

HACKERS...

ARE PERSISTENT, KEEP GOING, DEVELOP NEW TACTICS, NEVER STOP

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**Cyber services provided by
Hoosier Energy help secure
critical infrastructure** | PAGE 3



PUBLICATOIN UPDATE

End-of-year issue to be sent electronically

The November/December issue of EnergyLines will not be printed. It will be sent electronically. The print version will resume for the January 2020 issue.

USDA loan helps Harrison REMC improve the grid

The U.S. Department of Agriculture has identified 12 electric cooperatives receiving \$181 million in loans to improve service for member-consumers. Harrison REMC has been selected to receive a \$15.5 million loan.

This rural development investment will be used to connect 1,445 new consumers, build 78 new miles and improve 122 miles of distribution line. The loan includes \$1.1 million in smart grid investments. Harrison REMC serves about 23,200 consumers over 2,460 miles in Harrison, Floyd, Crawford, Clark and Washington counties.

ON THE COVER

As long as there is an internet, threats to cyber security will exist. That's why Hoosier Energy is rolling out cyber security services to help member systems be as secure as possible.



Cyber security attacks focus of Utility Dive podcast

The latest podcast from Utility Dive tackles the topic of cybersecurity.

The podcast notes that while a widespread outage from a coordinated cyberattack in the U.S. remains low, hackers continue to work to access utility systems.

Hackers are working to access distributed generation resources and smart devices used by electric consumers.

The evolution of the grid includes more connections and Richard Mroz, former New Jersey regulator, discusses what can be done to thwart attacks.



Using AI for storm prediction

A North Carolina co-op is testing new machine-learning analytics software called Storm Readiness to make outage predictions before severe weather affects service territory.

>> Read more at Rural Electric Magazine. Cooperative.com/remagazine

RENEWABLE ENERGY

Strides made in renewable hydrogen technology

As utility-scale wind farms and solar arrays are built across the nation, what can be done with excess energy these renewable resources might provide?

This is a question posed in a recent article published in Power magazine. An answer for bulk power storage solutions revolves around hydrogen.

Excess renewable energy can be used to create hydrogen through electrolysis. This process uses electricity to split water into hydrogen and oxygen.

According to Power magazine, renewable hydrogen can be stored for long durations – ready for use in gas turbines that have been modified to use this fuel source.

ONLINE EXTRA >> Visit Powermag.com to read the article about renewable gas.

RENEWABLE ENERGY

Utility-scale solar system costs continue to decrease

For newly constructed utility-scale electric generators in the U.S., annual capacity-weighted average construction costs for solar photovoltaic systems continue to decrease according to the Energy Information Administration (EIA).

Since 2013, average costs for solar photovoltaic generators have fallen by 37 percent and wind generation by 13 percent.

The decrease in the cost of solar photovoltaics was a result of falling costs in crystalline silicon axis-based tracking panels. This equipment had its lowest average construction cost of \$2,135 per kilowatt (kW) in 2017. This is the technology used at the 1 MW solar sites in member territories.



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Eight ways Hoosier Energy works to succeed

These are the strategic priorities that the Hoosier Energy workforce strives to achieve every day.

- EMERGING TECHNOLOGIES
- MEMBER FOCUS
- RISK MANAGEMENT
- GOVERNANCE
- COMPETITIVE RATES
- COST MANAGEMENT AND PERFORMANCE
- SUPPLY PORTFOLIO
- OPERATIONAL EXCELLENCE

OPERATIONAL EXCELLENCE



HE photo

MONITORING THE GRID: Meter Relay Working Foreman Donnie Eslinger helped design a way to detect the location of faults taking place on the grid. Eslinger looks at the fault recorder used at one of Hoosier Energy’s primary substations.

CRITICAL DEVICE INVENTION

Fault recorder results from experiments conducted by Donnie Eslinger, Darrell Goodson

One of the electric power industry’s most important goals is ensuring the integrity of the nation’s power grid. Digital fault recorders are one technology used to monitor operations at substations and power plants throughout North America. The devices continually monitor the flow of electricity in and out of the substations. When they detect abnormalities such as faults, they record and relay the information so it can be analyzed.

You may be surprised to learn that this critically important equipment is the direct result of experiments conducted by Hoosier Energy employees at the Merom Generating Station.

Meter Relay Working Foreman Donnie Eslinger was part of the team preparing Merom for operations in the early 1980s. The 43-year Hoosier Energy employee and his co-worker Darrell Goodson took advantage of some downtime to experiment with locating the source of faults. “In those days, you did that with equipment that

used a galvanometer and a light beam reflected on photo paper,” Eslinger recalled. “It produced squiggly little waveforms on the paper, and we would measure them with a ruler. We knew how many volts and amps were present, so we could use the waveforms to estimate a fault’s location. It was a cumbersome process, but it gave us a picture of what happened.”

Thinking digital technology might make it easier and faster to perform the computations, Eslinger brought his personal computer to Merom. The pair put it to the test, developing an algorithm that simplified the computation process. Impressed with their idea, System Protection Engineer Dan Souhrada shared it with a colleague who ran a company called USI. The men worked together to refine the concept.

