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Spring 2024

# Towers Up, Voices Up!

With Hazards from Unmarked Towers Multiplying, Communication and Engagement are essential for Aerial Applicators' Safety

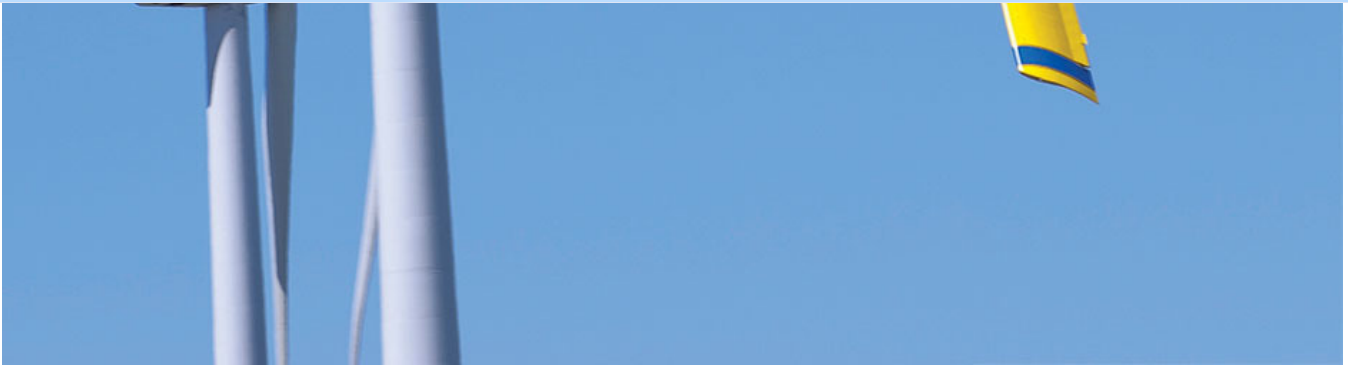
By Jan Tegler, NAAA Contributing Writer

Cover Story

Featured

Flight Safety





**S**unflowers.

They were the only visual indicators Scott Delong had as he set up to work a field near Waco, Nebraska, on a fair-weather day in August 2019.

Peering out of the canopy of the AT-502 he was piloting for Sky Tech Aerial Application and seeding, Delong focused his gaze on a guy wire attached to an unmarked 300-foot-tall cell repeater tower and followed it to its base as he overflew the field.



"There was a group of sunflowers around the bottom of it and that's how I marked it," he remembers.

Half a mile to the east of the field, Delong began to align the 502 for his first application pass. As the distance closed, he spotted the sunflowers and adjusted his line, "thinking that if I miss the sunflowers, I'm definitely going to miss the wire."

But there were two groups of sunflowers. The second was actually inboard of the group at the base of the guy wires. DeLong had fixated on the wrong group, realizing his mistake nearing the end of the run. In an instant, he collided with a guy wire.

"As soon as I noticed I was in trouble, I pulled up hard, turning to my left," he says. "I caught the top guy wire dead-center almost with the prop. It sheared one blade off and took a little over two feet of the right wing off."

The Air Tractor's turbine engine "absolutely exploded," DeLong adds, sending a fireball back over the cockpit, covering the canopy glass in front of him with oil, forcing him to look through the windows to his left and right.

Fortunately, cutters installed on the AT-502 severed the wire, releasing the decelerating airplane from its grasp. "It was like being cut out of a slingshot," DeLong recalls.

Immediately, he pushed the 502's nose down to regain energy, crossed a small highway beyond the field's perimeter and landed the stricken bird in a bean field.

"I landed pretty nice in that bean field. If you drove by and saw the airplane sitting there, you'd ask, 'Why did that guy land in that bean field?'"

Luck and flying skill kept DeLong alive, beating long odds. According to NAAA Tower Accident data from 2013–2022, there were 15 tower accidents and eight fellow aerial applicator pilots perished in tower collisions in that time period.

## **Reauthorization and the Recurring Hazard**

2016 seemed to be the moment when the Federal Aviation Administration (FAA) finally took the hazard posed by unmarked towers to aerial applicators and other low-altitude aviators seriously. In its FAA Extension, Safety, and Security Act of 2016, Congress directed the agency to do something that had been under discussion since at least 2007—develop a national rule for marking towers between 50 and 200 feet high and create a regularly updated, publicly accessible database recording the locations of the structures for pilots.

The FAA was expected to issue a Notice of Proposed Rule Making in April of 2017. But that never happened.

Last year's 2023 Reauthorization Bill again urged the FAA to develop this rule and, if not, to report why it hasn't and to list the "fatal aircraft accidents associated with unmarked towers that have occurred over the five years previous to the date of submission of the report."

