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## HUVRDATA AND EDGEDATA ANNOUNCE COLLABORATION TO OPTIMIZE AERIAL WIND INSPECTIONS



Two leading companies in aerial wind inspection services — HUVRdata, based in Austin, Texas, and EdgeData based in Grand Forks, North Dakota — recently announced a collaboration to deliver a suite of wind industry data intelligence tools and credential processes to optimize the use of this technology within the wind industry. The collaboration will leverage multiple points of synergy between the two companies, including HUVRdata’s data capture ca-

pabilities and cloud-based services and EdgeData’s BladeEdge analytics software for automated blade condition assessment.

“With our shared commitments to accuracy, security, and continuous innovation, EdgeData and HUVRdata make natural partners,” said Lonnie Bloomquist, CEO of EdgeData.

The scope of the collaboration spans data capture, software analytics tools, data handling, and report-

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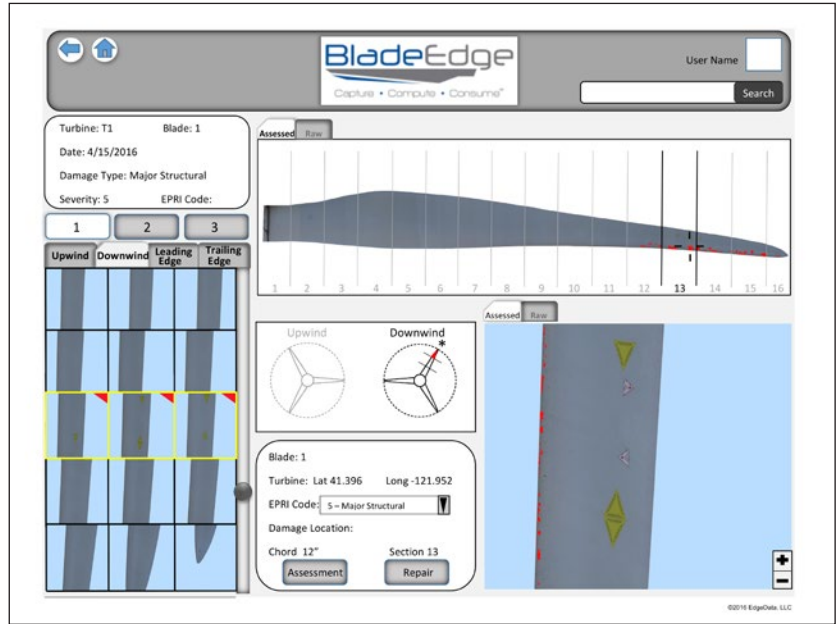
**37** Campbell Scientific Releases CR300 Datalogger

ing. HUVRdata, which holds a 333 exemption for wind turbine inspections and is the first company to be credentialed by the National UAS Credentialing Program, will be added as an EdgeData unmanned service provider (USP) to provide safe, reliable turbine inspection data.

“Our collaboration will allow the industry to accelerate the adoption of unmanned aircraft systems [UAS] within O&M operations and provide the most robust analytics and cloud-based services to lower annual operating expenses,” said Bob Baughman, CEO of HUVRdata.

The companies will work together to accelerate software performance, deliver enterprise-grade cloud-based and on-site data storage, and optimize reporting tools to serve the needs of different organizational roles, from wind farm technician to vice president of operations.

“This partnership will give wind professionals more powerful tools for delivering rate of interest [ROI]



with an unprecedented range and depth of data collection, analytics, and reporting capabilities,” said Chris Shroyer, president of EdgeData. “It is about the data and the associated intelligence. This is the future of the wind industry.”

Source: HUVRdata

For more information, go to [www.huvrdata.com](http://www.huvrdata.com) and [www.bladeedge.net](http://www.bladeedge.net).

## TEXAS TECH RESEARCHER AIDING IN STUDY OF EAGLE INTERACTION WITH WIND TURBINES

In the avian world, the eagle is known as the apex predator, meaning no other bird considers an eagle its prey. The eagle is on the top of the avian food chain. But that doesn't mean they live without dangers, most of which are man-made. There's one man-made danger in particular that has led a Texas Tech University professor to work with several government agencies in an effort to discover ways to mitigate golden eagle deaths as much as possible.

With the push toward clean energy, West Texas and Eastern New Mexico have seen a tremendous growth in the popularity and construction of wind turbine farms. However, while they are essential to ending the United States' dependency on fossil fuels, these wind



farms have created a danger for the golden eagle in the same areas.