“We knew the size of the conductors, structures mounted on the line, the reactance, and the resistance, so we punched all of those figures into the

INVENTION, continues on Page 6



SAFETY SERVICES

CYBER SECURITY

PROTECT THE NETWORK, BEAT THE ODDS

As long as there is an internet, threats to cyber security will exist, says Richie Field, Manager of Cybersecurity and Network Operations at Hoosier Energy. That's why with new threats emerging every day, Hoosier Energy is rolling out several cyber services to make sure member systems are as secure as possible.

The services fall into three main cyber threat areas:

- Disaster recovery (including offsite backup storage)
- Intrusion detection system
- External vulnerability scans

These services may seem basic, Field says, but the benefits are invaluable. And, they're free.

As Cyber Security awareness month gets underway, here's a look at how members are taking advantage of Hoosier Energy's cyber security offerings.

Disaster Recovery

Several members have begun taking advantage of this backup service, while others are interested in jumping on board when their current contracts expire, Field said. "Hoosier Energy offers computer storage space in the server room, including redundant power and cooling systems.

We also provide an internet connection so members can VPN tunnel back to their network in the event of an emergency," Field said.

Jackson County REMC began using the service a year

ago, followed by Harrison REMC in May.

"We replicate to the networking equipment at Hoosier Energy every day. In the event of a disaster, we can access our system remotely, run outages, assist members and get the power back on," said Rodney Brewer, Information Systems Coordinator at Harrison REMC.

For Jackson County REMC, it was also a cost saver. "We were able to avoid third-party rack rental cost. That was one of the driving factors in getting on board so quickly," said Ben Conner, System Administrator for Jackson County REMC.

None of the co-ops have activated the service, and they like it that way.

"Thank the Lord, no," said Conner, "and I don't ever want to. But we do like knowing it's there."

Intrusion Detection System

An intrusion detection system helps identify threats to a system. "We can see if attacks are cascading from one member to another or if malicious campaigns are targeted at members," Field said. "It gives a lot of visibility."

Since Clark County REMC began using the system last spring, the system has flagged some medium risk activities that the co-op needed to check out, said Network Administrator Brian Tanner.

He's especially pleased with the dashboard feature. "I can log in, see high-level activity and know what we need to investigate. It's awesome."

“We replicate to the networking equipment at Hoosier Energy every day. In the event of a disaster, we can access our system remotely, run outages, assist members and get the power back on.”

RODNEY BREWER

Harrison REMC


Information Systems Coordinator

Monitoring is a two-way street. “Hoosier Energy monitors it as well. If I don’t log in and there is a serious concern, they’ll reach out to us. The best part is, there’s no cost to the REMC. It’s really a no-brainer.”

External Vulnerability Scans

An external vulnerability scan adds another layer of protection, casting a wide net to check on cyber security controls for IT assets, Field says. An IP address is a computer’s passport to the internet. Much like an old-fashioned mailing address for homes and businesses, an IP address is a series of numbers that tells a remote computer how to communicate with other computers on a network.

Harrison REMC is pleased with the service. “The system scans our public-facing IP addresses once a month to make sure we’re not vulnerable from outside attacks,” Brewer said. “It’s been pretty clean so far.”

But the biggest benefit from the cyber security services, the co-ops say, may be peace of mind. 

ONLINEEXTRA

>> If your co-op is interested in adding these cyber security services, contact Richie Field for more information at rfield@hepn.com or 812-322-5280.

MEMBER-FOCUSED

South Central Indiana REMC’s 80th annual meeting had strong member-consumer attendance

The South Central Indiana REMC annual meeting took place on Aug. 10, at Mooresville High School. The co-op’s 80th annual meeting included a breakfast for members and exhibit booths where member-consumers learned about fiber internet and home energy efficiency.

Chief Executive Officer James Tanneberger focused on three things: grid reliability, using member resources wisely and preparing the co-op for a successful future. An 80th anniversary video was shown providing a historical review of the cooperative during the past eight decades.

Member-consumer questions mostly revolved around fiber internet, specifically pricing, speed and packages available.



ELECTION OF OFFICERS

District 2: Jerry Pheifer

District 6: Stephen Williams

District 7: Bruce Hamlin

EVENT DETAILS

Members lined up outside of Mooresville High School before the doors opened for the 80th annual meeting.



Photo submitted by Richard Biever, IEC

POWERING COMMUNITIES: JCREMC Journeyman Lineman Kevin Bay shows children images on his phone. Bay was participating in Project Indiana to bring a rural Guatemalan community power.

Changing lives, one mile at a time

Co-op value.

JCREMC Journeyman Lineman, Kevin Bay traveled to San Jacinto, Guatemala for 16 days with other lineworkers from Indiana to build the grid to help improve lives – especially the lives of children.

“That’s what it was about for me,” he said. “The kids.”

While the rural Guatemalan community is home to a hydroelectric plant and 3-phase lines, they were not connected to the grid.

Area residents helped by setting power poles before the line crews arrived.

