that improves safety for linemen and the public, simplifies the troubleshooting process, and speeds up outage restoration. Over 1.3 million

IFDs have been installed by over 500 safety and cost-conscious utilities across North America and are trusted to deliver enhanced safety standards, improved system reliability (SAIDI and SAIFI), and operating savings.

NRECA Silver Associate Member

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Founded in 1989, IGS Energy has been a leading advocate for change in the energy industry through supplying natural gas, electricity, and home protection products to more than 1 million customers. Our suite of superior home protection products each come with a 12-month guarantee on any repairs, as well as a built-in network of vetted local contractors to offer professional service. Our plans cover repairs on normal wear and tear issues to electric, water, sewer, and gas lines, both inside and outside the house, and HVAC systems like furnaces, heat pumps, boilers, air conditioners, and water heaters. Our plans have recently expanded to include surge and appliance protection.

NRECA Gold Associate Member

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IMCORP provides power cable reliability assessment services for medium- and high-voltage power cable systems for both new cable installations and aged cable assets. IMCORP's cable system improvement process is a proactive approach designed to be integrated into a client's existing reliability program. IMCORP's factory-grade assessment is proven to dramatically improve cable reliability at a significantly lower cost than conventional cable replacement.

NRECA Silver Associate Member

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In2lytics is a B2B software solutions company with a time-series data integration platform and analytics tools designed to save companies time and money. We specialize in helping electric utilities and co-ops understand and make sense of their volumes of disparate grid data. In Hawaii, we are helping to achieve the Hawaii Clean Energy Initiative goal of 100 percent renewable energy by 2045 by providing the situational insight needed to incorporate renewable energy and improve grid reliability and efficiency while reducing costs.

NRECA Silver Associate Member

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inLighten is a leading provider of digital media solutions including traditional and interactive digital signage, self-service kiosks and tablets, on-hold and environment audio, speech privacy systems, and more. inLighten's intuitive, cloud-based management system enables creation, scheduling, and distribution of dynamic content from inLighten's hosted network. Over 2,000 institutions in the U.S. and across the world engage their audiences with inLighten products each day.

NRECA Silver Associate Member

Inside Information Inc.

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Inside Information Inc. is a solutions company that exists to help cooperatives understand and serve their members. With a team of client-focused employees serving as an extension of your staff, we provide information on demand to assist you with meeting your goals. We specialize in surveys, member-targeted communication, and website management services. Since 1995, we have helped more than 300 cooperatives with energy efficiency program implementation, fiber feasibility research, satisfaction research, employee surveys, transactional follow-up surveys, annual meeting notification, outage communication, grassroots engagement, and all types of program promotion.

NRECA Silver Associate Member

Insurance Network of America, a division of the Nitsche Group

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The Nitsche Group has served the needs of the utility industry since 1989 by providing complex insurance solutions to distribution and G&T cooperatives across the United States.

NRECA Silver Associate Member

Inteleca IT Business Solutions

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Inteleca represents all major brands, such as Cisco, Juniper Networks, Extreme Networks, Brocade, HP, Dell, IBM, and Lenovo. In addition, the company is an industry leader in all aspects of the secondary IT hardware market, particularly optical networking products. With in-depth product knowledge and the expertise to implement network design for the most demanding IT environments, Inteleca's

certified technicians pass each piece of equipment through a rigorous inspection and testing process in its in-house laboratory. Inteleca has such a high level of confidence in its testing procedures that it not only offers a 90-day warranty for resellers, but also a lifetime warranty for end users.

NRECA Silver Associate Member

Inteliquent

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As broadband-based telecommunications company, Inteliquent is equipped to provide customers with a superior network experience through industry-leading voice quality, a reliable and expansive network footprint, and advanced features—all supported by a team of market experts.

NRECA Silver Associate Member

IPS-ENERGY USA Inc.

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 IPS-ENERGY systems are designed by electric power professionals for electric power professionals to provide full technical asset management—asset repository, work content definition using maintenance templates, planning, scheduling, field execution and data acquisition, and analytics—with broad functionality for relay setting and testing management. The software can be licensed or offered as a service in the IPS-Cloud. Field execution can be done completely mobile or connected to the server using a web interface. Interfaces to other systems and access to other data sources can be configured using the IPS-SmartGridDI system, which also provides robust asset analytics.

NRECA Platinum Associate Member

Irby-A Sonepar Company

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Irby is a service and solutions provider offering a complete portfolio of products from the industry's leading manufacturers. Additionally, we provide a range of value-added services, which include transmission and substation packaging, high-voltage testing and repair services, storeroom and logistics management, metering and automation support, lighting system design and layout, customized e-commerce portals, and complete integrated supply capabilities. Irby provides its products, services, and solutions in all utility business segments—distribution, transmission, substation, generation, and renewable energy. To learn more, visit www.irby.com.

NRECA Silver Associate Member

iRestore

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Founded in 2012, iRestore is a California corporation with offices in West Hartford, Connecticut, that is dedicated to meeting the mobile app needs of electric, gas, and water utilities. The iRestore product team combines mobile designers and developers with experience building enterprise apps at scale with experienced utility managers who have hands-on operations expertise. iRestore serves many of the nation's investor-owned utilities as happy customers. iRestore apps enjoy a very high degree of user satisfaction and have been covered extensively in the TV and print media for their ability to help utilities recover more effectively from extreme weather damage to the electric grid.

NRECA Silver Associate Member

ITC Holdings Corp.

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ITC Holdings Corp. (NYSE: ITC) is the nation's largest stand-alone electric transmission company. Based in Novi, Michigan, ITC invests in the electric transmission grid to improve reliability, expand access to markets, allow new generating resources to interconnect to its transmission systems, and lower the overall cost of delivered energy. ITC owns and operates high-voltage transmission facilities in Michigan, Iowa, Minnesota, Illinois, Missouri, Kansas, and Oklahoma, serving a combined peak load exceeding 26,000 MW along approximately 15,600 circuit miles of transmission line. For information about ITC and its grid development efforts, visit www.itc-holdings.com.

NRECA Platinum Associate Member

Itron Inc.

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Itron enables utilities and cities to safely, securely, and reliably deliver critical infrastructure services to communities in more than 100 countries. Our portfolio of smart networks, software, services, meters, and sensors helps our customers better manage electricity, gas, and water resources for the people they serve. By working with our customers to ensure their success, we help improve the quality of life, ensure the safety, and promote the well-being of millions of people around the globe.

NRECA Platinum Associate Member

J

J. Ranck Electric

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J. Ranck Electric (JRE) is a contractor of choice for a wide range of utility projects. We are experienced in both energized and de-energized aerial and underground systems, as well as construction and maintenance on substations. Our Renewable Energy Division is a leader in clean energy projects across the country, including rooftop and ground-mounted solar arrays from smaller 40 kW projects to many of the largest arrays in the Midwest. JRE has installed over 200 MW of solar generation capacity nationwide. Our team can offer turnkey services, including project management support, material procurement and management, quality assurance/control, testing/commissioning, and final job close-out.

NRECA Silver Associate Member

J.J. Kane Auctioneers

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J.J. Kane Auctioneers is a nationwide auction company conducting 30-plus live, absolutely public auction sales and 27 timed, online-only auctions each year. We offer the choices fleet owners need to easily and effectively remarket their surplus. Auction sellers include electric membership cooperatives, investor-owned utilities, manufacturers, contractors, lenders, rental fleets, and more. We specialize in utility, power line, underground, and construction equipment, fleet vehicles, and unique equipment assets used within the electric utility industry. Contact us to learn more about how our team can help yours.

NRECA Gold Associate Member

John Deere

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Since its founding in 1837, John Deere has seen many changes in its business, its products, and its services. Change always comes with opportunity. And Deere has always been ready and willing to embrace it. Yet, through it all, John Deere's mission is still dedicated to those who are linked to the land—farmers and ranchers, landowners, builders, and loggers. And Deere has never outgrown, nor forgotten, its founder's original core values. Those values determine the way we work, the quality we offer, and the unsurpassed treatment you get as a customer.

NRECA Silver Associate Member

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Jordan Transformer specializes in remanufacturing, rewinding, and repairing substation transformers, as well as mobile substation, generator step-up unit, auxiliary, station power, startup, and furnace transformers up to 200 MVA and 230 kV. Additionally, Jordan Transformer now designs and manufactures entirely new mobile substations, mobile transformers, and mobile regulator trailers. Our testing is conducted per ANSI/IEEE standards including impulse, partial discharge and temperature rise tests. We offer full field-service capabilities, including turnkey projects, oil processing, new installations, gasket repair, load tap changer repair, and more.

NRECA Silver Associate Member

JSI

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With more than five decades of experience in the rural telecom industry, JSI is uniquely qualified to assist electric co-ops expand into the broadband arena. We can help you understand and meet regulatory and reporting requirements; develop smart business plans; launch the products and services that customers want; set competitive prices; assess new markets and technologies; and maximize profits through forecasting and financial planning. JSI also works hand in hand with its strategic partners to provide marketing and communications services (Plus One Strategic Communications), cloud computing and hosting services (Codero), and merger and acquisition services (JSI Capital Advisors LLC).

NRECA Gold Associate Member

Juniper Networks

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Juniper Networks challenges the status quo with innovative products, solutions, and services critical to businesses by transforming the economics of networking in the connected world. We create highly scalable, secure, and cost-effective networks for unprecedented choice, agility, efficiency, and value.

NRECA Gold Associate Member

K

Kenick

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KENICK Inc. is an engineering-based consulting firm providing surge protection program design and operational support, strengthened by a proven line of surge protection products. KENICK supports over 110 electric utility clients and businesses across the US. Established in 1989, KENICK has former utility surge protection program managers on staff to support our existing clients and to help new utility clients design and grow successful surge protection programs. Our client list continues to grow and includes innovative teams at investor-owned utilities, cooperatives, and municipalities across the U.S. If you are considering starting a program, or refreshing an existing one, call KENICK (800-362-9997).

NRECA Silver Associate Member

KLJ Engineering

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Since the 1930s, KLJ has planned, designed, and supported infrastructure across the country, such as roads, runways, pipelines, and parks. Our solutions turn visions into reality, improving the lives of people and communities. We're proud to work in various geographies and markets across the nation. For more information, visit kljeng.com

NRECA Gold Associate Member

KornFerry

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KornFerry is the leader in: talent acquisition—board and CEO services, executive search, professional search, and recruitment process outsourcing; organizational strategy—organizational effectiveness, cultural transformation, strategic workforce planning, employee engagement, performance management, and HR effectiveness; rewards and benefits—executive pay and governance, employee rewards, work measurement, and sales compensation; assessment and succession—executive success profiles, leadership assessment, and succession management; and leadership development—enterprise leadership development, senior leadership team development, leadership accelerator portfolio, and custom leadership development programs.

NRECA Silver Associate Member

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Laminated Wood Systems Inc.

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LWS offers E-LAM engineered laminated wood transmission and distribution structures for use in tangent, unguyed angle, switch, dead-end, and substation applications through 170 feet. The patented Phase-Raiser structure lifting system allows crews to raise energized round wood structures an additional 5 to 20 feet while energized. The Adjustable Vault Reinforcement System economically repairs underground utility vaults and manholes. The patented PoleEnforcer groundline reinforcement system reinforces poles that are considered to be non-reinforceable rejects, saving change out costs. The Pole Reclassification System can be used to increase the strength of existing poles up to three or more classes.

NRECA Gold Associate Member

Landis+Gyr

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Landis+Gyr is leading grid modernization across the globe with solutions for utilities that improve reliability, energy efficiency, and consumer engagement. The company's comprehensive portfolio includes standards-based smart grid networks and intelligent devices, analytics and data management, renewable integration, and energy storage. The company employs 5,700 people supporting customers in 31 countries with the goal of managing energy better.

NRECA Platinum Associate Member

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LAPCO Manufacturing Inc. is a respected manufacturer and an innovative leader in the flame-resistant and industrial workwear sectors. Workers in the oil and gas, electric utility, refining, and petrochemical industries have worn LAPCO premium workwear products since 1989. Our mission is: "Doing our utmost to make our customers' experience so positive that they will not consider an alternative."

NRECA Silver Associate Member

LDR Leadership

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LDR Leadership recently acquired Icon Inc. and brought Jack Yeager on board. The new entity, LDR Leadership, now has a broader offering of services for electric cooperatives. On top of Jack's existing proactive performance coaching (PPC) courses, we also offer tactical leadership services (TLEs) and an organizational leadership series (OLS). As former members of the U.S. Special Operations Forces, LDR Leadership uses a multi-faceted approach combining military experience with years of academic study to help companies become high performing teams.

NRECA Silver Associate Member

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Lee Electrical Construction Inc. is a turnkey utility contractor that provides professional services to investor-owned utilities, electric cooperatives, municipalities, and industrial companies. We are independently owned and operated and pride ourselves on having the ability to react quickly to your needs.

NRECA Silver Associate Member



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Lendlease Energy Development LLC

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lendlease.com/us/expertise/

areas-of-expertise/energy

We develop, build, and finance solar energy, energy storage, and energy efficiency projects for our customers. Solar and storage capabilities include large-scale solar and energy storage development services: site selection, permitting, electrical interconnection, finance, power purchase agreements, or turnkey development (design-build-transfer). Projects include 10 to 200-plus MW across the United States, plus team experience in delivery more than 6 GW of clean energy in operation. Energy solutions capabilities include turnkey efficiency, renewable energy, integrated building management systems, and microgrid solutions (new construction or retrofit). We will design, build, own or operate, and typical energy savings are 25 percent to 40 percent with no upfront capital investment.

NRECA Gold Associate Member

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Lightsource BP develops, owns, and operates solar energy power plants for cooperative, municipal, and investor-owned electric utilities. We offer cost-effective, turnkey solutions and manage all requirements for project development, funding, construction, and long-term operations. Lightsource BP also specializes in the deployment of large-scale energy storage to optimize solar generation and to provide reliability and resiliency to the electric grid. Founded by industry veterans with deep solar and energy storage development experience and backed by one of the largest energy companies in the world, Lightsource BP is committed to delivering creative and dependable solar energy solutions.

NRECA Silver Associate Member

LineWise by Diversified Products

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LineWise designs and manufactures job-specific utility products by collaborating with the people on the front line of the utility industry. Our line lifters, phase lifters, pole pullers, three-phase boom lifts, man baskets, and insulated work platforms are field-tested and proven to make your job more efficient, productive, and safe. For over 22 years, LineWise is proud to be developing the utility products of the future—today. You can always count on Diversified to keep you moving down the line.

NRECA Silver Associate Member

Litra Manufacturing (MFG)

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LitraMFG is a U.S.-based manufacturer and distributor of custom fiber-optic cable assemblies, cleaning supplies, test equipment, rack-and-wall-mount interconnect shelves, adapter panels, splitters, attenuators, pigtails, loop-back modules, splice closures, optical time domain reflectometer launch boxes, network interface devices, and much more.

NRECA Silver Associate Member

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lockheedmartin.com/us/what-we-do/

energy.html

Lockheed Martin (LM) Energy is focused on engineering solutions that create reliable, affordable, clean, and renewable energy. Our integrated offering provides a full range of solutions to our customers. We deliver cost-effective, forward-thinking solutions to help utilities manage operations, programs, and resources from generation and transmission to distribution. Focused on demand-side management programs that deliver reliable energy savings and enhanced grid solutions, LM Energy offers the following turnkey solutions: energy efficiency, demand response, grid and customer analytics, systems integration, cybersecurity, transmission and distribution automation, microgrids, energy storage, renewables, and cogeneration.

NRECA Silver Associate Member

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In business since 1967, LogoStoreUSA has been the trusted cooperative resource for branding and promotional needs for over 20 years.

Whether your needs are to recognize and inspire employees, show your members appreciation, or educate and enlighten your local community, we have solutions to fit any budget. Looking for the best of the best? That's what you'll find at LogoStoreUSA and CoopLogoStoreUSA, featuring only the most popular selection of cooperative annual meeting and key account gifts, employee recognition gifts, custom calendars, and branded energy efficiency and safety products. You'll also find a link to CustomWeaversUSA, which features our made-in-the-USA custom afghan throws.

NRECA Silver Associate Member

Lonza Wood Protection

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Arch Wood Protection is a developer and supplier of wood preservatives, offering treated wood products through a network of licensed producers. Well-known brands include Wolmanized wood, Wolmanized Heavy Duty wood, and Wolmanized ET poles. The ET pole combines the longevity and cleanliness of CCA poles with the climbability of oil-impregnated poles. The excellent climbing characteristics have been confirmed by a number of field-climbing trials on both new and aged poles.

