Courtney Doyle (00:16):

Welcome back to Co-Op Energy Talk. I'm your host, cherry Lands Communications and member relations manager, Courtney Doyle. I know it probably doesn't come as a surprise to any of our usual listeners, but we care deeply like a lot about keeping the lights on for our members and doing it efficiently. In today's episode, we're talking with Cherry Lands, CEO, Rachel Johnson, and our communication controls field engineer Zach Andress, about how we're using drone technology to keep the lights on and how it's one way and one of the tools that we're using to make smart investments that save members money down the road. Zach, Rachel, thank you so much for joining us today. Thanks

Rachel Johnson (00:53):

For having us. Yeah,

Zach Endres (00:54):

Thanks you.

Courtney Doyle (00:54):

Of course. Zach, let's start by giving our listeners a little bit about who you are and and what you do for Cherry Land.

Zach Endres (01:00):

Yeah, so I'm the communications control field engineer and, uh, wear many hats in the engineering department. We do maintenance recloser deployment, and then we dabble with the drones, with our partnership with NMC, uh, to do all of our maintenance on our lines. So making the system safe, affordable, and reliable by using the drone technology.

Courtney Doyle (01:25):

A lot of cool technology that's out on the system, like on the poles on the grid itself, right? Yep,

Zach Endres (01:32):

Yep. So every little component on the pole eventually will deteriorate, so the quicker that we can inspect them with the drones, the quicker we can catch the issue to, I guess, uh, repair it. Mm-hmm <affirmative>. So before there's an outage or a storm event that actually takes it takes it down, right.

Courtney Doyle (01:53):

That causes the issue. And so before we dive deeply into how you do that now, Rachel, so what he's talking about is in inspecting the poles, inspecting the equipment out there. Can you walk us through how has that been done traditionally right before all this technology <laugh>?

Rachel Johnson (02:07):

Well, I think it's important to first start by, um, acknowledging that not every utility has an inspection program like ours. Our inspection program has always been robust. It's something we've always seen as a, a good investment of our members dollars to catch things sooner and fix them before they become more expensive repairs. Mm-hmm <affirmative>. So it's a way we help save our members money and also keep their lights on. So historically what we did is we paid a line crews to go pull to pole and essentially like a, you know, a lineman would either, you know, kinda inspect it from the ground or hop in a bucket and go up and inspect it from the air. Mm-hmm <affirmative>. But that's a, a, a really time intensive process. And we were sending these highly skilled linemen to poles that didn't need any work done. Right. And so

what the, um, drone inspection program has allowed us to do is instead put lineman where the work needs done mm-hmm <affirmative>. And also then utilize this technology to get eyes on that system a little bit more efficiently. But that inspection program itself is something that, regardless of how we were doing it mm-hmm <affirmative>. Is unique to cherry land and I think it's one of the reasons that our members enjoy significantly higher reliability than than most other utilities.

Courtney Doyle (03:07):

Yeah. And we talk a lot about the way that we invest in the system and how that really pays off for us and the members. And so that's a great point there. I think another piece here that's interesting is, is you pointed out right, would literally go pole to poll of the what? 3,400 poles? Is that a

Rachel Johnson (03:24):

Right number? Oh, way more poles than that. Yeah. Way

Courtney Doyle (03:25):

More poles. Yeah. Is it 34? What is the 3,400 number? I'm

Rachel Johnson (03:28):

Think that's the number of miles of line.

Courtney Doyle (03:29):

Number of miles of line, yes. Yeah. And so poles that I covered that, all that mileage. Um, so that was a really tedious process. Uhhuh <affirmative>, do you remember when we kind of realized maybe there's an opportunity here or how that, how that kind of came about?

Rachel Johnson (03:45):

I think Zach could probably speak to that on the line inspection side of things, but we started paying very close attention to drones probably about 10 years ago now. Uh, at that time, this is one of the things I really like about this story is 'cause I think it's a really, uh, important example of not giving up on something just 'cause your first idea failed mm-hmm <affirmative>. So at that time we thought, well, you know what we should do? We should get a bunch of licensed drone operators on staff. And so we started sending our line workers, our engineering, uh, employees, all kinds of employees across the co-op through NMCs drone pilot program. And we had quite a few licensed drone pilots on staff, but the problem is they also have all these other jobs. And so they were available in like an emergency situation, but not necessarily available to do this day-to-day inspection work.