“Wind energy development throughout the western U.S. is ongoing and rampant, and it is an important renewable energy source,” said Dr. Clint Boal, a professor in the Department of Natural Resources Management in the College of Agricultural Sciences & Natural Resources and leader of this study. “But it doesn’t come without some ecological cost that can result in either displacement of wildlife or the direct mortality of wildlife. If the species is really abundant, it may not be a substantive issue, but when you have a species like the golden eagle that is not as abundant, has a long life span, and has low productivity, it does become an issue.”

That’s why the research that Boal and his colleagues are performing is so important. Boal, a member of the United States Geological Survey’s Cooperative Research Unit at Texas Tech, along with the U.S. Fish and Wildlife Service’s Region 2 office and its Western Golden Eagle Team, are in the process of studying golden eagle movements and potential interactions with wind turbines by capturing golden eagle chicks before they can fly and affixing lightweight GPS transmitters on their backs. The chicks are returned to the nest, and their movements can then be tracked over the next several years.

“Because these are alpha birds, their distribution is such that they have a large territory, and their primary cause of death that first year is starvation or accidents, just because they have to learn how to fly and hunt,” Boal said. “What happens when you start losing them through electrocution on power poles, flying into turbines, or getting hit by cars on the highway when they are scavenging car-

casses is that it may have a population-level effect, and that is what the Fish and Wildlife Service is concerned about. Wind turbines are the most recent and potentially most dramatic of these.”

**PROTECTING THE EAGLE**

Golden eagles are not on the endangered or threatened species lists, but the species is protected under the Bald and Golden Eagle Protection Act. According to Boal, from the 1940s to the early 1960s, hundreds of golden eagles were killed, leading to them being added to the act in 1962. A golden eagle reaches full maturity in about five years and produces only one to two chicks per year, if any, when it reaches breeding age.

The golden eagle can be found throughout the western third of North America, from the western edge of the Great Plains to the Pacific Coast and from Alaska south to Mexico. A small population also is present in northeastern Canada.

However, according to Boal, there has been no real assessment of the golden eagle population in Texas since the 1970s. Boal did some studies in the Texas Panhandle in 2005 and 2006, but the growth of wind turbines presented a new danger.

Boal said that during the last two winters, he and other researchers have studied eagle habitats off the plains of Oklahoma and Texas and into Eastern New Mexico, examining both the birds that stay in the area year-round and those that migrate to the area every year. They’ve also examined some of the sites where golden eagles have nested since the 1970s, in the Trans Pecos region of Texas and, more closely, along the Caprock Escarpment.

Capturing a golden eagle is quite a process. Once an appropriate

nest is located along the face of a cliff, a group of the researchers fan out across the bottom of the cliff. A climber descends from the top of the cliff above the nest and either captures it at the nest or it flees the climber by jumping from the nest. Though it can’t yet fly, the young eagle can glide very well — up to a kilometer, according to Boal — before reaching the ground.

There, the researchers capture the young eagle, put a hood over its head to keep it calm, affix the solar-powered GPS transmitter, tag the bird, and take blood samples for genetic analysis before the climber returns it to its nest.

Last year, Boal and the other researchers tagged and fitted six golden eagles in Eastern New Mexico, several of which migrated into the Texas Panhandle between Lubbock and Amarillo and into the Caprock. Another seven birds have been fitted and tagged this year so far.

“We’re able to track where they go to see if they interact with wind turbine farms, if they fly through to hunt in those areas, or if they avoid them altogether,” Boal said. “We hope to determine what the important features of the landscape they key in on, especially during that first year of life when they’re just learning how to be eagles and learning how to hunt.”

**PROTECTION THROUGH MITIGATION**

Boal said that regardless of what the GPS trackers say about a golden eagle’s movements, not much can be done to change an eagle’s habits. So, the task for Boal and other researchers becomes ensuring that eagle habitats and the landscape are as conducive as possible to ensure survival and reproduction while, at the same time, having mitigation policies in place

for landowners who erect wind turbine farms that could endanger eagles.

One mitigation strategy could be to put wind turbines in areas like a cotton field where the prey eagles hunt for is scarce. It's the native grasslands where prey like jackrabbits and cottontail rabbits are most abundant, and eagles may venture to hunt even if there are wind turbines present.