NRECA Platinum Associate Member

LUMOS

Lumos Solar

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Lumos Solar was founded in 2006 and is the global leader in architectural solar solutions. Our products are made in America using the best materials available to provide the most aesthetic, functional, and durable solar products available. Lumos solutions have been used in everything from corporate campuses, stadiums, and universities and by co-op and investor-owned utilities, municipalities, commercial and retail clients, and residential projects.

NRECA Gold Associate Member

LutzCo dba Workwear Club

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Workwear Club provides safety and workwear clothing at wholesale rates. We are a Carhartt specialist and also supply Bulwark, Ariat, and more. With friends-and-family pricing, and a staff that thrives on taking care of our customers' needs, we are proud to serve America's electric cooperatives.

NRECA Silver Associate Member

M

MacLean Power Systems

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MacLean Power Systems (MPS), a MacLean-Fogg Company, is a leading manufacturer of products used by utilities for building transmission and distribution lines and substations. MPS product families include hardware and connection products as well as insulation and protection products. With global raw material sourcing capabilities, MPS produces over 10,000 items in seven domestic production facilities.

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Magellan provides turnkey broadband planning, engineering, funding, implementation, and management services to electric cooperatives across the U.S. We assist rural electric co-ops in delivering new broadband and smart grid services to their communities that are underserved by existing providers. Magellan's broadband business and technical and operational expertise provides co-ops with a turnkey partner they can use to fulfill all aspects of broadband planning and deployment.

NRECA Silver Associate Member

Mapcom Systems

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Mapcom Systems is the developer of M4 Solutions—a visual operations platform that allows service providers to manage their workforce, as well as fiber, coax, wireless, and copper networks, including both outside and inside plant at the physical and logical levels. M4 Solutions enables users to integrate and correlate data from existing billing, accounting, GPS tracking, element management, network monitoring, and vehicle-tracking applications in a powerful visual interface to all network elements.

NRECA Silver Associate Member

Marmon Utility LLC

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Marmon Utility is the parent company of Hendrix and Kerite. Providing the transmission and distribution industry with reliable cable for over 150 years, respectively. Hendrix offers aerial cable systems (15 kV to 69 kV), underground medium-voltage cable (5 kV to 46 kV) and molded insulator products. Kerite offers medium- and high-voltage cable (5kV to 138kV) along with cable services. Together, Hendrix and Kerite offer not just cable but also the expertise in solving unique and common installation issues that arise within the overall project planning. Our experience from cable design, application design, and on-site installation surpasses industry requirements.

NRECA Gold Associate Member

MasTec North America

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MasTec companies have been involved in some of the largest and most complex infrastructure construction projects across the country. Our experience has given us a deep and comprehensive understanding of the markets we serve, as well as the ability to effectively manage people and projects.

NRECA Silver Associate Member

MCA Architecture Inc.

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MCA Architecture is a multidiscipline design firm serving a broad range of clients throughout the country. At MCA, we help our clients realize their vision through a unique partnered-bid process, combining the best elements of a collaborative client/architect design approach with dependable estimating procedures and the competitive bidding of all building elements. MCA has extensive experience in the electric cooperative market: 27 corporate headquarters and administrative buildings; 39 operations, maintenance, and dispatch facilities; 51 data centers; 67 call centers; 11 fiber-optic hub facilities; nine high-security communications facilities; and three tower installations.

NRECA Silver Associate Member

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McCarter and English attorneys have more than 30 years of experience in representing consumer-owned utilities, such as rural electric cooperatives and municipal utilities, along with state consumer advocates and other state agencies, in electric and natural gas supply matters before the Federal Energy Regulatory Commission (FERC), state public utility commissions, and federal and state courts. Our attorneys have participated in every major energy policy and rulemaking proceeding before FERC over the past three decades. They have handled nearly every sort of rate, certificate, and compliance matter.

NRECA Silver Associate Member

McWane Poles

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McWane Poles manufactures high-quality

ductile iron utility poles. McWane Poles offers engineered strength, dimensional consistency, and natural corrosion resistance. Ductile iron poles are impervious to rot, insects, and woodpeckers and are highly fire resistant. These poles are less expensive to transport and install because they are about 30 percent lighter than wood and 80 percent lighter than concrete. McWane Poles is a division of McWane Inc., a 95-year-old company with 5,500 employees on five continents. McWane started in the iron foundry business and is now a diversified manufacturer, offering water infrastructure products, fire suppression equipment, and compressed gas cylinders.

NRECA Silver Associate Member

MEYER

UTILITY STRUCTURES

Meyer Utility Structures

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Meyer Utility Structures is an industry-leading provider of transmission structures, with a heritage of over 60 years of innovation, engineering, and manufacturing expertise. Meyer offers full-scale vertical testing, numerous fabrication locations, optimized designs, and custom engineered solutions for transmission projects of any size or complexity.

MGS Inc.

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MGS provides specific solutions for the public utility industry, offering a full line of standard products for the various needs of our customers. Trailer types include, but are not limited to, cable reel, pole, multi-use, substation recovery, and enclosed/command. Paint and galvanized finishes available. Our newest line of configure-to-order products has been designed for online quoting and order fulfillment, featuring shorter lead times and lower prices. We also have a custom product line designed to satisfy your specific work practices and life-cycle requirements.

NRECA Silver Associate Member

Michels Corporation

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Michels builds overhead and underground transmission and distribution lines. We perform bare-hand maintenance and storm restoration. Substation experience includes greenfield construction and brownfield maintenance.

NRECA Silver Associate Member

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Microsoft Azure is an ever-expanding set of cloud services to help your organization meet your business challenges. It's the freedom to build, manage, and deploy applications on a massive, global network using your favorite tools and frameworks.

NRECA Gold Associate Member

Mid America Testing and Supply

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Mid America Testing and Supply is a full-service high-voltage testing laboratory and distribution center. Our prompt professional service and state-of-the-art equipment allows us to test your equipment efficiently and effectively. We are in compliance with all applicable standards and regulations to help keep you and your employees safe. Our distribution warehouse carries a full line of utility-grade products, in stock and ready for distribution. Our mobile testing service will help you save money on shipping and testing

cost. We work with your schedule to keep your crews out in the field when needed. We provide testing from the truck to the hand and anything in between.

NRECA Silver Associate Member

Milner Technologies Inc.

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As the leading provider of document workflow and imaging solutions, our users benefit from our experience in integrating document-centric processes with the main line of business software providers, including CSA, Daffron, National Information Solutions Cooperative, and SEDC. We have over 30 years of experience and more than 200 cooperatives.

NRECA Silver Associate Member

**Milsoft Utility Solutions Inc.**

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about your electric utility system like never before. With a suite of engineering and operations software solutions, Milsoft delivers on streamlined workflows, increased productivity, and improved customer services while reducing operational costs. Milsoft has been supplying electric utilities since 1989. Providing solutions that make utilities work faster, smarter, and more accurately is the main focus of our products. Our support, however, remains focused on bringing you world-class support long after the point of sale. Milsoft also has several customer self-service features that will wow your customers. Learn more by visiting milsoft.com.

NRECA Platinum Associate Member

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Milspec Industries manufactures the finest electrical wire and cable in the world. Milspec Industries also offers a complete line of connectors and wiring devices: quality construction at no extra cost.

NRECA Silver Associate Member

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Milwaukee Electric Tool Corporation

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Milwaukee Tool is an industry-leading manufacturer of heavy-duty power tools, accessories, and hand tools for professional users worldwide. Since the company began in 1924, Milwaukee Tool has led the industry in both durability and performance. From the power plant through transmission and distribution, it is Milwaukee's goal to improve reliability and productivity for the lineman by offering solutions that help increase confidence while on the job. Milwaukee delivers unprecedented innovation for the power utility industry through a wide range of power tools, cordless crimpers and cutters, high-output lighting, hand tools, and accessories.

NRECA Silver Associate Member

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Minerva enables telcos and cable operators to transform their legacy pay-TV systems into a next-generation video delivery solution faster and more cost effectively. The Minerva platform has been deployed to over 300 operators worldwide. Minerva offers a full range of multiscreen clients to deliver a compelling and consistent user experience that includes premium features like DVR, video on demand, Pay-Per-View, network DVR, catch-up and restart TV, and customizable internet content. These features are available across a wide range of devices, including set-top boxes, tablets, smartphones, PCs and other consumer electronics devices. At Minerva, we are the future of connected entertainment.

NRECA Gold Associate Member

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MinMax Technologies is a recognized leader in delivering software-based productivity tools for utilities managing assets for substations, transmission, and distribution operations. Whether it is asset management, work orders, document control, visual inspections, major maintenance, repair tracking, inventory control, facility ratings, or accurate record-keeping for North American Electric Reliability Corporation or Rural Utilities Service compliance, MinMax has them all covered for you. Known for its simplicity and creative use of mobile solutions, MinMax's popular Substation Maintenance and Asset Reliability Tracking (SMART) software has been featured in T&D World and Electric Energy T&D and has been case-studied by Microsoft.

NRECA Silver Associate Member

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Morbark and its affiliated brands, Rayco Manufacturing Boxer Equipment, and newly acquired Denis Cimaf – the leader in mulching head technology – make equipment that is specifically made for the care of utility and right-of-way maintenance. Our purpose-built equipment includes the AT75 Aerial Trimmer; a series of forestry mulchers, including the new C120 and T415 Mulchers; brush cutter-mulcher attachments for excavators, skid steers, forestry tractors, graders, and other types of heavy equipment; horizontal grinders; brush chippers; and compact utility loaders. We know that the maintenance of power line right-of-way can be a daunting task, and we have the expertise you need to power through it.

NRECA Silver Associate Member

Moss Adams

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We help clients determine risk factors and critical business functions in order to develop and implement a detailed plan of action to ensure your business achieves its continuity of operation objectives before, during, and after a disaster. Our business continuity and disaster recovery services are customized based on your unique needs and incorporates Moss Adams' proven methodology to secure a well-managed and focused business continuity management program: rapid assessment and roadmap; emergency operations plan development and implementation; facilitation of emergency operation plan exercises; risk evaluations and controls; updating emergency response procedures; and crisis communications plans.

NRECA Silver Associate Member

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mPower Innovations develops advanced geographic information system (GIS) and asset management solutions for utilities across the nation. We empower our partners by offering cost-effective solutions paired with superior customer service. Our user-friendly suite of GIS, work management, and outage management solutions are easy to use and affordable.

NRECA Silver Associate Member

MultiSpeak

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The MultiSpeak Software Integration Initiative

is a collaboration of software vendors and utilities, administered by NRECA, that has developed a standard of defining interfaces among software applications used by electric distribution utilities to facilitate interoperability.

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NASCO, the market leader for waterproof outerwear for the utility industry, offers innovations in comfort and safety. All of NASCO's ArcWear line of electrical safety outerwear products are compliant with ASTM F1891 for electric arc protection and are available in high-visibility to conform to ANSI/ISEA 107 for conspicuity. Choose from ArcLite Air, our newest innovation and the lightest weight dual-hazard rainsuit; ArcLite, the industry's most popular; Sentinel for gas and electric applications; or Omega for breathable, arc, and flash fire-resistant (FR) products. We now offer removable, FR, insulated winter liners for cold-weather protection. Choose NASCO for protection that suits you.

NRECA Gold Associate Member

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National Information Solutions Cooperative (NISC) is a leading provider of software solutions and services for utilities and telecoms. NISC offers advanced, integrated solutions featuring automated workflows, electronic approvals, and more in billing and customer service, accounting, engineering and operations, meter data management, payment channels, cybersecurity, and eServices and apps. Over 20 million consumers in 50 states receive utility or telecommunications services from over 820 companies using NISC advanced solutions. Additional information can be found at nisc.coop.

NRECA Service Member

N-Dimension Solutions

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N-Dimension is a market leader in the development of innovative cybersecurity products that protect utility networks from cyberattacks, improving system reliability and safeguarding critical infrastructure, data, and assets. The company offers N-Sentinel, a cloud-appliance, doing real-time threat detection and an alert service that uniquely combines utility community insights and security intelligence. The N-Sentinel is also capable of doing vulnerability assessment scans. The N-Sentinel provides easy-to-use, actionable steps in a report format via a customer portal for remediation of issues found. Expert cybersecurity support is provided with the N-Sentinel services.

NRECA Silver Associate Member

Nelson Tree Service Inc.

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Nelson delivers complete distribution and transmission line clearance services for

utilities throughout the U.S. Whether it be regular maintenance or critical storm support, Nelson delivers quality response and service. From our customer-trained workforce to our innovative safety program, everything we do is aimed at "protecting the reputation of the utilities we serve ... it's part of our job."

NRECA Silver Associate Member

NESCO Rentals

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NESCO provides everything linemen need to get the job done: from aerial devices, boom trucks and cranes, diggers, pressure drills, and stringing gear to blocks, repair parts, tools, and accessories. NESCO maintains one of the industry's largest rental fleets and service networks in the country. NESCO has over 45 locations in North America, Canada, and Mexico; has 25-plus years of industry experience; and is an authorized distributor for the industry's most trusted manufacturers: Terex, Hogg and Davis, Sherman + Reilly, Skylift, Manitex, and more. NESCO's extensive fleet and knowledgeable staff offer the right rental equipment and service you need to get the job done.

NRECA Silver Associate Member

Nest Labs Inc.

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Nest makes thoughtful hardware and software for the connected home, including the Nest Learning Thermostat and the new Nest Thermostat E. Dozens of electric and gas utilities, including numerous electric cooperatives, are partnering with Nest to achieve member-friendly load management, cost-effective energy efficiency, and exceptional customer engagement and satisfaction, through customized demand-side management programs designed to meet their specific objectives. Nest has established a partnership with NRTC to provide cooperatives with discounted pricing on Nest's thermostats, as well as our demand response and load management solutions.

NRECA Silver Associate Member

Network Innovations

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- New broadband services
- Increased below-the-line revenue

We're vendor-neutral integrators, focused on building a long-term, scalable solution delivered on time and on budget. With Fujitsu by your side, deploying an operational-ready, broadband network is easier than you think. Because we get you.

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Network Innovations (NI) provides reliable satellite broadband, GPS (tracking), M2M telemetry/SCADA, voice/data communication solutions that enable utility companies to maintain high availability of their infrastructure and mobile workforce, ensuring the safety of field staff anywhere. Using leading tracking, communication, and asset management technologies, NI is able to tailor specific solutions that offer cost-efficiencies (BGAN), expedited field operations (meter reading/reporting), and high-speed transmissions (AVL). A global, regional, cooperative partner.

NRECA Silver Associate Member

NewGen Strategies and Solutions LLC

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NewGen Strategies and Solutions is a management and economic consulting firm specializing in serving public sector utilities. We provide financial, cost-of-service, rate design, valuation, strategy, expert witness, stakeholder, and sustainability consulting services to our clients. Our expertise includes litigation support in state and federal regulatory proceedings, utility business and financial planning, and sustainability strategy for water, wastewater, solid waste, electric, and natural gas utilities.

NRECA Silver Associate Member

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Nexamp is leading the transformation to the new energy economy with proven solutions for the deployment and operation of solar energy assets. Our comprehensive capabilities span the entire solar project lifecycle—from project development, design, and construction, through financing, operations, and maintenance. Our integrated, best-in-class solutions make solar energy simple and profitable for our clients and partners and make an impact every day. With a rapidly expanding network of property owners, businesses, and communities benefitting from our growing portfolio of solar assets across the U.S., Nexamp and our partners are laying the groundwork for a cleaner, more secure energy future.

NRECA Silver Associate Member

NexGen Utility Solutions

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nexgenusa.com

NexGen Utility Solutions is a nationwide provider of infrastructure modernization services for the energy and communications industries. We implement, build, and support the smart grid, wireless communications

systems, and wireline telecommunications. With a footprint that stretches across the United States, Canada, Mexico, and the Caribbean, NexGen Utility Solutions has the experience, manpower, resources, and capability to handle virtually any infrastructure project regardless of its scope, geographic span, or underlying technology. Count on NexGen to consult, deploy, and support your next energy services project, on time and on budget.