So far, no action has resulted. In November 2023, FAA was asked why six years after a Congressional requirement for the marking of towers and creation of a database, nothing has been done. The FAA's strange reply finally arrived in late January in a statement from FAA public affairs specialist Christopher Mullooly.

"The FAA is considering changes to regulations for marking certain structures between 50 and 200 feet, including guy wires, and maintaining their location and height information in the FAA database. Rulemaking takes a considerable amount of time. We would publish any Notice of Proposed Rulemaking in the Federal Register."

The response is the rough equivalent of a non-answer, all the more perplexing as it states that the FAA is "considering" taking action even though an enacted statute requires it to take action.

Congressman Sam Graves (R-MO), the current chairman of the House of Representatives' Transportation and Infrastructure Committee, the body with jurisdiction over all modes of transportation, including aviation, has long supported NAAA's efforts to enact federal rules for tower marking and logging.

Asked about the FAA's response to our recent inquiry, Graves reiterated, "The FAA needs to carry out this important safety rulemaking—something they've been required by law to do for more than five years now. My bipartisan FAA reauthorization bill now pending in Congress, the Securing Growth and Robust Leadership in American Aviation Act, directs the FAA to take this action and to report to Congress about any failure to do so."

## **Mapping the Hazard**

As anyone who has flown over fields from the Midwest to the Southwest can

attest, tower construction is expanding exponentially on agricultural land.

More than 73,000 wind turbines and thousands more of the meteorological evaluation towers, or METs, associated with them are now in place across the nation, according to the United States Geological Survey (USGS).



**AVOID THE LINES** *Wire strikes are one of the most common types of accidents for aerial applicators.* HELICOPTER APPLICATORS INC.

A 2024–2029 tower market size and share analysis from Mordor Intelligence

estimates that there are more than 154,000 telecom towers in the U.S. currently, including the type DeLong collided with.

The building of other tower types is also on the rise with government funding and grants available from the U.S. Department of Agriculture (USDA) and the Department of Commerce, accelerating the proliferation of rural broadband towers and Real Time Kinematic or RTK towers. Biden administration initiatives funding wind energy projects and rural broadband are also fueling tower construction on agricultural land.

To understand the wind energy industry's future plans for development, *Agricultural Aviation* magazine reached out to the American Clean Power Association, the renewable energy trade association formed in 2021 that folded the American Wind Energy Association into its organization. No response was received when asked about the scale of wind turbine development expected across the U.S. for the rest of the decade.

Understanding the location of extant and newly constructed towers, including wind turbines and METs, is challenging for aerial applicators. The FAA offers a national database known as the Digital Obstacle File, listing all known obstacles above 200 feet updated every 56 days.

However, the database does not identify obstacles by type and, more crucially, doesn't include obstacles below 200 feet (as the 2016 federal statute requires it to). MET towers and other tower types escape inclusion in the listing. Further, MET tower builders frequently skirt existing federal regulations requiring marking for towers exceeding 200 feet by building them up to 198 feet.

One resource that may help cue aerial applicators to the location of wind turbines is the USGS' U.S. Wind Turbine Database (USWTD). Compiled by USGS from data supplied by the agency itself, the FAA, the Lawrence Berkeley National Laboratory and the American Clean Power Association. The database provides the locations of land-based and offshore wind turbines in the U.S., corresponding wind project information, and turbine technical specifications.

The database is graphically portrayed via an online map available at <http://tinyurl.com/uswindturbine>.

Satellite images of wind farms and individual turbines in 43 states can be viewed and zoomed in on. Clicking on a particular turbine brings up metadata, including make and model, total height, hub height, rotor diameter, year of installation and more. USGS says that one of the FAA data sets it uses lists MET towers, but they're "screened out" of the USWTD.

Still, a look at the USWTD could help aerial applicators understand the scope of the problem in their area.

## Be Your Own Advocate

Perry Hofer, NAAA's 2019 past president and current NAAREF President, sums up America's expanding tower hazard and the lack of action to address it succinctly.

"If we don't speak up and get involved, no one else will," he stresses. "Aerial applicators are going to have to be their own advocates on this issue, like many others."

## Learn Before You Lease Ads Available

### Wind Turbines Could Cause Farmers to Lose the Advantages of Aerial Spraying...



#### An Ag Pilot Could Lose a Lot More.

Aerial spraying, or "crop dusting," gets more challenging with every wind turbine project erected on America's farmland.

Ag pilots have been injured and, sadly, even killed in incidents involving wind turbines and related meteorological towers. The result has been expensive litigation and landowner liability.

Landowners are being asked to make crucial decisions that will impact farmers and their neighbors for years to come. Ag aircraft can treat large areas of land quickly and safely, and may be the only option for treating crops when wet fields, intense insect infestations or dense crop foliage exist. The presence of wind turbines can restrict and, in many cases, eliminate the option of aerial application.

Be sure to consider all the facts before "green lighting" a wind energy installation on your land.