Because golden eagles are protected, the Fish and Wildlife Service has developed an incidental take permit system. That program allows energy companies to apply for an incidental take permit that protects these companies from liability if an eagle is struck by a wind turbine blade, which would be a violation of the Bald and Golden Eagle Protection Act.

This is where some of the data that Boal and his team are collecting can be used to determine how many eagles are expected to be in an area and the potential for being killed if a wind energy center is placed in a certain area. But those incidental take permits usually span only about five to 10 years, and a condition of those permits is that for every eagle killed by a wind turbine, the energy company has to offset the loss by ensuring birth of a new eagle somewhere else or prevent an eagle in another location from dying from other causes.

The methods to ensure eagle productivity could range from putting money into a mitigation bank fund to be used in some management action to a direct action by the energy company itself.

Ensuring the viability of the landscape for eagles to hunt and capture prey is an area of particular interest for Boal. One example of that, he said, is the encroachment of juniper all along the Caprock.

Juniper thickets not only reduce the number of jackrabbits and cottontails for eagles to capture, but it also makes it difficult to capture the ones that are there by allowing the rabbits to hide in the thickets.

Boal said landowners are interested in reducing juniper because it degrades the quality of land for cattle grazing and uses a large amount of water. Boal wants to find a way to estimate how many eagle chicks can be produced by restoring a certain amount of land to native grassland that eagles can hunt in.

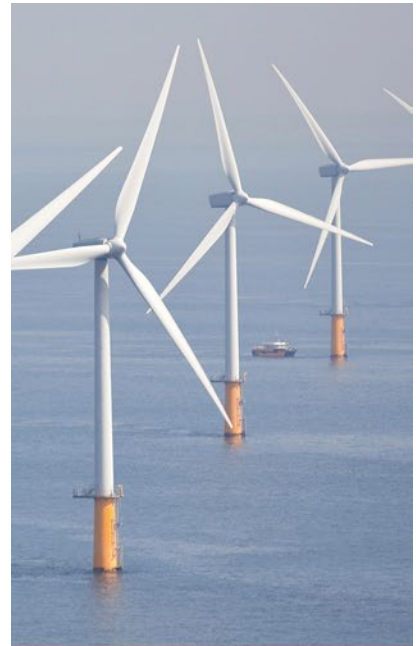
"That's a way where energy companies can say that they want to put money into a mitigation bank to help the landowners do what they already want to do and that is controlling the juniper and mesquite encroachment," Boal said. "By doing that, the landowner wins because they receive financial assistance for improving the quality of range land for cattle. Eagles win because it provides a habitat for jackrabbits and cottontails, and it provides it in such a way that the landscape is more effective for foraging."

In the long term, Boal said he would like to also study eagles' food habits by putting remote cameras near eagle nests to see what kind of prey they bring back for their young. A better understanding of the diversity and proportions of different prey species used would help determine how to manage the landscape to ensure an adequate food supply for eagles to hunt.

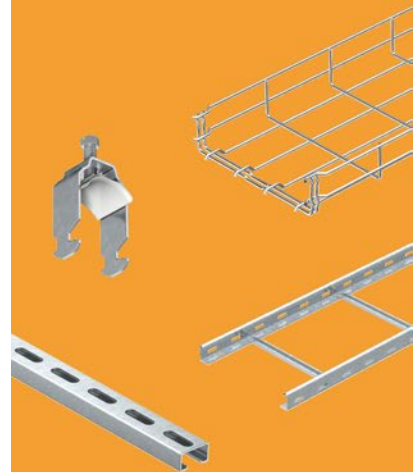
"I think it's a win-win for everybody involved," Boal said. "You get clean energy through turbines and a good habitat for eagles, and it also benefits the cattle ranchers." ♪

Source: Texas Tech University

For more information, go to [www.ttu.edu](http://www.ttu.edu).



## Cable Management for Wind Turbines



[www.obous.com](http://www.obous.com)

## GE RENEWABLE ENERGY INTRODUCES NEW SUITE OF DIGITAL WIND FARM APPS



At the American Wind Energy Association’s Windpower 2016 event in New Orleans, GE Renewable Energy introduced a new software applications suite for its Digital Wind Farm ecosystem.

Offered as part of GE’s flexible service agreements, the apps are compatible with the company’s new 2- and 3-MW wind turbines and were developed to enhance annual energy production (AEP) and improve wind farm profitability. The programs are built on the Predix software platform, the foundation for all GE’s industrial internet applications, and include its specialized cyber security protection for operational technology.