NRECA Silver Associate Member

Nextera Energy Marketing LLC

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nexteraenergyresources.com/what/
marketing.shtml

NextEra Energy Marketing is one of the nation's leading electricity and natural gas marketers and a key player in energy markets in the United States and Canada. NextEra Energy Marketing is also responsible for electricity and fuel management for all of NextEra Energy Resources' generation fleet, which includes the largest renewable energy portfolio in North America. NextEra Energy Marketing provides a wide range of electricity and gas commodity products, as well as marketing and trading services, to electric and gas utilities, municipalities, cooperatives, and other load-serving entities, as well as to owners of electric generation facilities.

NRECA Silver Associate Member

Nicopress (The National Telephone Supply Company)

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Nicopress is a market leader for compression connectors, tools, and dies for electric power transmission and distribution. RUS approved, we know it's critical to use proven and reliable products for new construction; maintenance, repair, and operations; and emergencies. The easy-to-use Nicopress system of connectors and tools provides consistent and superior connections, ensuring dependability. Nicopress kits are available for a range of 6- and 12-ton hydraulic and battery hydraulic tools. Splices meet or exceed tensile rating and electrical conductivity of industry and utility standards, including ANSI C119.4. Full line of connectors includes: splicing sleeves in aluminum, copper, copper alloy, and galvanized steel; reducing, repair, and offset dead-end sleeves; and clevis-type suspension dead-ends.

NRECA Gold Associate Member

Nikola Power

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Nikola Power is a solutions provider that delivers energy and cost savings to our customers through a combination of on-site renewable energy and an integration of energy storage technology. We own patented battery management algorithms that can optimize the performance and life span of energy storage assets. With 10-plus years of experience, the Nikola Power team has developed, built, owned, and operated over 100 MW of projects in the U.S., Canada, and the Caribbean. Our leaders have been on the forefront of the industry and completed the first-ever combined investment and new market tax credit deal in the U.S., as well as expanded power purchase agreement adoption and third-party financing in the solar industry.

NRECA Silver Associate Member

NOVINIUM

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Novinium is the undisputed innovator at the forefront of the utility and secondary-networks market. Novinium's featured products include Cablecure, a revolutionary injection-fluid technology that provides the longest extension of cable life available with a 40-year warranty, and PreVent, a new manhole event prevention system.

NRECA Gold Associate Member

NRECA National Discounts Program (NDP)

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https://cooperative.com/services/national-discounts-program/pages/default.aspx
Our main goal is to assist you in reducing your daily business costs and adding savings back to your budget. NDP Fundamentals: What is the National Discounts Program? It's a consortium that leverages the collective buying power of co-ops to obtain pricing discounts from a variety of national suppliers. How does the NDP work? Access the NDP page via Cooperative.com/services to link to over 200 suppliers where NRECA has negotiated pricing discounts. Who can use the NDP? It's available to all member co-op employees and directors for business and, in some cases, for personal use. For questions, contact your NDP administrator, Charleen Tzou.

NRG Energy

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NRG is the leading integrated power company in the U.S., built on the strength of the nation's largest and most diverse competitive electric generation portfolio and leading retail electricity platform. A Fortune 200 company, NRG creates value through best-in-class operations, reliable and efficient electric generation, and a retail platform serving residential and commercial businesses. Working with electricity customers large and small, we continually innovate, embrace, and implement sustainable solutions for producing and managing energy.

NRECA Platinum Associate Member

NRTC

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The National Rural Telecommunications Cooperative (NRTC) leads and supports its more than 1,500 members by delivering telecommunications solutions to strengthen member businesses, promote economic development, and improve the quality of life in rural America. NRTC offers smart grid, broadband, and video solutions.

NRECA Service Member

**OFS**

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ofsoptics.com OFS is a world-leading designer, manufacturer, and provider of optical fiber, fiber-optic cable, connectivity, fiber-to-the-subscriber, and specialty fiber-optic products. Focused on safety, loyalty, and customer service with a dedication to research, OFS has helped lead the way in pioneering innovative fiber-optic solutions for more than a decade. We provide forward-looking, advanced products and solutions in several areas, including communications, medicine, industrial automation, sensing, aerospace, defense, and energy. We provide reliable, cost-effective fiber-optic solutions that help our customers meet the needs of consumers and businesses, today and into the future.

NRECA Gold Associate Member

Olameter

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Olameter provides comprehensive utility solutions to North American utilities, municipalities, and energy retail and management entities. Solutions include meter data management, workforce and ticket management software, geospatial, IT and technology, billing, call center, print/stuff/mail, meter services, and damage prevention.

NRECA Silver Associate Member

OMICRON electronics Corp. USA

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OMICRON develops innovative power system testing solutions for these application areas: test instruments for protective relays and recloser controls, power and instrument transformers, and circuit breakers, while also offering monitoring solutions for generators, motors, and cables. Specialized tests include partial discharge and dielectric frequency response. Support services include test result analysis, expert training, application support 24/7, and customer knowledge base. OMICRON has customers in over 160 countries.

NRECA Silver Associate Member

On Now Digital

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On Now Digital delivers intuitive software solutions, making complex data simple. On Now Digital pursues high-trust relationships with every utility client. We enable clients to easily monitor and analyze the health of their core electrical assets. Capabilities include field inspection apps; barcodes; laboratory and diagnosis automation; equipment condition-based monitoring; speech-to-text integration; internet of things and industrial internet of things; streaming device integration; and systems integrations among computerized maintenance management systems, enterprise resource planning, work orders, inventory, accounting, inspections, geographic information systems and GPS, lab equipment, infrared, test devices, etc. Using our packaged and custom software solutions, our clients increase convenience, timeliness, and accuracy.

NRECA Silver Associate Member

OneSource Restoration

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OSR provides utilities across the nation with additional storm response resources. Quality damage assessment, wire down guards, distribution line crews, two-person service units, and logistic support are all vital to safe and timely power restoration. Quality resources are key. We have you covered. OSR deploys quality line construction resources that have been thoroughly vetted and meet our strict requirements and safety standards. We provide full construction crews as well as two-person secondary and service units. OSR believes that becoming a true partner with utilities will provide greater success down the road. OSR will provide trained resources to assist in meeting those goals.

NRECA Silver Associate Member

Open Systems International Inc.

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Open Systems International—headquartered in Minneapolis, Minnesota—provides open, state-of-the-art, and high-performance automation solutions to utilities worldwide. These solutions include SCADA systems, energy management systems, distribution management systems, outage management systems, generation management systems, substation automation systems, data warehousing analytics, distributed energy resource management systems, situational awareness systems, pipeline network management systems, individual software and hardware products, and smart grid solutions for utility operations.

NRECA Gold Associate Member

Osmose

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Osmose provides professional inspection, maintenance, life extension, and rehabilitation services designed to help build resiliency into transmission and distribution infrastructure. Osmose also provides corrosion mitigation and engineered repairs for steel structures, structural load analysis, and a variety of turnkey infrastructure enhancement and upgrade solutions. From the structure top to below grade, Osmose offers products and services designed to preserve, protect, repair, and restore in-service wood utility poles. With 80 years of diverse experience as a foundation, Osmose proudly serves America's cooperatives as they manage aging infrastructure and build tomorrow's intelligent utility.

NRECA Gold Associate Member

P

Palmetto Engineering and Consulting (PEC)

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PEC leverages the power of a geographic information system (GIS) to organize, visualize, and analyze our clients' data so they can operate more efficiently and effectively in the utility and energy markets. Our mission is to help our clients get the most from their investment in GIS and spatial technology. Our services include developing an overall GIS strategy or roadmap; assisting clients with their day-to-day workflow and long-term projects; augmenting and supporting the client's GIS staff; implementing practical solutions that are tailored to specific objectives; building secure GIS platforms to store, manage, and present information for executive collaboration—inside their enterprise or hosted in the cloud; ArcGIS online utility jumpstart; and utility software implementation and deployments.

NRECA Silver Associate Member

PCS Technologies Inc.

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PCS Technologies Inc. is a complete wireless integrator. PCS supports a full complement of installation, construction, and professional services, allowing us to supply, implement, and support today's high-capacity wireless broadband solutions.

NRECA Silver Associate Member

Penske Truck Leasing

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A global leader in transportation services, Penske Truck Leasing operates more than 266,000 vehicles and offers leasing, comprehensive fleet maintenance, truck rental, and logistics services with more than 1,000 locations in North and South America, Europe, Asia, and Australia. Penske offers local electric cooperatives and utilities skilled technicians with the latest training and diagnostic technology to service their bucket trucks and other vehicles. Penske can provide maintenance services either at its own facilities or on-site at the customer's location. Current customers range from rural electric cooperatives to large metropolitan utilities with more than 1,000 vehicles.

NRECA Silver Associate Member

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Petra Systems Inc. is a leading global technology provider delivering remotely managed networks for smart city infrastructure, leveraging core expertise in power electronics, controls, and communications. With over 250,000 installed systems, Petra combines technology innovation and competitive financing to help mobile carriers, municipalities, utilities, and transportation authorities transform streetlights into valuable assets that deliver the highest level of cost savings and revenue streams and enable the best return on asset to streetlight owners.

NRECA Gold Associate Member

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The Pike family of companies is a leading provider of utilities solutions to over 300 investor-owned, municipal, and cooperative utilities in the United States. Our comprehensive services include facilities planning and siting, permitting, engineering, design, installation, and maintenance of electric, gas, and communication infrastructure. Pike prides itself for powering innovations while delivering solutions safely and with integrity for over 70 years.

NRECA Gold Associate Member

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Pivot is a customer engagement agency that helps our clients comprehend their markets through research, connect to their audiences through creative and effective marketing, and convert leads into sales through customer experience training. Where do you want to go? Pivot stands ready to help.

NRECA Gold Associate Member

**PLH Group Inc.**

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PLH Group is a leading provider of construction services to the electric power delivery

industry, with six business units serving utilities, renewable energy developers, and regional cooperatives. Power Line Services and Edison Power provide transmission, substation, and distribution construction and maintenance. Air2 provides helicopter-assisted services for transmission line construction, maintenance, and inspection services. Auger Services provides complete foundation drilling and construction. TTR Substations is a full-service substation contractor. R.B. Hinkle specializes in underground utility installation. All of these business units provide emergency response services.

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Plus One Strategic Communications is a consulting firm specializing in marketing, communications, and business development for rural communications, utilities, and related industries. Plus One has a decade of experience providing integrated marketing services to our clients, including web design and development, messaging and brand, marketing content and campaigns, surveys and analysis, business strategy, sales and customer service representative training, and internal communications. Whether customers need short-term project assistance or ongoing support, Plus One develops and executes comprehensive strategies to position each customer as the top choice in an increasingly competitive ecosystem.

NRECA Silver Associate Member

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Posi-Plus manufactures the highest-quality, least-expensive aerial devices and cable handlers in the world. Our products are built to exceed your needs in safety and productivity. Posi-Plus builds heavy-material handlers: manlifts, cable placers, and cable handlers. We are leaders in hybrid technology; we build systems that can work all day on battery power and provide the customer with a substantial return on investment.

NRECA Silver Associate Member

Power and Tel

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Power and Tel is an industry leader in the procurement, sales, material management, and distribution of product solutions to the worldwide telecommunications marketplace. Our supply chain expertise and extensive distribution network provide an efficient

solution to build and maintain your entire network. Power and Tel's portfolio includes products and solutions for fiber-to-the-x, IP TV, VOIP, central office/headend, open settlement protocol, wireless, customer premise, home networking, testing, and much more.

NRECA Silver Associate Member

POWER Engineers

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POWER Engineers is an international leader in power delivery. We bring strength, depth, and expertise to utilities facing system upgrades, multifaceted projects, or unique space, capacity, and performance issues. From overhead and underground transmission lines and substations to electrical system studies, testing, and energization, utility automation, and comprehensive program management, our teams are proficient in design and implementation of power delivery systems. Whatever your power delivery requirements are today—and whatever challenges you might face tomorrow—POWER stands ready to provide the engineering services you need to be successful in the ever-changing energy market.

NRECA Silver Associate Member

Powerfield Energy Inc.

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Powerfield is working to serve co-ops and their members by providing simple, affordable, flexible, modular, and sustainable solar energy. Our goal is to help co-ops and their members save money, increase revenues, diversify risk, and strengthen their position as leaders in sustainability. Powerfield has a patented and made-in-the-USA solar racking product and process for mounting solar panels to the ground without the need for digging, concrete, steel, nut and bolts, or tools. As a result, Powerfield offers solar energy systems that can be rapidly installed and use existing labor, so we can share the savings with our customers.

NRECA Silver Associate Member

PowerGrid Services

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PowerGrid Services is a WBENC-certified woman-owned business that provides transmission and distribution construction, right-of-way clearing, tree trimming,

vegetation management, and power restoration services to utilities across the Southeast. While on paper it appears that PowerGrid is a brand-new company, the owners and management team of PowerGrid have been in the industry for over 30 years and have established values that focus on cultivating relationships that benefit our customers, our employees, and our company.

NRECA Gold Associate Member

Power System Engineering Inc. (PSE)

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Power System Engineering Inc. (PSE) is a full-service consulting firm for electric utilities. The professionals at PSE include engineers, IT experts, utility strategy experts, economists, and financial analysts. Our team has extensive experience in all facets of the utility industry. Our services include communications (fixed and mobile), technology work plans, strategic plans, construction work plans, long-range plans, sectionalizing studies, load forecasting, line design, rates and financial planning, substation automation, and many others. For a full list of services, visit our website at www.powersystem.org.

NRECA Gold Associate Member

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Powerline Tags LLC

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Powerline Tags makes phase ID products for the electric power industry. As a 24-year cooperative employee, serviceman and troubleshooter, I designed and make highly reflective pole and crossarm tags and underground tags that attach to the concentric tie back on underground primary cables. We also carry reflective phase stickers for underground transformers, cabinets, etc. Our phase ID tags are a great tool for troubleshooting, engineer studies, and load balancing. The reflective pole and crossarm tags can be seen from a half-mile at night with just the headlights of a vehicle. They work day and night. That equates to performance 24 hours a day. These products increase awareness and enhance the culture of safety at your cooperative.

NRECA Silver Associate Member

PowerPlan

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PowerPlan software provides financial insight into how complex rules and regulations impact your organization—empowering you to make credible decisions. The integrated solution provides complete visibility, starting with asset management and asset investment planning through project execution to eventual retirement. Call to learn how we can help.

NRECA Platinum Associate Member

PowerSecure Lighting

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EnergyLite and Solais are brands of Power-Secure Lighting (PSL), a division of Power-Secure Inc. PowerSecure Lighting is a fast-growing, technologically relevant, market-driven manufacturer that pushes the innovation envelope to create LED products that replace traditional lighting technologies with zero compromise to aesthetics and performance. PSL's products provide quality lighting for its retail, hospitality, supermarket, museum, commercial, and utility client list that includes the world's leading brands.

NRECA Gold Associate Member

PowerServices Inc.

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PowerServices is a full-service engineering and management consulting firm serving electric cooperatives nationwide. Our services include generation, transmission, distribution,

substation, and solar/microgrid design, construction management, and engineering, procurement, and construction; system planning, protection, and relaying; rate and cost of service; accident investigation; and management consulting, all of which enable our cooperative clients to excel in their business. Our team has been a true partner with cooperative managers and engineers since 1960 and has completed thousands of projects. We welcome the opportunity to put our experience to work for your cooperative.

NRECA Silver Associate Member

Powertech Labs

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Powertech Labs is one of the largest testing and research laboratories in North America. Our 11-acre facility offers 15 testing labs for a one-stop-shop approach to managing utility generation, transmission, and distribution power systems. Powertech is home to a broad range of scientists, engineers, and technical specialists, with capabilities in electrical testing, cable condition assessment, mechanical and materials engineering, software technologies, power system studies, chemical analysis, gas systems engineering, and smart utility services. Additionally, we have the capabilities to derive and develop non-standard testing methods and setups based on client requirements.

NRECA Silver Associate Member

PowerTrunk Inc.

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PowerTrunk presents a broad portfolio of critical communication solutions for the transportation, public safety, utilities, and industrial sectors based on TETRA, DMR, P25, and LTE technologies. With more than 300 network references in 50 countries, PowerTrunk is dedicated to providing complete radio network infrastructures, control centers, and end-user equipment, including specialized onboard systems. The company's flexibility, technical independence, and willingness to customize allow PowerTrunk to truly put the customer first to fulfill the most demanding communications system requirements. Since May 2015, PowerTrunk has been part of the Sepura Group.