Rachel Johnson (04:26):

And the program kind of sat dormant for probably five or six years after we tried that originally realized it didn't work. And it was only when, um, Zach and uh, also Christopher Mul and our engineering supervisor really I think got creative and said, Hey, wait a minute, with a different approach and a different partnership, we could actually do something with this and we have to let go of this idea that it has to involve licensed drone pilots on staff. Mm-hmm. And instead think about how do we staff externally to do that. Mm-hmm. So it's, it's a really cool fail forward example. But I don't think originally we were really looking at it from a line inspection perspective mm-hmm <affirmative>. It's just that because drones were on our radar of something that we thought could help us, we were then kind of saw that opportunity when it came.

Courtney Doyle (05:02):

Yeah. It evolved into that. And, and while we don't have as many licensed operators on staff, we do have some. Right. Zach, you have a license. Yeah. And through that process, it's, you know, you take the tests, you do the fly tests, you learn all the FAA rules, so you guys know when you can, you can't fly when you should, when you shouldn't, where you can and can't. Right?

Zach Endres (05:19):

Yep. Yeah. So we have like five part 1 0 7 certified pilots here at Cherry Land. Um, and we all went through the NMC program and it's a really good program to learn all the rules and how to safely fly and operate a drone within, within the airspace. Mm-hmm

Courtney Doyle (05:39):

<affirmative>. I think something that's specific to the pole inspection program is how close you have to get to that. So can you talk us through a little bit about if, if you're going out or if you're, you're helping one of these NMC students kinda learn what we need, um, what would you, what steps would you walk them through as they need to fly and capture some of that imagery around the pole?

Zach Endres (05:59):

Yeah, so I guess we made NMC and their staff and students aware of all the hazards that are near the power lines, trees, proximity to wires, um, just communication lines about keeping, keeping our members' privacy. You know, if, if there's a concern that drone may be too close to a member's home or a livestock of any sorts. Uh, we keep our distance. Um, the nice thing about partnering with NMC is that with their drone technology and their cameras, they don't have to be really close to the lines. They can be 50 feet away and still capture the really high quality imagery that we're looking for.

Courtney Doyle (06:45):

And so what are they looking at up there?

Zach Endres (06:47):

They're looking at everything from the wire to the trees. Um, vegetation encroachment. Um, they're finding cracked insulators, deteriorating cross arms and pull tops. We found like missing Kotter pins. I,

Courtney Doyle (07:06):

I don't know what that is. Help

Zach Endres (07:07):

Me. It's a little tiny, tiny pen that might be inch and a half long by less than a, an eighth inch wide. So

Courtney Doyle (07:15):

A tiny, so a tiny piece of some equipment that's at the top of a pole.

Zach Endres (07:18):

Yeah. It's just a little piece of hardware, um, to hold an insulator together to Yeah. Together. So found a lot of cool, interesting things that you just can't see from the ground.

Courtney Doyle (07:31):

And, uh, yeah. Something that you said it's what, like an inch long or what? Yeah,

Zach Endres (07:34):

Little pin, just little little tiny cotter pin. So

Courtney Doyle (07:38):

Yeah. So those are the kind of things that the drone is capturing. And then what happens? So we capture that imagery and then what happens next?

Zach Endres (07:46):

Yep. And then we, uh, work with PLP. They're a company that will analyze all the images one by one. They'll go through, they'll find all those issues. They know what to flag look for, they have all of our specs for the inspection so they know what we want from the imagery. So then we, at the end of it, after they've gone through all the images, we get a very detailed inspection report. So that's where we can then determine is there action required, yes or no? If it's a yes, we're sending crews out there to go take care of all the items that have been flagged. So

Courtney Doyle (08:23):

Essentially it's creating this big database of all of these little pieces on the system that we may or may not have discovered on a manual inspection. And then we're able to make those repairs sooner. Rachel, can you talk to us a little bit about some of the, the benefits of that? What's the outcome when we're able to see those things happen earlier?

Rachel Johnson (08:45):

Well, I mean, anything you catch and repair that would've become an outage is helping you prevent an outage for your members. Right, right. In addition to that, and I kinda hinted this later, it's more expensive to repair an outage than it is to prevent an outage usually mm-hmm <affirmative>. And so you're saving your members' money and you're also making, you know, making their power more reliable. It's a double win, which I love. Um, but the other, I think thing that is a long-term outcome here is we're validating equipment on our system. So one of the things Zach didn't talk about is when that report comes back, it interfaces with our mapping system. And we have this very, very detailed, amazing mapping system put together by one of our employees, Caroline, that has essentially what equipment we believe is on every pole. We're using that inspection information to say, is that what was actually observed there?