**Learn Before You Lease**  
Learn more at [AgAviation.org/towers](http://AgAviation.org/towers)

A MESSAGE BROUGHT TO YOU BY  
  
NATIONAL AGRICULTURAL AVIATION ASSOCIATION

NAAA offers ads that encourage landowners and growers to consider all the facts and potential ramifications before they lease their property to a wind energy entity. The "Learn Before You Lease" ad is ideal for placement in local newspapers and trade publications, but even something as simple as including it along with your customer invoices would be a way to encourage growers to do their due diligence before contracting with a wind turbine company. Download the Learn Before You Lease ad slicks at [AgAviation.org/policy/wind-turbines/](https://AgAviation.org/policy/wind-turbines/) to provide to your customers, neighbors and local media.

Hofer, owner and operator of Doland Aerial Spraying in Doland, South Dakota, points out that in the absence of a national tower marking/logging rule, individual states and municipalities have created a patchwork of regulations that vary considerably.

That puts the onus on aerial applicators in a given locale to track tower construction plans as best they can, monitoring sources like zoning board notices and other published planning for tower construction. Hofer says his efforts to be proactive include attending public utility commission meetings, testifying at state hearings on tower construction and meeting with wind energy and tower construction companies.

"On the state level, we had a huge push on the MET towers to get a law created where if MET towers were put up, they had to be painted or lighted," Hofer reports. "The law was passed and signed by [then] Governor Rounds."

However, as Hofer notes, tower marking/logging regulations enacted at the state or local levels are only as good as the enforcement behind them.

"It appears that our law is not being totally enforced," he says. "One MET tower that we work around just east of us was completely unmarked for a couple of years after the law passed and the wind farm was open and operating. And now there are still towers going up that are not painted or marked."

Hofer's communication with Spink County Commissioners on the construction of



120-foot-tall RTK towers proved more effective, however.

"They told the builders, you guys need to mark these free-standing towers. And by God, they did. They put marker balls on them and that helps a lot. It was worth going to the meeting and giving my side of the story."

Talking directly to builders has also been worthwhile, Hofer says, "to at least have them put these towers in a linear construction instead of haphazardly all over the place. Then at least you can line up and go a half mile or a mile spraying instead of towers all over a field where you're dodging them all the time."

Ryan Lubben, a pilot with West Central Ag-Air Inc. in Fergus Falls, Minnesota, is adamant that aerial applicators have to get out ahead of tower building to have a positive influence.

"We're just starting to get inundated with wind developers here, migrating north from Iowa," he explains. "So, we're trying to be proactive and not get these giant wind farms up here. We're pretty wide open, but with Minnesota's 100 percent renewable fuel standard coming, you can see where this is going."

Lubben has also attended public utilities commission meetings and has joined his local Traverse County zoning work group.

"A couple of us crop dusters and some growers went in and said, 'Hey, you've got to adjust this ordinance.' The commissioners agreed and started a workgroup. We're going to try to get some applicator-friendly language in there."

Another effort Lubben has engaged in is making the wind energy industry aware of ground-based LiDAR and Sodar sensors as alternatives to MET towers for measuring wind speed and consistency in areas being assessed for wind turbine construction.

"MET towers, nobody really wants them," Lubben says. "Even the wind companies don't like them because they're hard to permit. Ground-based radar can measure wind speed as well or better than the 100-year-old technology of anemometers. I think all it would take for widespread adoption of LiDAR and SODAR systems is for local governments to say we're not going to put up any more MET towers."

## Agricultural Impact and Communication with Farmers

Justin Wenger, a pilot with AgriFlite Services in Wakarusa, Indiana, and Tommy Ellett, president of Nor-Wes, Inc. in Shreveport, Louisiana, agree that tower construction is harming agricultural output.

Wenger says that AgriFlite Services has had to turn down application requests in instances where multiple wind turbines packed into a small area combined with transmission lines that forward power collected by the turbines to substations.

"Power lines that go in amongst wind turbines—your workload can really spike if you've got them together in an area," he notes. "That's a lot to keep track of, and it might not always be the case where we turn it down completely, but the farmer gets a subpar application simply because we have to cut out part of a field and not fly it. In that regard, the farmer takes a hit that he otherwise wouldn't have to."

"The more crowded our airspace gets, the more difficult applications are," Ellett adds, noting that areas Nor-Wes serves in Iowa and Illinois where wind farms have proliferated, present significant safety problems.

"In most of those places we just have to say, we can't do that and the farmer loses out on his crops. If he can't get in there with his ground rig and we can't do the work with an airplane, especially if it's an insect problem that's devastating a crop, it's a hit."

Curious about the impact to agricultural production when aerial applicators turn down requests for application due to tower hazards, USDA was asked if they had any concerns about tower construction on agricultural land or if it was collecting any data on land where towers and crops coincide.