NRECA Platinum Associate Member

Preformed Line Products

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Since 1947, Preformed Line Products (PLP) has been providing electric utilities with innovative and quality products for use in

overhead transmission, distribution, and fiber-optic systems. Products include compression hardware, spacers and spacer dampers, string assemblies and hardware, suspension and support hardware, dead-ends, conductor ties, insulators, motion control products, protective guards and markers, splices, wildlife protection products, and inspection services. PLP has a long history of working with both large and small co-ops, and with a global headquarters in Cleveland, Ohio, and two domestic manufacturing facilities, PLP is a proud supporter of the U.S. electric utility industry.

NRECA Gold Associate Member

Q

QEI

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QEI has been providing SCADA and automation solutions to the electrical cooperative industry since 1960. Our substation gateways, capacitor controllers, RTUs, complete SCADA systems, and turnkey engineering solutions can provide the anchor for your place on the smart grid.

NRECA Silver Associate Member

QinetiQ North America

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LineWatch Sensor systems provide utilities with a quick, safe and low total cost of ownership solution for monitoring the distribution grid. LineWatch sensors measure voltage, current, and phase angle on the conductor and derive many additional values including power factor, kilowatt-hour, and harmonics (up to the 13th) that provides utilities the visibility to manage their distribution grids more efficiently. LineWatch installs very quickly using standard equipment. Both devices can be integrated with any communications platform. LineWatch helps utilities address a multitude of smart grid applications, including asset management, grid automation, legacy substation monitoring, load flow analysis, etc.

NRECA Silver Associate Member

Quanta Services

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Quanta Services builds, maintains, and provides comprehensive solutions for the infrastructure that delivers electricity. Electric cooperatives, municipal agencies, and independent power producers choose Quanta because its extensive knowledge, resources,

and scope of innovative construction services are unmatched.

NRECA Gold Associate Member

R

Radiance Solar

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Radiance Solar delivers turnkey solar design, engineering, procurement, and construction services, along with operations and maintenance services and energy storage expertise.

NRECA Silver Associate Member

RAVENii

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RAVENii provides continuous threat and vulnerability management, firewall management, managed endpoint protection, and incident response, as well as a robust SIEM technology. By leveraging the collective intelligence of security experts across the globe and monitoring the entirety of the IT environment, RAVENii moves beyond the sphere of security breaches, providing the most comprehensive discovery, analysis, and mitigation of threats associated with an organization's presence.

NRECA Silver Associate Member

RealTerm Energy

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RealTerm Energy specializes in designing and delivering intelligent LED street lighting systems that deliver exceptional energy and maintenance savings. We have provided cost-effective conversions to over 170 communities of all sizes across North America. RealTerm Energy makes it easy for cooperatives to convert their street-light network to LED by choosing from our menu of services: a complete turnkey solution, procurement or project management consulting, and innovative geomatics and design services. We build capacity in every cooperative and municipality we work with by training local labor on leading-edge GPS applications and installation techniques.

NRECA Silver Associate Member

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Recurrent Energy is a leading utility-scale solar project developer, delivering competitive, clean electricity to large energy buyers. We are a wholly owned subsidiary of Canadian Solar Inc. and function as Canadian Solar's U.S. project development arm. Founded in 2006, Recurrent Energy has developed, originated, and constructed 2.2 GWp of projects, ranging from commercial rooftop installations to utility-scale ground-mounted power plants.

NRECA Gold Associate Member

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Reelstrong Utility Fleet manufactures reel, pole, and pulling trailers that offer Safelock, Powerlock, Autolock, Securelock, and ACME-CLAMP Reel Arbor and Tongue-Securing safety technologies. Our units are, hands down, the safest, easiest to use, and lowest maintenance trailers in our category.

NRECA Silver Associate Member

We're constantly sharpening our skills to build the safest, most efficient, and most capable workforce in the industry, featuring advanced **SafeProduction** training protocols, including:

- Industry-Leading Apprenticeship Program
- Computer Based Training
- Tree Felling Training

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ASPLUNDH
A BETTER WAY

Rheem Water Heating

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Rheem is a manufacturer of Rheem, Ruud, Richmond, and Marathon brand water heaters for residential and commercial applications.

NRECA Gold Associate Member

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Rocky Mountain Institute's nonprofit Shine Program helps electric co-ops to procure distribution-scale solar. Shine has helped co-ops in Colorado, Texas, New Mexico, and North Carolina. We helped Otero Electric Cooperative realize 4.5 cents per kWh for a 3-MW project completed in 2017. We helped six Colorado co-ops receive prices between 4 and 5 cents per kWh for 1 MW systems. In Texas, we are helping Bluebonnet Electric Cooperative and CoServ Electric to procure solar and storage. Our vision is that every co-op in the United States can sign solar deals that save money. We help co-ops by modeling the economic value of solar; publishing a request for proposal to leading national and local developers; and guiding buyers to successfully sign power purchase agreements.

NRECA Silver Associate Member

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RS Technologies Inc. is a customer- and technology-driven company that designs, engineers, and manufactures composite utility poles. The high-performance poles are used in transmission and distribution (up to 345 kV) and communication applications and offer a lighter, more durable, and longer-lasting solution over wood, steel, and concrete alternatives. With over 32,000 poles having been installed in the field since 2003, RS has over 400 customers globally and is ISO 9001:2015 registered. Suitable for direct-bury installation in high or standing water, salty or corrosive soils, pest-infested areas (woodpecker, termite, etc.), fire-prone areas, high-wind applications, and guyed and un-guyed applications.

NRECA Gold Associate Member

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Ryan is dedicated exclusively to business taxes. The firm provides an integrated suite of tax services and understands the unique challenges faced by the utilities industry. Credits and incentives (C&I) present significant savings opportunities for growing and expanding companies. Ryan offers a full-service approach to help organizations maximize key C&I opportunities through a comprehensive review process where no stone is left unturned. Our C&I professionals can add value to your capital projects through new markets tax credit (NMTC) financing: \$3.5 billion of NMTC are allocated annually; over 40 percent of the U.S. is NMTC eligible; and cash benefits can range between 15 and 20 percent of the project investment.

NRECA Silver Associate Member

S

S&C Electric Company

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S&C Electric Company is a global provider of equipment and services for electric power systems. Founded in 1911, with global headquarters in Chicago, S&C applies its heritage of innovation to address challenges facing the world's power grids and is thus shaping the future of reliable electricity delivery. The mission of employee-owned S&C is to continually develop new solutions for electricity delivery, fostering the improved efficiency and reliability required for the intelligent grid.

NRECA Gold Associate Member

Safe Electricity, a program of the Energy Education Council

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Safe Electricity is the award-winning program of the Energy Education Council (EEC), a nonprofit organization dedicated to promoting electrical safety and providing information on energy efficiency and renewable resources. EEC members, who include more than 400 utilities across the country, receive a wealth of materials and communications tools for consumer education and outreach, including videos, news releases, articles, a high-resolution photo library, social media posts, professionally designed consumer handouts, posters, banners, and much more. EEC's Safe Electricity program helps utilities empower

consumers with the knowledge to use electricity safely and efficiently.

NRECA Silver Associate Member

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Today, Samson is the worldwide leader in the development and manufacture of high-performance ropes, with a focus on research and development and solving specific customer applications.

NRECA Silver Associate Member

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Established in 1991, Schnieder Engineering is an electric utility-focused engineering and consulting firm that offers a comprehensive array of services designed to align with business areas that are critical to our clients' success. Our clients range from large utility systems with over 250,000 meters to small systems with less than 3,000 meters.

NRECA Silver Associate Member

Schweitzer Engineering Laboratories Inc. (SEL)

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SEL invents, designs, and builds digital products and systems that protect power grids around the world. This technology prevents blackouts and enables customers to improve power system reliability and safety at a reduced cost. A 100 percent employee-owned company headquartered in Pullman, Washington, SEL has manufactured products in the United States since 1984 and now serves customers worldwide. Our mission is simple: to make electric power safer, more reliable, and more economical.

NRECA Silver Associate Member

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Scope Services is the nation's premier utility solutions provider specializing in smart grid projects, outsourced workforce solutions, and maintenance construction services.

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ScottMadden Inc.

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ScottMadden is a leading management consulting firm with practice areas in energy, sustainability, and clean tech; shared services; and federal government. We have served the energy industry for more than 25 years and assisted more than 200 energy clients, including 90 percent of the top 20, performing thousands of successful projects. ScottMadden provides broad, deep energy expertise, coupled with practical business acumen, honed over decades of experience in this industry. We have helped energy industry companies both large and small develop and implement their strategies, plan their businesses, improve their processes, restructure their organizations, and produce results.

NRECA Silver Associate Member

SEDC

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SEDC has been a leader in the development of innovative utility software solutions for nearly four decades. We're committed to providing our users with customer information systems or billing, accounting, capital credits, engineering, and operations applications configured to meet their unique needs. We understand that your success depends on effective communication between a variety of groups and departments, and we strive to deliver software that connects your entire organization. Our enterprise software suite provides the most advanced tools available, including AutoCue IVR and customer communications, ReportIQ data analytics, meter data management, prepaid metering, mobile workforce, document imaging, and work management, among others.

NRECA Service Member

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NRECA Gold Associate Member

Sensus, a xylem brand

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Sensus helps a wide range of public service providers—from utilities to cities to industrial complexes and campuses—do more with their infrastructure to improve quality of life in their communities. We enable our customers to reach farther through the application of technology and data-driven insights that deliver efficiency and responsiveness. We partner with them to anticipate and respond to evolving business needs with innovation in sensing and communications technologies, data analytics, and services.

NRECA Platinum Associate Member

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Service Concepts, created by co-ops for co-ops, serves hundreds of co-ops nationally with energy- and water-efficient products, kits, and programs. As part of the AM Conservation Group of companies, Service Concepts provides value-added solutions with your members in mind.

NRECA Silver Associate Member

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Since 1927, Chattanooga-based Sherman+Reilly, now a Textron company, has been a leading manufacturer of tools and equipment for underground and aerial transmission and distribution of electrical power and communications systems, including a complete line of battery-powered cutters and crimpers, single and bundle blocks, pullers, tensioners, and reel trailers. Sherman+Reilly is known for offering customers some of the most advanced stringing equipment and toughest and most durable stringing blocks and tools available in the industry, all with a focus on operator safety, ergonomics, and environmental comfort. Please visit our website to read more.

NRECA Silver Associate Member

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Sherrill Inc., founded in 1983 and headquartered in Greensboro, North Carolina, is the world's leading manufacturer and distributor of tree care and work at height equipment. In 2016, Sherrill launched the Notch and Rope Logic brands, which offer the highest quality tree-care tools and spliced goods available on the market today. Sherrill's vision is to become the world's leading supplier to professionals and athletes who "Work Elevated." These consumers depend on Sherrill's ropes, technical equipment, and clothing to work and pursue their passions safely, efficiently, and comfortably, high above the ground.

NRECA Silver Associate Member

Siemens

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Siemens Corporation is a U.S. subsidiary of Siemens AG, a global powerhouse focusing on electrification, automation, and digitalization. One of the largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of power generation, distribution, and transmission systems as well as medical diagnosis.

NRECA Silver Associate Member

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Silicon Ranch Corporation is one of the nation's leading developers, owners, and operators of solar energy plants. We understand the value that not-for-profit rural electric cooperatives and public power districts bring to their customers across the country. Silicon Ranch is proud to have established positive and productive relationships with prominent local co-ops throughout the United States. As the partner of choice for a diverse set of forward-thinking companies, Silicon Ranch brings all the benefits of utility-scale solar energy together in a turnkey model that requires no capital investment from our stakeholders.

NRECA Platinum Associate Member

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Single Phase Power Solutions LLC makes the BELLE Motor, the world's only large horsepower single-phase motor. Using patented

Written-Pole technology, the BELLE Motor can deliver up to 100 HP to applications without the need for a variable-frequency drive or other phase converter.

NRECA Gold Associate Member

SkyHelm Technology

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SkyHelm provides flexible, comprehensive IT consulting and solutions for enterprises with unusually complex and mission-critical IT needs. Leveraging our successful track record with electric grid and other critical infrastructure networks, SkyHelm has built a utility-focused NOC from the ground up using best-in-class networks, software, and communication systems. Your focus is to provide safe, affordable, and reliable power by ensuring the grid is always up. Our teams monitor your network 24/7/365 for abnormalities in performance and security breaches to ensure your communication network is always up. We offer holistic network operations management, a comprehensive network, and SCADA cybersecurity.

NRECA Silver Associate Member

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Skylar Energy is an energy trading and marketing organization focused on term-structured transactions. Our experience in energy markets allows us to serve clients by providing them with unique, customized, structured solutions, which are often difficult to find in the marketplace. Skylar can best be described as a hybrid organization that can invest as well as any private equity firm, quote prices as well as any trading house, build assets as well as any development company, structure products as well as any bank, warehouse risk as well as any long-term fund, and find physical or financial solutions as well as any merchant energy firm—and we do it faster and more efficiently than others.

NRECA Silver Associate Member

Smartenit Inc.

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Smartenit is a holistic internet of things solutions provider with three focus areas—energy, water, and security. Our protocol-agnostic solutions include utility-grade, high-capacity, metering load controllers, approved gateways, electric vehicle chargers, various sensors, and controllers for irrigation, lighting, appliances, and security equipment. Smartenit is a one-stop shop for things, platforms, apps, and end-to-end solutions.

NRECA Silver Associate Member

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SmartWorks, Partner Software, and dataVoice International are trusted providers of feature-rich turnkey utility solutions. Our products include solutions for meter data management and analytics, customer engagement, outage and call management, and map-based field applications.

NRECA Gold Associate Member

Snap-on Industrial

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Snap-on Industrial is a direct supplier of the company's diagnostics, shop repair equipment, and information and management systems software, along with hand and power tools and tool storage. We provide a broad range of services, from complete CAD shop layout and installation of new facilities including work stations, vehicle lifts, etc., through training in heavy-duty diagnostics, tool safety, and torque. We manufacture custom tools that allow access to fasteners in difficult repair situations, and we regularly interface with electric utility management and tool committees. Snap-on industrial services our products on-site at the customer location and provides competitive pricing.

NRECA Silver Associate Member

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Soltex provides quality dielectric insulating fluids for both underground high-voltage cable systems and transformer equipment. Soltex represents Ergon HyVolt hydrotreated naphthenic oil and Midel natural and synthetic ester-based transformer fluids. Warehousing and distribution from our Houston-area and Belleville, Ontario, Canada facilities, allows for efficient servicing in drums or bulk shipments. Soltex has a history of working with major utilities, cable manufacturers, and contractors, with an excellent track record of exceptional quality.

NRECA Silver Associate Member

SOS Intl

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SOS Intl, a leading provider of training and consulting to the power industry, rigorously tracks and interprets North American Electric

Reliability Corporation (NERC) Reliability Standards for system operations. We expertly translate the standards into customized education and compliance solutions, helping entities manage risk and ensure reliability for the North American power grid. SOS offers instructor-led and online courses, accompanied by sophisticated computer simulation. All are designed using the latest systematic approach to training, as required by the North American Electric Reliability Corporation.

NRECA Silver Associate Member

Southeast Lineman Training Center

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Southeast Lineman Training Center (SLTC) is the premier training school for apprentice training, consistently producing an elite group of highly trained and certified graduates. We accomplish this through a training style and philosophy that is unlike any other program offered in the country. SLTC offers an intensive 15-week program, the Electrical Lineworker Program (ELP). In the ELP, students learn how to climb wood and steel structures, install crossarms and hardware on poles, install conductors and pole line equipment, operate the equipment, and use various tools of the trade in simulated conditions.

NRECA Silver Associate Member

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We are a leading nonprofit research organization focused on innovative technology solutions for clean energy, clean air, and clean water. We objectively assess new technologies and provide process development support to private-sector clients, including inventors, technology providers, and financial investors. We develop and test air and water emissions-control technologies for leading electric power utilities, industrial manufacturers, municipal water utilities, and related trade organizations. We partner with private-sector firms and government agencies to develop new-to-the-world technologies that transform energy generation, chemical synthesis, and air and water purification.

NRECA Silver Associate Member

Southland Utility Services

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Southland Utility Services, Inc., located in DeFuniak Springs, Florida, provides utility construction support for Choctawhatchee Electric Cooperative (CHELCO), commercial businesses, residential developers and individual homeowners throughout Northwest

Florida. The services provided include tree services, mulching, brush clearing, underground utility placement, joint trench installation, utility meter reading and underground utility locating

NRECA Silver Associate Member

Southwire Company

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Utilities know that reliability of power is absolutely critical. Southwire meets that challenge with a wide range of innovative distribution wire and cable solutions like SureSeal, PowerGlide, HTS Triax, and the Proof Positive family of products to ensure the power stays on when—and where—it's needed the most. Southwire is also the trusted, single-source supplier for all of your substation needs. Our simplified ordering process helps reduce your freight and inventory costs. Our wire and cable products can be cut to length to help eliminate waste. Stocking and kitting services ensure you get exactly the materials you need, and our regional distribution centers ship those products to you exactly when you need them.