Rachel Johnson (09:30):

And if not, then we need to go out and figure out what's actually there. It's helping us to validate the internal data we have with what is being seen out on our system. And because the drones let us move more efficiently around our system, we're now seeing our whole system on about a nine year cycle instead of a 14 year cycle. So we're catching things sooner, we're validating what's actually there and then preventing outages along the way. So it's, again, like it's, it's really a, it's a kind of an amazing program, <laugh>, and I think it has a lot of potential in the future as well as it comes to outage response, not just outage prevention. Mm-hmm <affirmative>. Um, but there is one thing that you guys talked about that I wanna put a little finer point on, 'cause it comes up all the time from our members, is the drone looking at my yard <laugh> mm-hmm <affirmative>. Right. And I, I get it. I absolutely understand that concern and it makes sense to me. But Zach pointed out, like with NMCs technology, they're able to get even more detail. I think it's important to remember that's, that's the actual detail that's being captured. Mm-hmm <affirmative>. While the drone might look like it's flying 50 feet away, it's

Courtney Doyle (10:23):

Eyeballs.

Rachel Johnson (10:24):

Yeah. It's little drone eyeballs are looking at things that, that are, uh, an inch in size. And so it's all of the imagery, all of the data we're collecting is really, really tightly focused on those power lines. But that gives us visibility that we would be very, very difficult to get with a human in a bucket truck driving along. So mm-hmm <affirmative>.

Courtney Doyle (10:41):

Mm-hmm <affirmative>. Yeah. That's a good point. And the, the system inventory is, that's an interesting point that I always forget to bring up too, because that is not only creates efficiencies, right? Because if there is an issue there, then we know exactly all the pieces that maybe a crew needs to go out there with, but also a safety thing, right. So that we know exactly every single pole on the system what's on it. Mm-hmm <affirmative>. And so this helps us do that. Uh, something that you mentioned briefly is, you know, not just preventative, but also post if, if we have a storm, being able to survey the kind of damage, uh, this is a question for both of you. I know, uh, we used the, we we were able to provide a lot of support during the ice storm in 2025 and drones were a big part of that. Rachel, can you talk us through a little bit a what, you know, kind of flagged for you that you're like, wait, I think we have a tool that can help here. And then Zach, I'd love if you followed up, um, 'cause I know you were kind of boots on the ground in the field helping with that.

Rachel Johnson (11:37):

When that storm hit our neighboring co-ops, you know, we immediately kind of getting, getting on calls with him saying, what do you need? What are you seeing? How do we help you? And one of the themes I kept hearing from both of the CEOs of those two co-ops was, we can't even get around our system. The damage is so bad we can't access roads. We don't yet know what we're facing. Mm-hmm <affirmative>. And I kept saying, I think I, I think I have an idea. <laugh>, I think I have a guy for that. We call him Zach. Right? <laugh>. And so, uh, you know, for me it just was really immediately obvious this was a, an opportunity to use drones to do damage inspection of areas that might not otherwise be accessible yet. And because of the way that storm unfolded, 'cause the storm was really it, that ice storm went on for several days. And so they weren't really in a good position to start making repairs early. Trying to figure out how to use that time to get eyes on what they were going to encounter when they got to those areas felt important to me. And then to Zach's credit, he, he stepped up and actually went out. Mm-hmm

Zach Endres (12:32):

<affirmative>. Yeah. Yeah. How did you feel? Both, both Chris and I, we got the drones prepared, ready to go, went up and, uh, started out by just going to where they thought we should target based on hard access. So we were able to then go out and start flying and capturing some video slash imagery of problems out there in the field. So it was pretty efficient way to kind of collect storm damage assessment. I guess as we kept doing it day after day, we learned we kind of need to treat it like our maintenance inspection. So, um, we were able to get some inspections created. We could document what poles the drone actually flew so that you could associate kinda where the drone has been and where that data belongs. Mm-hmm <affirmative>. So

Courtney Doyle (13:24):

What were some of the things that you saw?

Zach Endres (13:26):

Um, saw a lot of things. <laugh>. <laugh>. There was, yeah, there were a lot, a lot of broken trees. Um, a lot of down power lines. Broken poles, broken wire, you name it. We saw it in that ice storm. It was pretty wild the amount of damage that was done by ice. Yeah.

Courtney Doyle (13:49):

So visualizing that ahead of time. Rachel, you can speak to this really well. Um, as far as strategy and getting, you can't just send everybody out and turn the lights back on. That's not really how an outage response works. Um, and so being able to visualize those parts of the system, they were able to be a little more efficient in how they did that. Can you talk through the thought process for things like that?