“The Digital Wind Farm is changing the future of our industry,” said Anne McEntee, president and CEO of GE’s onshore wind business. “We are actively working with our customers to develop new software technology applications that gener-

ate more production, better availability, and ultimately higher profit across the life cycle of a wind farm.”

One such customer collaboration resulted in GE’s new energy forecasting application. Developed in cooperation with Exelon Power as a strategic way to improve wind farm profitability, the app utilizes weather forecasting data to generate more accurate financial modeling and better predict the next day’s grid supply and demand fluctuations. It also offers real-time forecasting for identifying production ramps throughout the day to improve profitability for dispatchers and traders in PPA or merchant energy markets.

Energy forecasting was recently deployed for testing at four new wind projects in the U.S., and Exelon expects the software will deliver 1 to 3 percent of additional revenue per site.

In addition to business optimization, GE also unveiled two new

apps that help streamline wind farm operations. Digital Plan of the Day is a scheduling application that improves operations and maintenance efficiency for field service teams. The app combines a variety of disparate data sets, including SCADA information, diagnostic readings, weather conditions, and even geolocation data, to organize and prioritize daily maintenance schedules across a site.

The second operations-focused app is the next generation of GE’s popular Wind PowerUp Services platform, which is now capable of increasing a wind farm’s annual energy production by up to 10 percent. The newest version of PowerUp Services builds on GE’s earlier capabilities in making small hardware and software adjustments based on performance and reliability data, but now it expands the concept by introducing an iterative tuning process to monitor a site’s specific wind environment and lock in the appropriate

settings based on the most current information available.

“When we initially launched PowerUp Services a few years ago, we were using historical data to make hardware and software adjustments that would yield up to 5 percent more AEP,” McEntee said. “We’ve now taken all that learning from the initial version and put it back into our software development to speed up the adjustment cycle and generate more value for our customers. Today, PowerUp Services is capable of delivering up to double the AEP improvements of just a few

years ago. That’s the benefit of the Digital Wind Farm — it’s always learning.”

The final two applications in GE’s new wind software suite are focused on asset performance management. The Diagnostics app uses operating data for advanced anomaly detection analysis and then incorporates that analysis into a detailed case management and recommendation system. The Prognostics app uses operating, maintenance, and inspection data to project future operating conditions and predict turbine component reliability.

By shifting from unplanned outages to predictive maintenance, the Diagnostics and Prognostics apps can help wind farm operators reduce maintenance costs by up to 10 percent.

Many of the new applications are already being deployed with pilot customers, and they will be broadly available as part of GE’s flexible service agreements beginning later this year. ↵

Source: GE Renewable Energy

For more information, go to [www.gerenewableenergy.com](http://www.gerenewableenergy.com).

## CAMPBELL SCIENTIFIC RELEASES CR300 DATALOGGER

Campbell Scientific, a maker of research-grade measurement instruments for over 40 years, is releasing an innovative new data-acquisition product — the CR300 measurement and control datalogger. The CR300 has many of the best capabilities of full-size Campbell Scientific dataloggers with the smaller size and price of Campbell’s compact dataloggers.

“A nice part about the CR300 is that, from a user’s skill-level standpoint, it is not so different from our other dataloggers, so the learning curve is very small,” said Kevin Rhodes, Campbell Scientific’s product manager for the CR300. “Integrators can capitalize on their knowledge of CRBasic and our other popular dataloggers for use with this lower-cost datalogger.”

The CR300 datalogger was developed based on customer feedback, especially from customers who embed Campbell Scientific dataloggers in their own products. It is a step up from Campbell’s earlier low-cost, compact dataloggers because of its much richer CRBasic command set and serial communication capabilities, and its capacity for larger, more complex programs. The CR300 also

has its own onboard compiler that can handle large, complex programs.

The CR300 is the same size as the earlier compact Campbell Scientific dataloggers, and it can be a drop-in replacement. It is also the first Campbell datalogger that can measure 4 to 20 mA sensors natively.

The CR300 is the best-value datalogger Campbell Scientific has ever built. It has a 24-bit analog to digital converter, a high-speed processor, and a micro-USB port. For communication, the CR300 has full PakBus

capability, making it an important part of your network. There is plenty of non-volatile flash memory for storage.

The CR300 is programmed with Campbell Scientific’s LoggerNet software, which includes a point-and-click program generator, and a network planner for graphical layout of devices. ↵

Source: Campbell Scientific

For more information, go to [www.campbellsci.com](http://www.campbellsci.com).



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