NRECA Silver Associate Member

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Sparks Energy Inc. was founded in 2007 to address a growing need by both investor owned utilities and electric co-ops for a quality workforce to perform storm response and energy restoration services. The Sparks Energy Inc. team has over 35 years of experience in utility construction and management. Sparks is a committed leader in energy restoration management. Our crews are qualified for overhead and underground distribution, transmission, substation, and right-of-way operations. We are composed of both union and non-union crews. Our crews remain disassociated with mutual aid, giving us the ability to move throughout the U.S. without having to request RMAG releases.

NRECA Platinum Associate Member

Spatial Business Systems Inc.

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Spatial Business Systems Inc. provides software and services solutions to help their clients leverage the power of location-based data from CAD, geographic information systems, and other information systems. They provide innovative offerings that allow organizations to streamline their business processes and reduce costs.

NRECA Silver Associate Member

sPower

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spower.com

Headquartered in Salt Lake City, sPower is the largest owner of utility-scale solar assets in the U.S., with 150-plus projects and more than 5 GW of projects under development. sPower is led by a seasoned management team with a 20-year track record of successful work in the energy sector. The same team founded EnergySolutions (NYSE:ES) and ISG Resources (sold to Headwaters, NYSE:HW). This team now includes experts across all phases of the development chain—from land purchases to interconnection to operations and everything in between. sPower is committed to providing economically responsible power tailored to the needs of its clients. We are the renewable energy company that delivers on its promises.

NRECA Silver Associate Member

SPX Transformer Solutions, formerly Waukesha Electric Systems

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As one of the largest U.S. manufacturers of power transformers, SPX designs, builds, and tests its units according to the highest technical and quality standards. Additionally, SPX provides complete transformer service solutions and components that consistently receive high customer satisfaction ratings. The Service Group's capabilities include installation, oil processing, field testing, health assessments, retrofits, and repairs for SPX and other competitively branded products. The Components Group offers load tap changer (LTC) failure analysis, reverse engineering, and a variety of manufacturers' LTC replacement parts, transformer health products, and comprehensive LTC maintenance courses for all skill levels.

NRECA Silver Associate Member

Standard Solar Incorporation

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With access to \$300 million in low-cost project capital available from international energy giant Énergir, the new Gaz Métro, Standard Solar delivers superior solar projects—from start to finish. Our extensive team of experts guide developers, installers, EPCs, utilities, municipalities, educational institutions, communities and landowners at each step of the solar-project process—from development and to engineering, construction and maintenance. Standard Solar deploys smart money for smarter energy solutions.

NRECA Silver Associate Member

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Stanley Consultants, a global engineering service provider, focuses on power generation, transmission, distribution, and substations. We bring global knowledge, a century of experience, and multidisciplinary capabilities to serve our private and public clients.

NRECA Silver Associate Member

Staples Advantage

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Staples Advantage, the business-to-business side of Staples, partners with you as a trusted advisor and to make your workday a little easier. Whatever you need—supplies, technology, managed print services, cleaning products, safety, coffee and breakroom, furniture, print, logoed items, and more—Staples has it.

NRECA Platinum Associate Member

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STATES terminal blocks and test switches are designed and manufactured by Megger to facilitate the calibration, disconnecting, troubleshooting, checkout, and testing of meters, relays, instruments, transducers, and control systems. Test technicians and engineers have long depended on these high-quality STATES products to provide easy access to wiring on panelboards and switchboards. For increased safety, durability, ruggedness, and reliability, they incorporate many features in material composition and design construction.

NRECA Silver Associate Member

Storm Services LLC

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Storm Services offers full basecamp services, including sleep trailers and tents, showers, laundry, catering, ice, porta-johns and service, gray water removal, management, tower lighting, generators, hand-washing units, communication, garbage disposal, air conditioning and heating, freezer and refrigerated trailers, and dry storage trailers.

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Since 2008, Strata has been at the forefront of the solar industry, inventing new ways to bring more solar to more communities across the country. Our experience enables us to navigate changes in the market and identify opportunities to partner with our customers so that together, we can bring more successful projects online. We are proud to be transforming the solar industry through collaborative partnerships that allow us to develop, build, and operate quality projects nationwide. Strata offers turnkey financing; development; engineering, procurement, and construction; operations and maintenance; and asset management for a wide variety of solar applications. We also curate custom solutions for customers who need only certain services.

NRECA Gold Associate Member

Summit Group

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Summit Group LLC is a results-driven company that provides innovative business solutions across three core competencies: branded merchandise, engagement and recognition programs, and marketing creative services, and we also offer promotional products. Summit Group LLC is driven by the success of our clients, and we maintain the highest standard of internal excellence for every aspect of a solution.

NRECA Silver Associate Member

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Sunrun (Nasdaq:RUN) is the nation's largest dedicated residential solar, storage, and energy services company with a mission to create a planet run by the sun. Since establishing the solar-as-a-service model in 2007, Sunrun leads the industry in providing clean energy to homeowners with little to no upfront cost and at a savings to traditional electricity. The company designs, installs, finances, insures, monitors, and maintains the systems, while families receive predictable pricing for 20 years or more. The company also offers Sunrun BrightBox solar power generation with smart inverter technology and home battery storage. For more information, please visit www.sunrun.com.

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SureBill manufactures, sorts, and mails millions of paper bills, electronic bills, and statements each month. All work is done

in-house. We manufacture 1 million envelopes daily along with all of the inserts, paper, and electronic bills. Our complete control of the manufacturing process allows SureBill to offer excellent prices combined with the best possible service, quality, and flexibility. We physically sort the mail and commingle by ZIP code to get the best possible postage rate. As a detached mail unit, the U.S. Postal Service is on site, ensuring fast delivery. Financially strong and growing; family owned for 35 years. Large enough to provide economies of scale and small enough to provide you the service you deserve!

NRECA Silver Associate Member

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Survalent (survalent.com) is the most trusted provider of advanced distribution management systems for electric, gas, transit, and water/wastewater utilities across the globe. Over 600 customers in 30 countries rely on the SurvalentONE platform to effectively operate, monitor, analyze, restore, and optimize operations. By supporting critical utility operations with a fully integrated solution, our customers have significantly improved operational efficiencies, customer satisfaction, and network reliability.

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Survey and Ballot Systems

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The foundation of a successful cooperative is member trust and involvement. A major factor in that success is a fair election process that gives all members the ability to vote. Since 1990, Survey and Ballot Systems has helped plan and manage cooperative elections across the country. As a trusted election partner, we provide expert consultation while streamlining the voting process. Whether you need traditional paper balloting, online voting, on-site voting, or a hybrid election, we have the expertise to make it happen. Let us be the independent third party to administer your election or provide you with the tools to run it yourself. Contact us today for more information on your next election!

NRECA Silver Associate Member

Symbiosa

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Symbiosa hosts and professionally manages utility geographic information system (GIS) data infrastructure along with the configurations and complex interfaces needed to maintain the data. We develop your GIS using available data sources and provide continuing management, maintenance, and technical support to your utility staff.

NRECA Silver Associate Member

T

T&R Electric Supply Co. Inc.

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t-r.com

"The transformer people"—we buy, sell, rent, and repair distribution and power transformers through 30 mVA and 138 kV, along with related high-voltage switchgear.

NRECA Silver Associate Member

Tantalus

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Tantalus provides TUNet, an award-winning, multipurpose technology platform that enables smart grid applications, such as advanced metering infrastructure, load management, and grid optimization for electric, water, and gas cooperative and municipal utilities. TUNet uses IP and radio-frequency communications for a cost-effective hybrid network that delivers proven performance

across rugged terrain and low meter densities. Tantalus helps utilities improve reliability and reduce operational cost through applications that leverage distributed computing capability embedded at every endpoint.

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TEA SOLUTIONS

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TEA Solutions is a national energy marketing and risk management services provider with offices in Jacksonville, Florida, and Seattle (Bellevue), Washington. TEA Solutions leverages the talent, systems, and tools of The Energy Authority, which provides trading and risk management services to over 50 clients—with combined generating assets of over 29,000 MW. Our roots: Because we were created by and exist to serve community-owned utilities, TEA Solutions takes the time to understand your unique values and objectives. We then focus on creating strategies to manage your risk and help you accomplish your goals.

NRECA Gold Associate Member

Team Fishel

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Team Fishel provides engineering, construction, installation, and maintenance services of substation, transmission, and distribution systems. Services include overhead reconductoring, underground cable replacement, and emergency storm restoration. Backed by 79 years of experience and over 1,800 team-mates nationwide, we safely deliver projects on time and on budget. Team Power Group LLC specializes in overhead power-line transmission projects in the Central region of the U.S., including Texas, Oklahoma, Arkansas, Alabama, Mississippi, and Louisiana. JL Malone LLC specializes in substation construction, installation, maintenance, and repair in the Southeastern region of the U.S., including Kentucky, Tennessee, Virginia, Georgia, South Carolina, North Carolina, Mississippi, and Louisiana.

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Tech Products Inc.

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Tech Products Inc. is your local source for identification tags, including distribution pole tags, phase marking, transformer labels, substation signs, and transmission tower aerial observation tags. Since 1948, Tech Products has been innovating great new products to mark everything from underground distribution cable to overhead phasing. We helped Cass County Electric Cooperative in

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TechServ Consulting and Training Ltd.

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TechServ is a recognized leader of contract services because of the assurance of quality that exceeds client expectations. TechServ has the resources and financial stability to complete projects of any size and is fully insured for most client requirements. A progressive company with experienced management and staff, TechServ provides an innovative business approach to the unique needs of the utility and general industry. Services provided are most all distribution-and communication-related, including design and project development, construction oversight and coordination, joint-use administration, and work order inspections, and transmission construction oversight and coordination.

NRECA Silver Associate Member

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TPS, established in 1997, is a conservative marketing company focusing on energy management and the optimization of energy, both physically and financially. TPS is the leading energy management company in the United States. As a result, TPS holds a unique position in the industry with expertise, systems, and knowledge unparalleled by others in the energy management industry.

NRECA Silver Associate Member

Terex Utilities

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When it comes to utility equipment, our priorities are the same as yours. Safety, reliability, cost, and return on investment are at the top of that list. For over 70 years, Terex has been listening and turning challenges into solutions that keep you up and working, day in and day out. When your crews are out in the harshest conditions providing the services people depend on, you need to know you can depend on our equipment to do the job. We know utilities need the toughest, most reliable equipment and service support. Terex equipment is built for the unique demands of your work.

NRECA Gold Associate Member

Terracon Consultants Inc.

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Terracon is an employee-owned consulting engineering firm that has provided quality services to clients since 1965. From its roots in geotechnical engineering, Terracon has evolved into a successful, multidiscipline firm specializing in geotechnical, environmental, construction materials, and facilities services. Last year, Terracon provided these services throughout the country to more than 400 transmission and substation projects in the electric power industry. Terracon has consistently achieved growth above the industry average and ranks 41 in Engineering News-Record's 2008 list of the top 500 design firms. Terracon has 3,000 employees and nearly 100 offices in 34 states.

NRECA Silver Associate Member

TextPower Inc.

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TextPower provides dozens of electric cooperatives around the country with text messaging solutions designed specifically for the utility industry. Whether you are looking for two-way outage notifications that allow members to text in when they have an outage; sending Beat the Peak alerts; notifying members of severe weather conditions, overdue invoices, or low balances on prepaid accounts; or improving communications with your field personnel, Textpower's SmartAlerts provides you with field-tested solutions. TextPower has been chosen by a number of key providers in the electric cooperative industry to be integrated with their systems, including Milsoft, Daffron, and Cooperative Response Center.

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The StressCrete Group

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The StressCrete Group offers spun pre-stressed concrete poles for utility,

transmission, street and area lighting, sports lighting, and specialty poles for the electrical, communications, and utility industries. We also produce a comprehensive line of high-performance decorative outdoor luminaires, decorative metal poles and arms, and site amenities, including bollards, benches, and receptacles.

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T-Mobile ISP

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T-Mobile partners with electric cooperatives to provide fast and reliable internet service to underserved communities through hybrid fiber/fixed wireless broadband networks.

NRECA Gold Associate Member

Today's Power Inc. (TPI)

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Created to serve Arkansas' electric cooperatives, our fellow cooperatives in neighboring states learned of Today's Power Inc.'s program and wanted a known business partner to provide their solar power system. Using the highest quality materials, building to utility-grade standards, and with knowledge of utility rate structures, we customize systems to extract maximum value for cooperatives. TPI is now an integral part of helping the electric cooperative and public power sector serve members who are interested in solar and emerging technologies, and it has access to a wide range of expertise and resources. TPI offers turnkey solar solutions, battery storage, and electric vehicle charging stations.

NRECA Gold Associate Member

Track Star International Inc.

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Track Star's automatic vehicle location GPS system is affordable, private, powerful, and flexible. Track Star integrates the powerful functionality of an assortment of GPS-enabled devices to provide you with a richly featured yet amazingly affordable GPS vehicle tracking system. It is the most powerful and affordable software system available for fleet operations of all types and sizes. Its completely autonomous configuration makes it the ideal choice for managing your fleets.

NRECA Silver Associate Member

Tradewind Energy Inc.

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Tradewind Energy is one of the largest wind and solar project development companies in the U.S. We deliver long-term power projects that tap into nature's resources to produce sustainable energy for our nation. We've earned a reputation for innovation in the market, for our highly skilled and passionate

team and for our deeply held respect for the people, environment, and communities where we develop our projects.

NRECA Silver Associate Member

Trajectory Energy Partners Inc.

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Our team built careers in clean energy and community engagement, and we understand how to build clean energy projects supported by their communities. We formed Trajectory Energy Partners to bring a new approach to clean energy development—an approach that starts with understanding the communities we work in and focuses on quality projects that become a welcome part of their surroundings. We're working with interested community members, organizations, businesses, and landowners to evaluate their options for potential projects so we can hit the ground running as soon as possible. If you are ready to bring solar to your community, let's talk. Reach out at info@trajectoryenergy.com.

NRECA Silver Associate Member

Transgard Systems Inc.

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Transgard Systems Inc. manufactures and installs an animal-deterrent system to eliminate substation outages caused by animal intrusion. The patented system is specifically designed to prevent climbing animals, such as squirrels, raccoons, and snakes, from gaining access to substation equipment. The modular design makes the system easy to install and easy to use. In less than one day the system can be installed, with the substation energized, and the substation equipment will be protected. With over 2,500 installations in the U.S. and Canada, Transgard has a proven track record of eliminating outages and saving money. In most cases, one outage prevented will cover the cost of the entire system.

NRECA Silver Associate Member

TransWorld Network Corp.

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TransWorld Network Corp. (TWN) owns and operates one of the country's largest wireless broadband networks, covering over 250,000 square miles. In 2019, TWN will work with electric cooperatives to design, build, and fully manage fiber-optic networks to provide even more reliable, accessible, and affordable internet service to co-op members.

NRECA Gold Associate Member

TRC Companies Inc.

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TRC is a national engineering, environmental consulting, and construction management firm that delivers full life-cycle solutions—from power system and critical issues studies through permitting, engineering, construction, air measurements, auditing, operational support, and decommissioning—to help our electric cooperative clients provide safe, reliable power. As your trusted advisor, our expert staff get to know you and your conditions, goals, and business requirements to become a seamless extension of your team. We work with electric co-ops every day across the nation on a wide range of issues and services, including substation, distribution, and transmission engineering and construction.

NRECA Silver Associate Member

TREES LLC

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TREES LLC is a provider of professional vegetation management services to utility and municipal customers nationwide. As the company has grown over the past 60 years, so has the scope of the services we provide in order to continuously meet the changing needs of our customers. TREES is one of the largest utility vegetation management service companies in the United States. As a market leader in the industry, TREES has developed a reputation for professionalism, quality, safety, and dependability among some of the nation's largest utility companies. TREES offers dependable service at competitive prices. Our Certified Arborists are available to discuss your total vegetation management needs.

NRECA Silver Associate Member

Trilliant Inc.