Rachel Johnson (14:11):

Yeah. So a couple, lemme go backwards just a smidge. One of the things, and, and Zach chime in if you disagree, but one of the things that I think we realized pretty quickly in that storm is that the question of what's damaged, the answer was everything. And so, in a weird way, the drones then became a little less helpful in that moment in terms of identifying where the damage was. 'cause the answer was the damage is everywhere. Which poles are broken? All of them. Right? <laugh>, I mean, they, they replaced 8,000 poles in that storm. So it's, it, it, it's a, it's just a very different kind of storm. And I'll talk about how I think we can use it in a more normal storm, but an advantage of having all of the documentation that Zach did that is a FEMA qualifying storm. Now working through some of those processes with the federal government right now, but still what those co-ops now have is incredible documentation of the damage and where it was.

Rachel Johnson (14:57):

And a lot of that FEMA process involves proving the thing you did in order to get reimbursed for the thing mm-hmm <affirmative>. And so I think, um, I think there's a lot of value in a FEMA qualifying storm of having that sort of assessment tool. Even if it doesn't help you figure out where to go, it helps you document what you found when you got there. Mm-hmm <affirmative>. In terms of normal storms, which, you know, they might knock out power for a couple days, you make significant progress in that first day kind of a thing. My dream, what I've always believed drones that can do for us is if we could fly our system pretty quickly in the early stages of a storm and have any sort of kind of data processing tool that let us very, very quickly pull that information back in, run it through that program, and have it spit back out and say, the two worst hit parts of your system are the middle of Leno County and over by Williamsburg, for example, we would know before we've sent anybody out, that's where we're gonna need to deploy and dispatch.

Rachel Johnson (15:46):

And even better if it can say, you probably have 85 broken poles. Cool. Do we have 85 poles here right now? If we don't, we need to call our supply chain partners and start getting those here. So I think it can help you very quickly. Not yet. And it's not because we don't have the drone program, it's because nobody has the data processing program yet. But I think it can very quickly help you figure out where is the damage? What equipment will you need when you get there? Mm-hmm <affirmative>. Do I need to send a tree trimmer in in advance before I send a line crew there? I think it just give you more information to have a more sophisticated and, uh, thoughtful approach to restoring that storm. So I think it has advantages in like, the big, big FEMA storm, but also in the day-to-day storms too. Mm-hmm <affirmative>. It's just kind of, that's, I think that's the next phase for us. I don't know, Zach, if you have any thoughts on that?

Zach Endres (16:31):

Yeah, no, I, I think that's definitely coming in the future where you can deploy drones to then go fly the system quickly and then process the data that it's bringing back and it, it knows what the system is in a good working condition. Then when it comes back with stuff that looks abnormal, it's gonna be like, Hey, flag flagged. Flag flag. Yeah. Flag the, uh, problem areas and tell us roughly what, what we need to take out to the field with us. So come prepared the first time. Huge

Rachel Johnson (17:04):

Efficiencies. I think this is, yeah. And I think this is where Cherry land's approach here, it will pay off because we are really on the front edge of using drones, but we're collecting all this system data that we talked about earlier with our inspections. So we're gonna have that data to say, is there, has something changed? Is there an anomaly when you fly that storm? The work that that Zach and his team have done on making sure we understand all the rules, building up the partnerships to have, um, what is called a beyond visual line of sight capacity. Like all of those things are setting us up to be successful when the technology catches up with where we wanna take it. And so it's gonna be, so I think a program that pays off for us even more in the future, in, in ways that we probably don't anticipate yet.

Courtney Doyle (17:40):

And it, it's crazy cool technology and it's really fun to think about the possibilities and the data, but I think as much as we can like, get really excited talking about that, it's not just using it for the fun of using it. Rachel, can you talk about the, the tangible benefits that members get? We've talked a little bit about that, but I really just wanna drive that home because it's fun to hear us all talk about it. But I think at the end of the day, everything we do is for the members and for the members benefit. Everything we spend money on or invest time and energy into has to have a bottom line for the members. So let's talk a little bit about some of those things.

Rachel Johnson (18:12):

Every decision I make here, I take through the lens of does this make things safer for our employees and the public? Does it make our power more reliable for our members? Does it help us save them money? And when the answer to those things is yes, it's absolutely the right thing to do and for this program, the answer to those things is yes. Yes. And yes, it makes things safer for the public if we catch 'em before they become a hazard or an outage. It makes things safer for our employees if we know what they're gonna encounter when they get somewhere. It makes our system more reliable if we catch it before it becomes an outage. It helps us restore power faster if outages happen and it saves our members money because we're able to fly the system, uh, at a lower cost. This is what's crazy about it. We're seeing more faster and also saving money. So it's a, it's just a, like I said, it's a, a win-win win and it checks the boxes of how we make decisions. And I'm, I'm really proud of the program. I'm, I'm really proud of the work that Zach and Chris have done on it.

