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Goksel Dedeoglu, Brain4Drone's chief technology officer, flies a drone over a power line on Grizzly Mountain. PHOTO BY BRENT TEN PAS

Turning Toys Into Tools

CEC participates in federal research and development drone program

By Ted Case

Situated between Madras and Prineville in Central Oregon, Grizzly Mountain offers steep ridgelines and panoramic views of the valley floor below. Because of Grizzly's altitude and location, it also is home to numerous communication towers served by Central Electric Cooperative's distribution system.

Patrolling and accessing power lines on Grizzly Mountain is an arduous and dangerous ordeal for CEC crews, especially during the winter. Even with a utility all-terrain vehicle, personnel must

traverse challenging and divergent routes for inspections or repairs, often taking several hours.

Grizzly Mountain presents the kind of remote location Susan Rossbach—a civil engineer and bridge inspector—had in mind when she conceived an idea that could transform the use of drones in the electric utility industry.

Rossbach's day job had her loaded up with a harness and dangling precariously over structures, such as Manhattan's 59th Street Bridge, only to find nothing of interest. Thinking there had to be a better way, Rossbach and her husband, Goksel

Dedeoglu, founded Brains4Drones.

Based in Plano, Texas, the company was founded on the concept that artificial intelligence can perform inspections faster and, more importantly, safer than humans.

From Rossbach's perspective, all you need to do is BYOD—her acronym for "bring your own drone"—including inexpensive off-the-shelf models often seen buzzing across local ballfields.

Rossbach's ingenuity caught the attention of the U.S. Department of Energy's Small Business Innovation Research Program, which awarded a



LEFT: Susan Rossbach, right, CEO of Brains4Drones, updates Brad Wilson, director of operations and engineering for Central Electric Cooperative, and Tiffany Turo, CEC's geographic information systems analyst, on research and development efforts at the co-op's headquarters.

OPPOSITE PAGE: CEC's distribution line runs over steep inclines and ravines on Grizzly Mountain. PHOTOS BY BRENT TEN PAS

grant to study how her technology could rapidly assess storm damage on power lines. Another grant followed and was used to study additional capabilities in partnership with utilities.

Oregon Public Utilities Commissioner Letha Tawney—who has made wildfire mitigation a priority of her tenure at the PUC—heard about the call for utility partners to test the technology and thought it might be a good option for Oregon electric co-ops grappling with rugged, high-risk wildfire areas.

In a matter of weeks, Brains4Drones was working with CEC and Consumers Power Inc., an electric co-op based in Philomath. CEC and CPI are the only two electric utilities in the country selected to work with the company during this phase of the research grant.

"CEC is thrilled to partner with Brains4Drones as we continually look for ways to enhance our wildfire mitigation efforts more effectively and economically," said CEC President and CEO Dave Markham. "This is a tall task with a service territory of 5,300 square miles. This technology has the potential to save us time and money and, more importantly, add

another layer of safety to help protect the members and communities we serve."

The use of drones is not new in the electric utility industry. What sets Brains4Drones apart is the technology can be used on relatively inexpensive models—a process Rossbach calls "turning toys into tools."

Electric co-ops hesitant to invest in a \$70,000 drone can have a cheaper alternative that offers preplanned missions and can curate high-resolution information on potential hazards with real-time results.

"This technology could make it more affordable, while providing greater detail and detecting problems that linemen can't see from the ground," Markham said.

Tawney witnessed a demonstration of the technology at the highest point in Oregon's coast range: the steep and heavily wooded Mary's Peak in CPI's territory.

Instead of sending crews for hours into a deep canyon full of peril—think twisted ankles and rattlesnakes—a co-op drone operator can stand on a ridgeline and, within minutes, flag areas of concern using only a laptop and a low-cost drone.

"This technology has a low barrier to entry and provides access to the last places

you can check," Tawney said.

Brad Wilson, CEC's director of operations and engineering, has worked closely with Rossbach and her team to provide technical feedback on how to tailor the technology to help support his mission to maintain the co-op's electric system more effectively in difficult-to-access areas.

"Ultimately, the value of this technology could allow us to monitor equipment and identify vegetation encroachment in less-accessible high-risk wildfire areas more frequently," Wilson said. "It could also help locate the cause of an outage and get power restored more quickly."

Brains4Drones will unveil and demonstrate its research efforts this fall.

Bringing lower-cost options for wildfire mitigation technology to smaller utilities will be critical in the coming years.

"We're just seeing the leading edge of a changing climate," Tawney said. "Challenges to delivering safe and affordable service will continue to mount. Solutions like this could reduce wildfire risk and the cost of storm recovery and other utility operations. That's a very welcome win-win for customers." ■