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Trimble Energy

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Trimble Energy's strategic and operative asset management, visual and 3D asset management solutions, and mobile solutions enable electric cooperatives to increase system reliability, enhance system integrity, lower costs, and optimize investment management strategies. Visit us at energy.trimble.com.

NRECA Gold Associate Member

TSTM Inc.

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TSTM is a manufacturer of voltage transformers for metering applications, reducing 480 volts as well as adapters/VT Packs, converting self-contained 480/277, 480/240, and 480 to transformer-rated meters. Our family of toroidal voltage transformers outperform heavy, bulky conventional voltage transformers as well as protecting against voltage transients. Our FlexPack system also removes 480 V from the meter socket. Our products meet and adhere to Occupational Safety and Health Administration and arc flash safety requirements. TSTM has a 15-year limited warranty, including lightening on VT Packs, AccuPacks, VersaPacks, and PowerPacks wired to TSTM specifications. Our products reduce your total cost of ownership.

NRECA Silver Associate Member

U**UC Synergetic Inc.**

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UC Synergetic is an engineering and technical services firm serving the energy delivery and communications industries in North America.

Ulteig

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Ulteig delivers comprehensive design engineering, program management, and technical and field services that strengthen infrastructure vital to everyday life. Ulteig is an employee-owned company that provides its expertise to a wide range of public and private clients. The company is ranked in the Top 500 engineering design firms in the nation by Engineering News Record and is considered among the top firms in electrical transmission and distribution services. With a strong focus on grid modernization, asset renewal, operational excellence, regulatory compliance, and transmission right-of-way optimization, our

innovative solutions help utilities keep up in a rapidly evolving market.

NRECA Silver Associate Member

United Rentals

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Founded in 1997, United Rentals is the largest equipment rental company in the world, with a store network nearly three times the size of any other provider and locations in 49 states and 10 Canadian provinces.

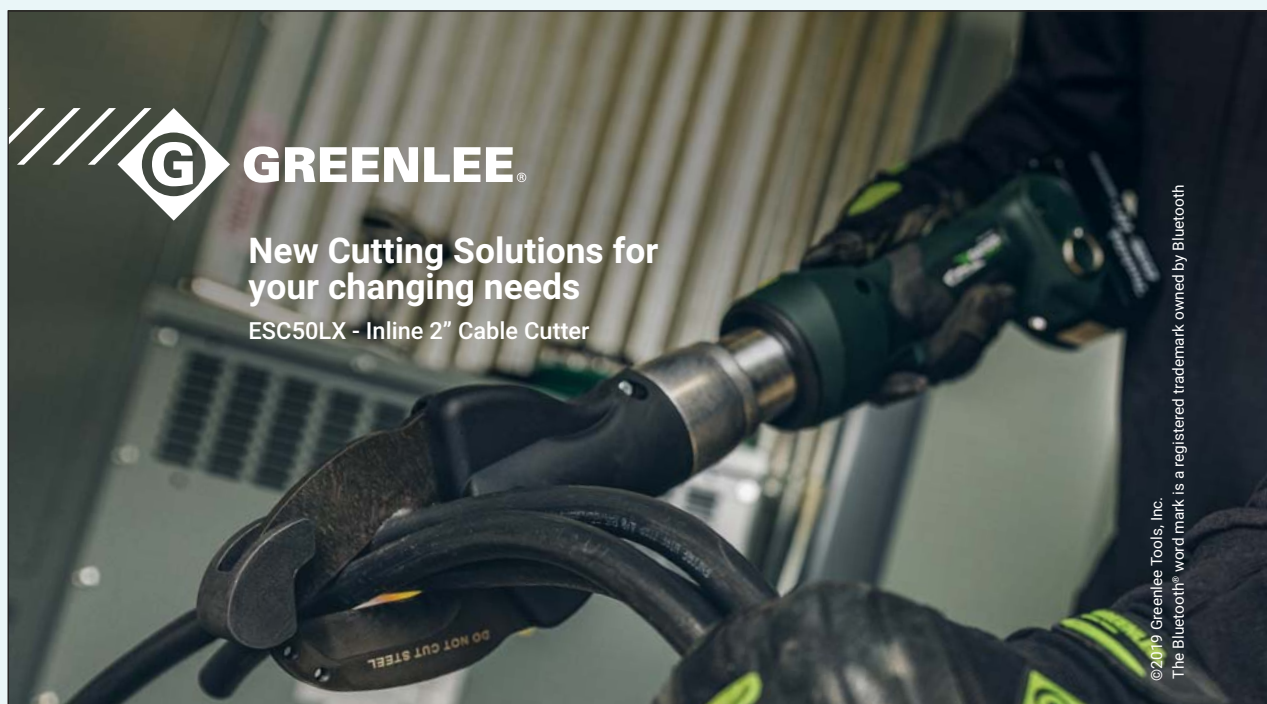
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USIC Locating Services LLC

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Utilismart Corporation

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Utilismart is the turnkey, single point of contact, meter data management online data solution company. We provide end-to-end managed advanced metering infrastructure operations, customer information system integration (meter-to-cash), voltage monitoring, transformer overloading, outage management, and theft detection.

NRECA Gold Associate Member

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NRECA Silver Associate Member

Utility API

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UtilityAPI is mission-driven software company based in Oakland, California. Our data exchange tools are used to accelerate deployment and monitoring of distributed energy resources and energy efficiency technologies. Some of the top solar, storage, and energy efficiency companies use us every day. For utilities and utility vendors we enable seamless data access and behind the meter insights through our safe, secure, and standardized data exchange platform. We also work with regulators and local governments to shape effective utility data access policies.

NRECA Silver Associate Member

Utility Transformer Brokers (UTB)

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UTB is among the top providers of oil-filled power transformers in the nation. The experts at UTB pride themselves in quick response times, creative solutions, and an overall dedication to customer satisfaction. UTB has one of the largest databases in the nation of used, new, and rebuilt transformers that include substation transformers, unit substation transformers, generator step-up transformers, transmission auto transformers, mobile transformers, distribution pad-mount and pole-mount transformers. We have a unique ability to quote our customers multiple options to meet their project needs, whether that be a short lead time, low price, or both.

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V&S Schuler Engineering Inc.

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V&S Schuler, an industry leader for more than 60 years, supplies rural cooperative, municipal, and investor-owned utilities with galvanized and weather steel substations, transmission, and distribution structures and engineered substation packaging solutions. We are AISC and ISO 9000:2008-certified.

NRECA Silver Associate Member

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For over 80 years, Vaisala's technology has guided decision-making in weather-critical industries. As the fuel for wind and solar projects, weather plays a critical role in the renewable energy industry, and Vaisala helps customers understand its impact on their bottom line. Through the acquisitions of 3TIER and Second Wind, Vaisala brings together the industry's foremost experts on advanced measurement, assessment, and forecasting to support renewable energy developers and operators around the world.

NRECA Silver Associate Member

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Valmont Utility is the industry leader in custom engineering and manufacturing of steel, concrete, and hybrid pole structures

for electrical transmission, substation, and distribution applications. Operating globally, Valmont Utility has 12 North American distribution facilities and three in global regions, meeting the high-stakes delivery challenges.

NRECA Gold Associate Member

Vantage Point Solutions

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Better broadband means better lives. Vantage Point helps broadband providers deliver on that promise through start-to-finish engineering and consulting services. Our solutions are customized to meet your cooperative's broadband needs and goals, from due diligence to deployment—and beyond. Vantage Point combines professional engineering and extensive technical and regulatory expertise to provide technically advanced, economically viable solutions. From due diligence and network design to the nuances of regulatory filing and everything in between—we get to know your cooperative, your team, and your goals to build a customized solution that meets your needs and exceeds your expectations.

NRECA Silver Associate Member

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Vaughn Thermal Corporation is a leading manufacturer of long-life, high-efficiency electric water heaters, heat pump water heaters, and thermal storage tanks. The company produces large-capacity electric thermal storage (ETS) water heaters for load management and demand response programs across the country. Vaughn Thermal Corporation is first to market with V-GRID grid-enabled large-capacity ETS water heaters for load management, off-peak water heating, and renewable energy storage.

NRECA Silver Associate Member

Verizon

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Verizon is simplifying grid modernization. Verizon Grid Wide Utility Solutions is a fully scalable internet of things platform as a service for utilities to remotely monitor, manage, and read their grid and delivery system. This offering provides cost-effective, efficient, and easy on-ramp assistance with smart grid modernization. It also offers an integrated solution for smart metering, meter data management, demand response, and distribution monitoring and control through a single, securely managed, hosted cloud-based software platform. Discover how

Verizon Grid Wide Utility solutions can help you meet your challenges and satisfy your customers.

NRECA Platinum Associate Member

Vermont Glove

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Founded in 1920 by Richard Haupt, Green Mountain Glove Company has been committed to quality for nearly 100 years. Richard's sons Kurt R. and Karl operated the business until Kurt's son Kurt A. joined his father as partners. Kurt A. and daughter Heidi Haupt carried on the family legacy and in 2017 they joined forces with Sam Hooper of Brookfield, Vermont. Heidi and Sam continue to own and operate the business, crafting the highest-quality gloves and are proud of the Vermont roots and heritage that define our culture and service. Our gloves are made from start to finish exclusively in our Randolph, Vermont factory. Our employees are dedicated craftspeople and assemble each glove by hand from high-quality leather. The result: unparalleled quality and durability.

NRECA Silver Associate Member

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We are a highly specialized consulting firm that provides pragmatic and actionable insights on the most critical issues faced by providers and consumers of telecom, media services, and technology. At Vertix, we pursue our collective passion for helping carriers, OEMs, network infrastructure companies, MSOs, network services vendors, equipment suppliers, and telecom and technology consumers resolve their most complex strategy, sourcing, and deployment challenges. From helping a carrier deploy a 4G network to negotiating an IoT services contract for a client in the manufacturing sector, we cover the entire TMT value chain. Our focus and simplified model enable us to deliver an alternative vision for our clients: producing client-centered solutions in a way that only experienced and proven professionals can.

NRECA Silver Associate Member

VETRO FiberMap

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VETRO FiberMap is an innovative, cloud-native fiber management geographic information system mapping platform purposefully designed to meet the needs of broadband providers, municipalities, and engineering companies building the next generation of internet infrastructure, from strategy to splice. The platform enables everyone who needs fiber network information—from engineering to sales, marketing, and management—to access accurate data

from anywhere using just a web browser. VETRO FiberMap provides an intuitive and accessible tool that enables customers to plan, design, build, sell, report, and manage their broadband networks using a single, cost-effective approach.

NRECA Silver Associate Member

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Virginia Transformer (VTC) is one of the leading transformer suppliers in the industry, designing and manufacturing power transformers. Our expertise extends across every market—utility, industrial, commercial, alternative energy, marine and offshore, transit, and data centers. Through an alliance with Georgia Transformer, VTC provides units from 345 kVA to 500 MVA. VTC offers solutions for the widest range of markets and applications. With its strength in design and engineering, and the additional resources of our other ISO-certified plants, VTC offers dry and liquid type units. VTC is making strides in the wind and solar markets with its generator step-up pad-mount transformers.

NRECA Gold Associate Member

VON Corporation (The)

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W.A. Kendall/Seelbach is a full-service vegetation management company with 65-plus years of experience in the electric utility industry. We offer right-of-way clearing, herbicide treatment, and storm assistance. We have experienced consistent growth by valuing every customer. Our customer service sets us apart. We are the clear choice.

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Western Control Systems

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James Carter, Executive Vice President
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Georgia
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Kentucky
Mississippi
Tennessee

Region 4
Indiana
Michigan
Ohio
West Virginia

Region 5
Illinois
Iowa
Wisconsin

Region 6
Minnesota
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South Dakota

Region 7
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Nebraska
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Region 8
Arkansas
Louisiana
Missouri
Oklahoma

Region 9
Alaska
California
Hawaii
Idaho
Montana
Nevada
Oregon
Utah
Washington

Region 10
Arizona
New Mexico
Texas

NATIONAL

NRECA ANNUAL MEETING

A new NRECA board president took the gavel, a new secretary-treasurer moved into the association's officer ranks, and contributions to the rural electric program nation- and worldwide earned the recognition they deserve when co-op leaders from across the country assembled for the association's 77th Annual Meeting.

NRECA CEO **Jim Matheson** set the tone for the meeting as he welcomed thousands of co-op board members, executives, and employees to the gathering in Orlando, Florida. "Cooperative leadership is community leadership, and we use it to get things done," he said.

Curtis Wynn, president/CEO at Roanoke Electric Cooperative, Aulander, North Carolina, moved up from vice president to president of the NRECA board, succeeding **Phil Carson**, a board member at Tri-County Electric Cooperative, Mount Vernon, Illinois. "Strong leadership is essential to helping NRECA and the entire cooperative family

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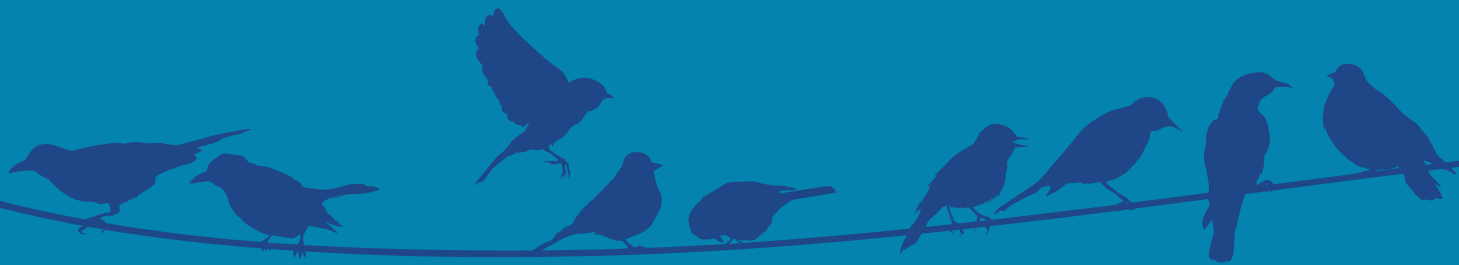


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navigate the many opportunities and challenges facing our industry,” Matheson said. “Like Phil, Curtis is an extremely thoughtful and capable leader, and I’m looking forward to his continued leadership as president.” Wynn pledged to help chart a careful, optimistic co-op course during his presidency. “I will be challenging all of us to fully examine the way we view our future, our individual cooperative’s place in it, and how we can lead our co-ops and our communities into the next generation,” he said. Carson echoed the theme in his farewell address as president. “Our co-ops exist for the sake of our communities,” he said. “We are in the business of providing the quality of life our members need.”

Chris Christensen, a board member at NorVal Electric Cooperative, Glasgow, Montana, advanced from secretary-treasurer to vice president, and **Tony Anderson**, general manager at Cherryland Electric Cooperative, Grawn,

Michigan, joined the board’s officer corps, succeeding Christensen as secretary-treasurer.

NRECA bestowed its highest honor, the **Clyde T. Ellis Award**, to **Martin Lowery**, the association’s executive vice president emeritus and board chairman of the National Cooperative Bank. Named in honor of NRECA’s first CEO, the award recognizes exemplary contributions to rural electrification and the development and use of natural resources. Lowery, a Cooperative Hall of Fame inductee, is also the U.S. representative on the board of the International Cooperative Alliance and NRECA’s member of the board of the U.S. Global Leadership Coalition. “Martin is extraordinarily dedicated to the cooperative purpose and stands out among the leaders within our industry,” Carson said. “His contribution to the success of NRECA and its members is unparalleled.”

The association’s President’s Award went to two co-op leaders noted for their work in expanding rural broadband: **Ken Johnson** and **Bob Hance**.

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Johnson, senior vice president of broadband programs at the National Rural Telecommunications Cooperative (service), Herndon, Virginia, was CEO & general manager at Co-Mo Electric Cooperative, Tipton, Missouri, when President **Donald Trump** chose him as Rural Utilities Service administrator. "Ken is a standard bearer and a wealth of knowledge for electric cooperatives that are working to bridge the digital divide," Carson said. Hance, president & CEO at Midwest Energy & Communications, Cassopolis, Michigan, has testified before Congress as part of his national and state advocacy for bringing high-speed internet service to rural America, and he led the drive for passage of an NRECA resolution last year calling for federal funding to help co-ops provide the service. "Bob has been a change agent," Carson said. "Through his advocacy efforts and sheer willpower, he has helped bring rural broadband and the needs of rural communities to the fore."