Courtney Doyle (19:02):

That's pretty great. Yeah. Are there any final thoughts about the future? I know we talked a little bit about the future of the program. Do you guys have any other final thoughts about what might be coming next or what, um, you're looking forward to exploring?

Rachel Johnson (19:15):

Yeah. Drone huts. Talk about drone hus

Courtney Doyle (19:17):

Hunt, drone hunts. What's a drone hunt?

Zach Endres (19:20):

Um, I mean, that goes with the beyond visual line of sight and the deployment of the drones to analyze the system. Kinda being able to deploy them from like, say a substation or a key point on your system and the drone, it can just take off and fly it on its own because it knows to follow the lines, predetermined paths. Or you could have a pilot from say, here at Cherry Land, take off and be able to fly that and then come back home, home to its home base and then, uh,

Courtney Doyle (19:51):

Like the Amazon package ones, but, but for electric lines. But

Rachel Johnson (19:55):

It has like a little house. So like, the idea I was gonna say,

Courtney Doyle (19:57):

Where's the hot? Are they in the pack?

Rachel Johnson (19:59):

So it's, yeah. So envision like a, a a little house at a substation, right? That a drone lives inside all the time and it's always charged and ready to go. And then, uh, we'd get a, an alert through our metering system that there's a, some sort of outage activity on, uh, one of those feeders. And either through Zach said, like someone here or some sort of automation that we've built into it, the drone says, ah, I got something going on. Pops up, flies, comes back, redacts itself, but sends that data back to cherry land without us having to send someone out to begin the inspection process. I mean, again, these are, this could be years in the future. Those are the kinds of things I'm excited about, you know, and I also think, Courtney, we've set a lot of goals here around data processing. Mm-hmm <affirmative>. Uh, we're paying very close attention to the ways in which technology can help us automate the processing of some of that and predict what might happen. And so I, I don't know, I can't answer today exactly where it's going. I'm absolutely certain we will build some more exciting programs on this program. Mm-hmm

Courtney Doyle (20:52):

<affirmative>. It plugs right in mm-hmm <affirmative>. Right? Like the, the fact that we've been able to build something like this before, a lot of that stuff exists, right? Building that foundation you were talking about is going to allow us to take advantage faster when it becomes a possibility. Yeah.

Zach Endres (21:08):

No, I think working with NMC and their knowledge of the industry definitely put ourselves in a good place to stay on that leading edge and kind of work with NMC, create experiences for the students and staff there. And also help us here at cherryland Learn, learn and grow. Yeah.

Courtney Doyle (21:27):

Great community partnership. You gotta, you gotta train up the next generation to come. Yeah. You got a while before you retire, Zach. Hopefully, hopefully. <laugh>. So we talked about a lot of things. Um, and so one is that the drone program helps prevent outages before they happen. It helps us restore them faster, it helps us keep the lights on. But I think we can't put a fine enough point on the fact that it's one of those obscure things that actually saves members money because emergency repairs cost more than premeditated pre-planned repairs. So I think that's huge. And then also man hours, right? Like time, the time that it took people to go from pole to pole to pole to pole all the time, that costs money. So when we

can speed that up and make it more efficient, that's saving our members money. Of course, we take safety really seriously.

Courtney Doyle (22:18):

And also members' privacy though, um, to what Rachel said, right? Those cameras are zoomed into tiny little things on the top of the pole. So we hope members rest assured that nobody's looking in their backyards or trying to, you know, get imagery of their homes or anything like that. But we also do have data privacy rules in place that all of our contractors agree to. And so we take that also very seriously. And then at the bottom line, the efficiencies this program creates are really just astounding. And the fact that there's more on the horizon with what are apparently drone hunts <laugh>, those are, I had never heard that term hunt before.

Rachel Johnson (22:55):

I, I might, I might have made that might just be what I call them. Oh, just know. Maybe don't run around saying that. People might

Courtney Doyle (23:00):

Laugh. I think we should. I think we should call the people at Bee and let them know that Drone Huts are gonna be a thing. It's

Zach Endres (23:05):

Like a full service, strong garage. There

Courtney Doyle (23:07):

You go. Yes. Full drone garage. Yes. Well, thank you guys so much for joining us on the podcast to talk about this. Of course, you can read more about it in the magazine or catch Rachel's video. There's been a couple of articles through our National Trade Association because this is so cool. So there's lots of resources to read up more about it.

Rachel Johnson (23:26):

Yeah. Thank you. Thank you for having us and sharing the story. Yeah,

Zach Endres (23:28):

Thank you.

Courtney Doyle (23:29):

Join us next time for more co-op Energy Talk.