While on the job, crews thought of the children and decided to take up a collection which was used to purchase 200 pairs of shoes and candy for them.

Bay set out with a goal to serve

others stating, “I really hope more people want to do this . . . It’s changing people’s lives tremendously. We take for granted what we have. To share our resources is a great thing.”

Project Indiana is a philanthropic organization committed to serving the people of Guatemala. It is administered by Indiana Electric Cooperatives and governed by a board of directors representing some of the state’s co-ops, as well as law, construction, and communications firms.

The organization’s mission centers around creating sustainable change. That means that they’re not only powering Guatemala’s rural communities but also helping them form cooperatives and improve education, nutrition, water, and healthcare.

INFOEXTRA

>> Visit JCREMC.com to read the complete article about Kevin Bay’s journey to San Jacinto, Guatemala.

Social session

South Central Indiana REMC updated its members how line crews were relocating to help in power restoration efforts following damage from hurricane Dorian. Whitewater Valley REMC reminded members that free Indiana Festival Guides were available to pick up at their office as the fall festival season begins.



(FACEBOOK)
SCI REMC



(FACEBOOK)
WHITWATER VALLEY REMC



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RENEWABLE ENERGY

STAFF SHINES ON SOLAR TOURS

EDP Renewables visit headquarters, tour solar array in Ellettsville

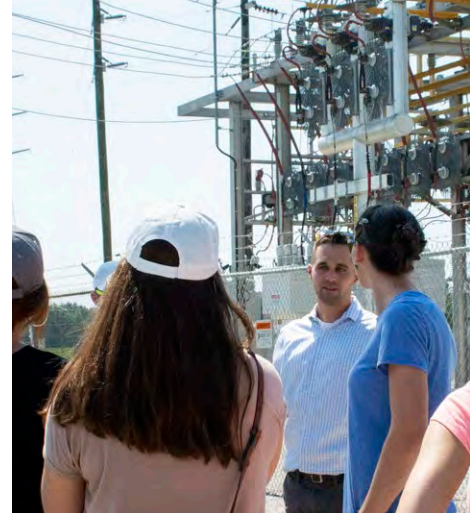
On a sunny day in September, employees from EDP Renewables visited Hoosier Energy to learn about the generation and transmission electric cooperative, member cooperatives and tour a 1 MW solar array.

The group of 40 learned about Hoosier Energy's renewable energy portfolio – which currently includes 50 MW of power from EDP facilities with an additional 250 MW planned in the next three years. The energy provided through purchase power agreements is helping Hoosier Energy reach its goal of 10 percent of energy to be renewable energy by 2025.

In attendance was EDP Renewable's Executive Vice President, Eastern U.S./Canada Ryan Brown. With a focus on expanding utility-scale renewable energy sites, Brown talked about the importance of building local connections that last.

“Forming local relationships as we build and expand sites in rural communities is important to us. We work to build strong relationships with land owners and local constituents. As the Meadow Lake wind farm is in its sixth phase, having shown our commitment to local communities is something we are proud of,” said Brown.

Renewable Energy Project Developer Chad



HE photo

SOLAR TOURS: With a substation in the background, Renewable Energy Project Developer Josh Cisney provided a tour of the solar array.

Jenkins helped coordinate the tours with the rest of the Emerging Energy Resources team.

“Building strong and lasting relationships is so important within our cooperative, both internally and externally. It means a lot to have EDP bring 40 employees, from all over the eastern United States and Canada, to learn how our Emerging Energy Resources department works for our members,” said Jenkins. [E](#)

INVENTION,

Continued from page 2

program, and it was the basis for how we calculated a fault's location,” said Eslinger. USI combined the concept with digital storage, and the digital fault recorder was born.

The technology instantly alerts system controllers to problems and pinpoints their location, so crews can be dispatched more quickly. “In the old days, we didn't know exactly where the problem was, so we'd try to open a switch somewhere in the area and

see if that was close,” Eslinger explained. “Now we have a GPS map that shows exactly where the problem is and what the nearest pole number is. That saves the member from being without power as long and it reduces the revenue we lose from the outage.” Fault recorders make it easier to troubleshoot other issues, too.

Eslinger modestly chuckled at being called an innovator, adding “I feel good that I worked on something that benefits the industry and is used all over the United States.” [E](#)



BIG CRUSH: The coal pile audit process

Devin Dejong fills a five gallon bucket with coal and dumps it into a large barrel. As he backs away, a thick metal plate attached to a hydraulic cylinder slams inside the barrel, crushing the coal. He does this process over and over until the barrel is full.

Dejong works for the Mikon Corporation and is at the Merom Generating Station for the annual coal pile audit. The testing he is doing simulates the density of the coal on the pile.

Once the coal is compacted and measured inside the barrel, it is used in the analysis of the coal on site. The analysis includes use of a GPS survey to determine the land mass of the pile and depth and density tests to determine how many tons of coal are on-site.

The fuels team at Hoosier Energy has the coal pile audit conducted to be sure the inventory matches what Hoosier Energy has on record.