Dakota Electric Association, Farmington, Minnesota, received NRECA's Cooperative Purpose Award, which recognizes co-ops for meaningful contributions to their communities. Dakota Electric worked with its G&T, Great River Energy, Maple Grove, Minnesota, to deploy the first all-electric school bus in the Midwest, speeding the introduction of new electric vehicle technology as a means of boosting energy efficiency, reducing carbon dioxide emissions, and improving safety. "Innovative projects like this require outstanding leadership and an impressive ability to leverage new partnerships to improve lives," Carson said. "Dakota Electric clearly has both."


Lyn Opalka, the former longtime board president at Mohave Electric Cooperative, Bullhead City, Arizona, earned NRECA's **Paul Revere** Award for outstanding achievement in mobilizing grassroots advocacy among co-op consumer-members. She took a lead role in fighting deregulation of the electricity market in her state, rallied member support for regulatory approval of a rate decrease for G&Ts, and helped gather more than 11,000 comments opposing federal greenhouse gas rules. "Lyn's 35 years on Mohave Electric Cooperative's board, 27 years as president, were marked by a sincere dedication to the cooperative and its members," Carson said. "She also demonstrated a strong commitment to grassroots advocacy, working tirelessly to advance the interests of the cooperative and her community."

Ohio Cooperative Living, the consumer magazine published by Ohio's Electric Cooperatives (statewide), Columbus, won the prestigious **George W. Haggard** Memorial Journalism Award. NRECA CEO **Jim Matheson** congratulated **Jeff McCallister**, the magazine's managing editor, and his staff for "beautifully telling the co-op story. ... They have the perfect balance it takes to deliver a polished, professional magazine." Sharing the honor were **Rebecca Seum, Anita Cook, Samantha Kuhn, Patrick Higgins, Magen Howard, Adam Specht, Chris Hall**, and **Nila Moyers**.


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NRECA's International Award was presented to **Chuck Dawsey**, the retired CEO at Benton Rural Electric Association, Prosser, Washington. Dawsey, a former NRECA board member who chaired the association's International Committee, has worked as a consultant on association missions to Uganda, Ghana, and the Philippines. "His efforts to support our international work have been tireless," Carson said.

Dan Waddle, senior vice president of NRECA International, presented an outstanding achievement award to Kaua'i Island Utility Cooperative, Lihue, Hawaii, for "demonstrating leadership and friendship as a model of cooperative support" to two co-ops in the Philippines.

And **Tom Halverson**, president & CEO at CoBank (service), Denver, Colorado, was on hand to present NRECA International leaders with a check for \$250,000 to support the organization's efforts. "To say that the work of NRECA

International is life-changing is not an exaggeration," he said. "It allows individuals, families, and entire communities to grow and thrive."

National Rural Utilities Cooperative Finance Corporation (CFC, service), Dulles, Virginia, has promoted **Graceann Clendenen** to chief administrative officer. Previously CFC's senior vice president of corporate services, Clendenen is a 37-year employee. "This title better reflects her expanded role and responsibilities for coordinating and integrating the day-to-day business functions of CFC as well as leadership in the development and execution of CFC's strategic plan," CEO **Sheldon Petersen** said.

REGION 1

MOURNING WEBB

Employees, board members, and member-owners at Sussex Rural Electric Cooperative, Sussex, New Jersey, were sorry to learn of the recent passing of **Thomas Webb**, who served on the co-op board for more than three decades until his retirement in 2014. Webb, 90, served for several years as the board's vice chairman and also represented his co-op on the board of Allegheny Electric Cooperative (G&T), Harrisburg, Pennsylvania.

David Koogler, vice president of member services & external affairs at Rappahannock Electric Cooperative (REC), Fredericksburg, Virginia, has been tapped to chair the Virginia Energy Efficiency Council. The council, made



David Koogler

up of representatives of Fortune 500 companies, small businesses, universities, nonprofits, local governments, state agencies, and utilities, works to ensure that energy efficiency is recognized as a key element in the state's economy. "REC already offers member-owners a variety of tools and resources to help them use energy efficiently," Koogler said. "My involvement

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with this state council will allow the cooperative to lead by example and also to learn of more opportunities to help our member-owners use energy more efficiently.” Also at the co-op, **David Johnson** has been promoted to director of member services. Johnson has almost 10 years of experience in the utility industry, most recently as the co-op’s key accounts executive.

Northern Virginia Electric Cooperative (NOVEC), Manassas, Virginia, has selected **Lisa Hooker** as the co-op’s new vice president of public relations. Hooker comes to the co-op from South Central Power Company, Lancaster, Ohio, that state’s largest distribution co-op. A Certified Cooperative Communicator through NRECA’s certification program, she is co-chair of the communications & public relations committee of the Association of Large Distribution Cooperatives. Hooker takes over from **Mike Curtis**, whose recent retirement closed out a 44-year co-op career. NOVEC also said farewell recently to four

veteran employees: **Minnie Hackley**, cashier & receptionist, 43 years; **Bob James**, business development representative, 35 years; **Pat Wilcox**, administrative assistant, 32 years; and **Lorrie Wolff**, customer service representative, 24 years. But as they were wrapping up their NOVEC careers, **Michael Younghans** was just beginning his—he joined the staff as an associate engineer.

Bill Buchanan has taken the reins as president & CEO at Northwestern Rural Electric Cooperative, Cambridge Springs, Pennsylvania, following the recent retirement of **Mary Grill** after 42 years at the co-op. Buchanan comes to the co-op with more than 20 years of chief executive experience, most recently at an Illinois telephone cooperative. “Practicing the cooperative principle of concern for community is important to me,” he wrote in an introductory column in the co-op’s pages of the statewide magazine, *Penn Lines*. “In my latest cooperative role, I have taken the lead on developing new business opportunities, specifically identifying new revenue streams for diversification strategies.” Grill held numerous leadership posts at the co-op in consumer services, accounting, and information technology before stepping into the CEO job in 2014. “One of Grill’s most valued accomplishments at the co-op was the creation of Northwestern REC’s Member-to-Member assistance program in the 1980s,” the co-op’s local pages reported. “Each year, Member-to-Member helps hundreds of struggling member families keep their electric bills paid.”

REGION 2

TRIBUTE TO A LINEMAN AND HIS WIFE

The soon-to-open Paulding College and Career Academy, Dallas, Georgia, will feature an “energy pathway lab” named in honor of a 50-year employee at GreyStone Power Corporation, Douglasville, Georgia, and his wife. The **Jerry Lamar Tucker** and **Ellen Barrett Tucker** Energy





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Pathway Lab will focus on preparing local students for energy and line work careers while paying tribute to Tucker's half-century of service on the co-op's lines and his late wife's support for his demanding career. The co-op recently donated \$50,000 to build the lab. "I think it's great for the kids of Paulding County to have this opportunity," said Tucker, whose wife died shortly before he retired last summer. "I wanted to leave a legacy for my wife, and this is very special to me, that GreyStone decided to honor myself and my wife in this way." Tucker joined the co-op staff as a mapping assistant in 1968, and GreyStone held his job open while he served in Vietnam. A severe foot injury sent him home, with doctors saying he'd never be able to climb poles again. But Tucker proved them wrong and climbed his way to supervisor of line construction & maintenance before retiring. **Brian Otott**, Paulding County Schools superintendent,

thanked the co-op for its donation and invited Tucker to visit the energy lab and its students. "GreyStone has had a commitment to and a partnership with the schools for as long as I can remember," he said. "They are instrumental in us being able to build this college and career academy. We will actually have a pathway to support those students who want to have lineman as a career opportunity. Mr. Tucker, we hope you will come over to the academy and talk with our students about your experience as a lineman."

Ty Peel has capped his 37-year career at West Florida Electric Cooperative, Graceville, with a move into the top staff post. Peel was named executive vice president & CEO recently to take over from **Russell Dunaway**,



whose retirement closed out 41 years on the co-op's staff. Peel joined the co-op's right-of-way department and worked as energy adviser, safety director, manager of transportation & safety, and manager of loss control before advancing to vice president of engineering & operations and now CEO.

J. Matthew Avery has moved up to senior vice president of engineering & operations at Choctawhatchee Electric Cooperative (CHELCO), DeFuniak Springs, Florida, after 16 years at the co-op. Formerly the co-op's vice president of engineering, Avery was promoted following the recent retirement of **Donny Fugate** as vice president of operations. Avery is a graduate of NRECA's **Robert I. Kabat** Management Internship Program and has worked in the utility industry since 1996.

REGION 3

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erative Association (TECA, statewide), Nashville, has been chosen as Magazine of the Year by an organization dear to the state's heart. Tennessee Music Awards, which honors independent artists and music professionals and spotlights others working to advance the state's musical heritage, picked the statewide's prize-winning consumer magazine for the honor. "Our team is honored to receive this Tennessee Music Award," Editor **Robin Conover** said. "Each month, we tell the story of Tennessee, and music is a big part of that story. We actively seek out Tennessee's most talented musicians, artists, photographers, and creators, and share their talents with our readers."

Staffers at Chickasaw Electric Cooperative, Somerville, Tennessee, congratulated 10 co-workers recently for completing their professional certifications, moving up in their fields, and, in one case, marking a major service anniversary. **Chris Parker**, staking/field engineer, rounded his 30-year service milestone, while **Robert**

Hart and **Eric McIntyre** completed the advanced linework training program. **Zach Wadley** passed the Principles and Practice of Engineering (PE) exam, and **Dylan Edmonds** and **Brent Pattat** completed their lineworker apprenticeships and were promoted to journeyman lineworker. **David Long** and **Daniel Reeves** both advanced to metering department service person, while **Nikki Culver** moved up to cashier II, and **April Henson** was promoted to accounting supervisor.

The National Safety Council has named **Anthony Campbell**, president & CEO at East Kentucky Power Cooperative (EKPC, G&T), Winchester, as a "CEO Who 'Gets It,'" a global list of executives who build corporate safety strategies based on leadership and employee engagement, safety management, risk reduction, and performance measurement. "These leaders understand that safety is the cornerstone of every world-class business," said **Nick Smith**, the council's interim president & CEO. Campbell said he was "honored and very humbled" by the honor. "However," he added, "I would be remiss if I didn't give most of the credit to EKPC's employees. It is their hard work, dedication, and commitment to safety that has made our safety program a sustained success. In addition, all EKPC employees and I know this is a never-ending journey. We cannot let our guard down for a second."



Anthony Campbell

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REGION 4 INDIANA'S NEW CHIEF

John Gasstrom has been named CEO at Indiana Electric Cooperatives (IEC, statewide), Indianapolis, following **Tom VanParis's** recent return to Hoosier Energy (G&T), Bloomington, Indiana, after three years in the top statewide post. Gasstrom

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comes to IEC from Georgia System Operations Corporation (service), Tucker, where he was director of compliance. A 25-year energy industry veteran, Gasstrom was at the Georgia co-op service organization for 17 years. "His leadership and deep understanding of the energy industry will be valuable to our member cooperatives as they meet the challenges facing our industry and work to improve the overall economic health, vitality, and quality of life in the communities we serve," said **Gary Gerlach**, president of the statewide board. Returning to Hoosier Energy as executive vice president, VanParis said his years at the statewide proved that the state's 38 electric co-ops face similar challenges and opportunities, and that will shape his approach to serving Hoosier Energy's 18 member co-ops.



John Gasstrom



Tom VanParis

"The concerns, the issues, the challenges they face are actually more common than they believe," VanParis said. "My priority as part of the member engagement division is to provide support to the members in a manner and deliver to which they expect. We will make sure that the products and services we provide to our members bring great value to them."

Staffers and members at Whitewater Valley Rural Electric Membership Corporation, Liberty, Indiana, recently saluted **Sandy Cason**, director of member services & corporate relations, for marking 30 years at the co-op. Whitewater Valley also welcomed **Brooke Reiboldt** as a new member support representative.

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(REMC), Corydon, Indiana, have said farewell to **Bob Geswein**, whose recent retirement as energy adviser closed out a busy 24-year career. "Through the years," the co-op said in announcing Geswein's retirement, "Bob has been a driving force in the Touchstone Energy Home Program." Since 2004, more than a fourth of the 480 new homes built to Touchstone Energy Cooperatives standards, facilitated by Hoosier Energy (G&T), Bloomington, Indiana, and 18 of its member co-ops, were in Harrison Rural Electric's service territory. "Bob had definitely helped make Harrison REMC the 'go-to place' for energy efficiency advice," the co-op said.



Bob Geswein

Jeff Hampshire has retired from the board of LaGrange County Rural Electric Membership Corporation, LaGrange, Indiana, after more than a quarter-century of dedicated service. Hampshire, who also represented his co-op on the board of Wabash Valley Power Association (G&T), Indianapolis, had achieved his Director Gold certificate through NRECA's director training and certification program.



Jeff Hampshire

Tony Bontrager was appointed to succeed Hampshire on the LaGrange County Rural Electric board until elections at this summer's annual meeting.

Folks at Noble Rural Electric Membership Corporation, Albion, Indiana, recently welcomed **Adam Chitwood** into their ranks as the co-op's new accounting & finance manager. A Certified Public Accountant, Chitwood brings nearly two decades of finance experience to the post.



Adam Chitwood

Michael Heise has taken over as president & CEO at Cloverland Electric Cooperative, Dafer, Michigan. Heise comes to the post with more than 25 years of utility and management experience, most recently as director of business development for American Electric Power OnSite Partners, Columbus, Ohio. "Mike's experience, expertise, and fluent knowledge of utility management made him the best choice," said **Jason St. Onge**, who chairs the Cloverland Electric board. "He will be great not only for Cloverland but the eastern Upper Peninsula." Heise said he was "honored" and "excited about this wonderful opportunity," and top staffers at the co-op were just as eager to welcome him. "I am pleased to have Mike on board and look forward to his leveraging his expertise in providing reliable energy at an affordable price," said **Aaron**

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Wallin, who returned to his CFO post after serving as interim president & CEO. “Mike is exactly the right person to lead Cloverland, and I anticipate a bright future for the cooperative.”

Nearly four decades of service to Cherryland Electric Cooperative, Grawn, Michigan, and co-ops throughout the state came to an end with the recent retirement of **Jim Carpenter** as line superintendent & safety director. Carpenter joined the co-op in 1979 and worked as a materials clerk, tree trimmer, lineworker, and operations/maintenance supervisor & safety director before moving to the Michigan Electric Cooperative Association (statewide), Lansing, for a three-year stint as safety instructor. He returned to the co-op in 2003. “I have loved my years at Cherryland,” Carpenter said. “It has provided me the ability to network with so many good, caring people. And those are the best kind: people who are focused on the members they serve.” During his career, Carpenter also served as president

of his Utility Workers Union local, and he sits on the board of the National Utility Training & Safety Education Association. “Jim’s passion and heart for our members will be missed,” said **Tony Anderson**, Cherryland Electric general manager.

Don Frank has been appointed to the board at South Central Power Company, Lancaster, Ohio, to succeed the late **Dick Poling**. “We appreciate member Don Frank stepping forward and his willingness to take a leadership role at the cooperative at this time,” board Chair **Ken Davis** said. “I know he will represent all South Central Power members well.”

Two meter technicians at Midwest Electric, St. Marys, Ohio, have become certified TUNet administrators through Tantalus University’s network administration program. **Stan Chisholm** and **Joel Johns** completed the in-depth coursework to gain certification.

REGION 5 SAFE AT CIPCO

As Central Iowa Power Cooperative (CIPCO, G&T), Cedar Rapids, closed in on a remarkable 2-million-hour, 10-year run without a lost-time injury, top officials credited the G&T’s employees for their focus on safe operations. “Our employees understand there is nothing so urgent that safety should be forgotten,” said **Dan Burns**, vice president of utility operations. “And there is no piece of equipment that CIPCO owns that is so expensive an employee should put themselves in harm’s way to protect.” The G&T recently punched through its previous record of 1,946,292 staff-hours without a lost-time injury and had its eye on the 2-million-hour mark. “Everyone does an excellent job of ensuring safety is our top priority and understanding its impact throughout our company and the delivery system,” said **Rex Butler**, safety & environmental manager. A safe work environment is important to more than the G&T’s workforce, CIPCO CEO **Bill Cherrier** added. “Safety not only matters to our employees, but it matters to our



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cooperative members,” he said. “Our employees are dedicated to safety throughout our electric system, for each other and the members. That makes a difference every day.”

Consumers Energy, Marshalltown, Iowa, led business and political leaders across the state in mourning the recent passing of **Mark Wampler**, who was vice president of the co-op’s board. Wampler had also represented his co-op on the board of Central Iowa Power Cooperative (G&T), Cedar Rapids. A state administrative law judge for 30 years, Wampler was active in other community groups as well, as a moving tribute by longtime friend, blogger, and retired reporter **Chuck Offenburger** made clear. “I always thought that Mark Wampler was smart enough, experienced and connected enough, to be governor, or a member of Congress, or a leader in the Legislature,” Offenburger wrote. “But the truth is, what he was was plenty good enough. He touched and inspired thousands of people who, like me, will be telling Mark Wampler stories for the rest of our lives.” Wampler was 66.

REGION 6 LEADERS’ LEGACY

The South Dakota Rural Electric Association (SDREA, statewide), Pierre, recognized two program veterans with the prestigious SDREA Legacy of Leadership Award at the association’s recent annual meeting. **Loren Noess** spent 46 years at co-ops in the state before retiring as general manager at Central Electric Cooperative, Mitchell, in 2015. He also served on the national board of Touchstone Energy® Cooperatives. **Brad Schardin**, general manager at Southeastern Electric Cooperative, Marion, launched his co-op career in 1983 as general manager of Douglas Electric Cooperative, Armour, and moved to one of Southeastern Electric’s predecessor co-ops in 1990. He also sits on the board of the National Rural Utilities Cooperative Finance Corporation (service), Dulles, Virginia. Also at the annual meeting, three South Dakota co-op board members were recognized for achieving Director Gold status

through NRECA’s director training and certification program: **Henning Hansen**, Sioux Valley Energy, Colman; **D.J. Mertens**, West Central Electric Cooperative, Murdo; and **Richard Olsen**, Southeastern Electric. **Travis Denison**, a loss control professional at the statewide, received his Certified Loss Control Professional certificate at the association’s annual meeting. And **Donita Loudner** was seated on the statewide board, succeeding **Mark Hofer** as Central Electric’s representative.

Jeff Birkeland has been named to move up to CEO/manager this fall at West Central Electric Cooperative, Murdo, South Dakota. Currently the co-op’s CFO, Birkeland is a 25-year employee at the co-op. He’ll succeed **Steve Reed** in the CEO office when Reed retires Oct. 3. Also at the co-op, employees, board members, and consumers were saddened by the recent passing of **Charles Oller**, who joined the co-op’s board in 1990 and served for 27 years, including 12 as its president. He also represented his co-op on the board of Rushmore Electric Power Cooperative (G&T), Rapid City.

Folks at Bon Homme Yankton Electric Association, Tabor, South Dakota, said farewell recently to **Floyd Burbach**, whose retirement as a line-worker closed out 32 years of service on the co-op’s lines. Burbach joined the staff as an apprentice wireman and worked as an electrician before rising to journeyman lineworker in 1993.

West River Electric Association, Wall, South Dakota, lost more than six decades of combined experience when two 31-year veterans retired recently. **Ross Johnson** retired as metering foreman, and **Joel Stephens** was a journeyman lineworker.

Two board members at North Itasca Electric Cooperative, Bigfork, Minnesota, paid solemn tributes to current and retired directors who passed away recently. **Terry Schmitz**, a director for nearly 25 years, was serving as the board’s vice president at the time of his recent passing. President **Larry Salmela** noted in *Watts News*, the co-op’s member newsletter. “His experience demonstrated that some

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years would be difficult for one reason or another,” Salmela wrote, “but over time the cooperative could succeed if the board would maintain a principled approach. He had the marvelous ability to see the good qualities in other people.” In an obituary notice for retired director and former President **Jerry Richards**, **Wes Waller** recalled joining the board “around 1989,” when Richards was at the head of the table. “At this time, Jerry probably had 30 years of experience,” Waller wrote. “He eventually served a total of 44 years, so there was very little he had not seen. And he could provide counsel on mistakes that had already been made and roads we probably shouldn’t go down. Virtually any question that I had, and there were many, Jerry had the answer for.”


REGION 7 GAVAN’S APPOINTMENT

John Gavan has resigned from the board at Delta-Montrose Electric Association (DMEA), Montrose, Colorado, to take on another role as a member of the state’s Public Utilities Commission. A longtime member of the DMEA board, Gavan was appointed to a four-year term on the commission by outgoing Gov. **John Hickenlooper**. “This appointment is a great honor for John and DMEA,” co-op CEO **Jason Bronce** said. “It’s also a testament to the vision and leadership he and our entire board have shown on electric utility and telecommunication issues.” It’s a bit of

a mixed honor, though, according to **Bill Patterson**, president of the co-op board. “We believe he will be an excellent commissioner and that all of Colorado will benefit from him serving in that capacity,” Patterson said. “While we are glad for his sake, we are sorry to see him leave. He was a great asset for our membership and will be missed.” Gavan said he’ll miss serving on the DMEA board, too. “I have truly enjoyed being a part of this wonderful organization and seeing it deliver so much good for our communities. I will cherish my time on the board and will always have a fondness for DMEA, its staff, board, and members.”


The staff lineup at Prairie Land Electric Cooperative, Norton, Kansas, looks quite a bit different after four recent promotions and the retirement of a longtime employee. **Kirk Girard**’s move from director of finance to assistant CEO triggered **Alisha Stark**’s advance from office manager to director of finance. **April Karnopp**, formerly the co-op’s human resources manager & benefits administrator, was promoted to director of administration. And **Dean Wiseman**, the co-op’s new operations manager, previously served as metering & apparatus technician. Wiseman takes over from **Steve Christy**, who retired recently after more than 40 years of service to the co-op. “I couldn’t have asked for a better place to work,” Christy said. “Also, a big thank-you to all the members who were so appreciative and I got to know over the years. I enjoyed working for you.”

Richard Johnson has joined Kansas Electric Power





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Cooperative (KEPCo, G&T), Topeka, as the G&T's new director of engineering. He takes over from **Mark Barbee**, who moved up to senior vice president of engineering & operations last year. Johnson comes to KEPCo from Otter Tail Power Company, where he was manager of delivery engineering. "We are very pleased to have found someone with Rick's background and experience for this position," Barbee said. "We believe that with his leadership, the engineering department will continue to provide outstanding engineering and technical support for KEPCo and its members."

His co-workers at La Plata Electric Association, Durango, Colorado, congratulated **Matt Gallaway**'s recent promotion to working foreman. Gallaway, a journeyman lineworker, joined the co-op's operations staff in 2016, bringing years of experience that includes stints at co-ops in Oklahoma and Arizona.



Matt Gallaway

REGION 8

PETIT JEAN'S NEW CEO

Michael Kirkland has been named to succeed **Bill Conine** as CEO/general manager at Petit Jean

Electric Cooperative Corporation, Clinton, Arkansas, following Conine's recent retirement. Kirkland has 17 years of rural electric experience and comes to the co-op from Laclede Electric Cooperative, Lebanon, Missouri, where he was manager of operations. "Michael is well-suited to be our CEO and general manager, and we look forward to working with him in serving our members," said **Donnie Collins**, president of the Petit Jean Electric board. Conine, who had led the co-op's staff for about 10 years, was recently named interim president & CEO at Arkansas Electric Cooperative Corporation (G&T) and Arkansas Electric Cooperatives (statewide), both in Little Rock, after **Duane Highley** left that post to become CEO at Tri-State Generation & Transmission Association (G&T), Westminster, Colorado.

Board members at the Association of Missouri Electric Cooperatives (statewide), Jefferson City, recently recognized **Johnie Hendrix**, a safety instructor at the statewide, for earning an associate of applied science degree from Bismarck (North Dakota) State College.

Howard Moffitt's recent retirement as area supervisor closed out a 30-year career with Grundy Electric



Johnie Hendrix

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Cooperative, Trenton, Missouri. Moffitt joined the co-op as an apprentice lineworker in 1988.

Carli Millsap has joined the staff at Rural Electric Cooperative, Lindsay, Oklahoma, as its new customer service representative. She comes to the co-op from an oilfield services company and previously worked at a local bank. “Working at Rural Electric Cooperative is an opportunity for a stable, long-term career,” Millsap said. “I am excited to learn more about the co-op and meet all the members.”

Eight employees who, together, boast more than a century and a half of service to Cimarron Electric Cooperative, Kingfisher, Oklahoma, received a round of applause from their co-workers recently. They were **Reed Emerson**, 35 years; **Rick Friez**, 30 years; **Lance Cue**, **Kevin Munkres**, and **Mark Snowden**, 20 years; **Bryan Randle**, 15 years; **Cheila Evey** and **Ray Stiner**, 10 years; and **Kayla Hamil**, five years.

REGION 9

CORWIN'S NEW POST

Scott Corwin takes over this month as executive director of the Northwest Public Power Association (NWPPA, service), Vancouver, Washington. A longtime advocate of public power, Corwin comes to the association from the

Public Power Council (service), Portland, Oregon, where he has worked as executive director since 2007. He previously worked for PNGC Power (G&T), also in Portland, and also served on the staffs of former U.S. Sens. **Mark Hatfield** of Oregon and **Don Riegle** of Michigan. “Scott Corwin is a phenomenal individual with a lifelong work career in the regulatory and electric industry, primarily pertaining to the Northwest,” said **F. Scott Egbert**, president of the association’s board and board president at Wells Rural Electric Cooperative, Wells, Nevada. “He brings his expertise, energy, and enthusiasm to this new position. NWPPA looks forward to moving ahead with Scott at the helm.” Corwin takes over from **Anita Decker**, who retires this month after five years with the association and nearly four decades in the utility industry.

Kathi VanderZanden has retired as director of communications & marketing at Ruralite Services (service), Hillsboro, Oregon, after five years with the organization and 18 years in public power. **Ryan Hakes**, who comes to Ruralite Services from Detroit, Michigan, where he ran his own marketing company, was named director of marketing & business development to succeed VanderZanden. “Kathi had done a remarkable job with the marketing and communications efforts at Ruralite and our affiliated companies,” CEO **Michael Shepard** said. “She has established a firm foundation for the department,

FLASHBACKS

FROM PAGE 9

a young Fisher County lawyer, were granted a charter for Midwest Electric Cooperative.

A seven-person board of directors was soon named, and they spent the next few months signing up co-op members and working on an REA loan application.

The loan was approved late that year, and in January 1939, \$137,000 was deposited at a local bank. Nine months later, the fledgling co-op energized 43 miles of line serving 132 members.

Stamford Electric’s story was similar. It was granted a charter in March 1939, got approval from REA on a \$158,000 loan, and in November 1939, energized 136 miles of line extending north from Stamford to a dozen small rural communities and connecting 369 meters. The young utility operated out of rent-free space offered by the Stamford Production Credit Association.

World War II brought most line work to a halt. Because copper was unavailable, linemen sometimes resorted to using barbed wire for service drops. But after the shooting stopped in Europe and Asia in 1945, “construction resumed at a relentless pace” at Midwest Electric, according to a co-op history.

The 1950s saw the two co-ops come into their own as electric utilities, but it also was a time of radical change in their load profiles as the Permian Basin oil fields boomed. Oil saved Midwest Electric after a severe drought drove

dozens of farmer-members away. By 1955, the Roby-based co-op had grown to 3,243 members.

Stamford Electric had about 30 oil wells on its lines in 1950. By the end of the decade, it had more than 1,000, and they represented 60 percent of the co-op’s annual revenue. Membership had reached 3,860.

Except for a devastating ice storm in December 1969, the 1960s passed smoothly for these neighboring systems. But the 1970s, ’80s, and early ’90s were an entirely different story because of steadily rising wholesale power costs, inflation, and declining oil revenues.

Month after month, Midwest Electric recorded no use on 20 percent of its meters—abandoned oil wells, presumably. Stamford Electric “was making very little on each kWh sold, and covering operating expense became difficult,” the history states.

In 1992, Midwest Electric began four years of merger talks with another struggling neighbor, Dickens Electric Cooperative (now part of South Plains Electric Cooperative in Lubbock). When no agreement could be reached, Midwest Electric turned to Stamford Electric, and by late 1998, a logo for hats, shirt patches, vehicle decals, and letterhead was being designed for a new NRECA member: Big Country Electric Cooperative.

Today, Big Country Electric serves some 12,500 meters in 12 rural counties mostly north and west of Abilene. **RE**



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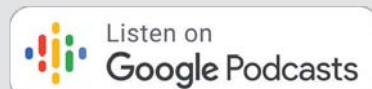
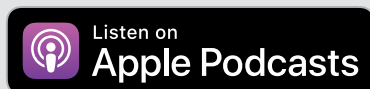


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and we're eager for Ryan and our talented marketers and content creators to build on that success."

REGION 10 TRI-COUNTY HERO

Co-op leaders from across Texas saluted **Wendy Moyer**, a member services representative at Tri-County Electric Cooperative (EC), Azle, Texas, for her calm, conscientious, and possibly life-saving assistance to a member in need. Moyer was talking to the member on the phone last summer when the member complained of chest pains. Moyer told the member to stay on the line while she contacted first responders on another phone, and then she stayed on both phones to relay information to the ambulance crew while helping the stricken member remain calm—in part by assuring her that getting the light bill paid was the least of her worries. For her efforts, Moyer earned the Good Samaritan Award presented by Texas Electric Cooperatives (statewide), Austin, at its recent loss control conference. "Wendy did not hesitate to offer help when our member was in immediate need during a potential life-threatening situation," the co-op said. "Tri-County EC is very proud of the selfless act that Wendy displayed and congratulate her on the award."

The U.S. Environmental Protection Agency (EPA) will get a co-op perspective on issues affecting southern border communities following the recent appointment of **Michelle Freeark** to the agency's Good Neighbor Environmental Board. Freeark, executive director of legal & corporate services at Arizona G&T Cooperatives, Benson, was invited to join the advisory panel in a letter from EPA Administrator **Andrew Wheeler**. "Every year the board is required to submit a report to the president," Freeark said. "And that report has to detail any findings, research, and suggestions for policy improvements or new policies that the president or Congress should undertake. Some of these issues are all about socioeconomic issues and health on both sides of the border. It's exciting to be a part of something that could really have an impact on these issues." Freeark was appointed to a two-year term on the board and could be appointed to a second term.

Marana, Arizona, Mayor **Ed Honea** was all smiles when Trico Electric Cooperative, based in his town, recently dedicated its 10-MW Avion Community Solar Project there. "It gives us all an opportunity to work together and make our community even better," Honea said. "Just like Trico [Electric], the town of Marana is dedicated to energy efficiency and conservation." The co-op was doing what it's always done, board President **Nick Buckelew** replied. "Trico listens to its members," he said. "We continue to hear from our members that they want renewable energy programs, and we will continue to respond to our community with cost-effective renewable energy options." Also at the ceremony was **Bob Hall**, a co-op member who became its first residential solar member in 2005. **RE**

NEW FEATURE: STAFF SPOTLIGHT

A MONTHLY COLUMN TO SHOWCASE A
NEWCOMER TO THE CO-OP PROGRAM
BY MEGAN MCATEE



Melissa Greenwood

Melissa Greenwood

- Communications Specialist
- Ravalli Electric Cooperative, Corvallis, Montana
- Cooperative employee since 2016
- Birthplace: Cainsville, Missouri

Hobbies: Crossfit, photography, and volunteering in the community.

How did you learn photography? I taught myself and attended a few classes. I enjoy it so much that I've become the co-op's resident photographer. A photo I took of Montana's Bitterroot River Valley was published in *RE Magazine's* August 2018 issue, "Co-op Country."

How did you get into Crossfit? My husband got me into it three years ago.

What do you like about it? It's such a supportive and family-friendly community. We've made a lot of really great friends there. We love it.

What are your Crossfit goals for the New Year? I want to be able to do a bar muscle-up and strict handstand push-ups.

What do you like most about your job at Ravalli Electric? I really enjoy working for a community-focused organization and the opportunity to serve my neighbors.

What is your greatest professional accomplishment since you've been at Ravalli Electric? I won 11 communication awards at the 2018 Montana Electric Co-op Association's Annual Meeting, including the overall Excellence in Communications Award.

If you could have any superpower, what would it be? I wish I could fly so I could visit family and friends who live far away a lot more often.

Education: Bachelor's in communications from Boise State University

One random fact or something most people may not know about you: I have a cheerleading and gymnastics background, and in high school I was voted "Biggest Guns." **RE**

Know someone who could be profiled in Staff Spotlight? Contact Megan McAtee at megan.mcatee@nreca.coop or 703-907-6105.



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