USDA spokesman Allan Rodriguez provided the following minimal statement.

"USDA does not regulate the usage or placement of these towers on agricultural land. Would recommend reaching out to federal agencies who do have regulatory authorities in this space... "

One issue several of the applicators we spoke with mentioned is diminishing

communication between aerial applicators and farmers. Applicators now booking work via retailers or coops often don't communicate directly with the farmers. That can lead to surprises.

"Even though the scouts up there in Iowa do a good job of being in the fields and making recommendations, they're still not there enough to know if a MET tower has gone up from one week to another because a lot of their stuff is on schedules," Ellett says. "They'll schedule an application 10 days out. Well, guess what? In 10 days, builders have put up a MET tower a farmer hasn't told anyone about."

Lubben and Hofer raised another issue, absentee agricultural landowners. Both noted the growing number of owners who once lived in agricultural areas but moved away to cities. Many view leasing portions of their land to the wind energy industry or telecommunications companies for tower placement as a cash cow with little concern for the hazards they present to aerial applicators or the potential impact on agricultural production.

"They're throwing around some pretty significant dollars," Lubben says, referring to the wind energy industry. "And we're getting farther and farther away from the people that live here actually owning the land and that's going to continue getting worse."

Hofer adds that growers who actually do own the land they farm have a hard time turning down the money wind energy companies can offer them for leasing land. A farmer Hofer has worked with in Iowa for several years recently allowed the construction of multiple wind turbines on his land.

"I said to him, it complicates spraying your fields and it's a hazard, the kind of hazard that can lead to someone like me accepting or rejecting a job," Hofer recalls. "Then I asked him, 'Is it worth it?'"

"He was honest with me about the amount of money he got paid for crop damage, let alone the amount of money he gets once the wind turbines start spinning per year. I farm too and honestly, if they came and offered me a program like that, even though I'm an aerial sprayer, they'd be putting windmills on my land too."

Kameron Gradert, a pilot with Crop Dusters LLC in Maurice, Iowa, says the western part of the state where the firm operates is "absolutely peppered" with wind turbines and the MET towers that accompany them.

"A lot of the MET towers in our area are really hard to find," Gradert attests.

"You run across some that have red balls on them or are clearly marked. They're easy to see but so many without markings aren't. We've had accidents locally."



**WIND TOWERS** are increasing with more than 73,000 wind turbines and thousands more METs associated with them in place across the U.S.

The danger from METs and wind turbines ultimately led Crop Dusters LLC to a costly but effective solution.

"We've been a fixed-wing operation 100 percent and we had no interest in helicopters," Gradert explains. "That's a completely different realm of ag aviation. But not too long ago, when a wind farm was under construction southeast of us, that got me thinking."

"What are we going to do with these fields that we've always serviced with fixed-wing that are now full of wind towers?"

The answer was getting into helicopter spraying, Gradert says. Crop Dusters LLC purchased a Bell 206 and hired a pilot. "I can honestly say that as nervous as I was about it, it has been a very good fit for us," Gradert reports.

Now, there's a stipulation for customers with wind turbines located on farms that Gradert and his fellow pilots service.

"We said if you have a single wind tower in a field, it is probably manageable to do application with our fixed wing aircraft. But if you have more than one tower, it automatically has to be a helicopter job."

That makes application in wind farms safer, but it costs farmers more, Gradert notes. Doug Pralle, operator of Flying Farmer Aerial Application in Hampton, Iowa, and president of the Iowa Agricultural Aviation Association (IAAA), says IAAA is seeing rising costs for aerial application on agricultural land where wind turbines are present and the costs are passed on to farmers statewide.

"We've had to look at our business approach in Iowa and add expense, not only for applicators but for farmers," Pralle affirms. "The turbines are a problem not only in western Iowa but across the state. I'm in Franklin County in north central Iowa and we have a ton of wind farms here."

Gradert says that Crop Dusters LLC makes clear to the retailers it schedules work with that fields with multiple wind turbines will be serviced by helicopter and that it will cost more.

"Our retailer has said that the farmers are getting subsidized for having wind towers in their fields. Now they have to pay a higher application fee because of that choice."

## **Ag GPS Makers Are Ready to Incorporate Tower Alerts**

Greg Guyette, the founder/owner of Insero, says the company's AgPilotX wireless guidance system is currently capable of displaying tower information in-cockpit on the Internet-connected iPad that's part of the system.

Tower indications can show up as red dots on AgPilotX's background GPS maps, Guyette says, adding that Inero has recently been working with a mosquito-spraying operation in Georgia that is compiling its own database on obstructions, including towers below 200 feet.

"They're gathering all of that information and they can load up a shape file that has the obstacle data in it," Guyette says.

Shapefiles and KMLs, short for Keyhole Markup Language, are software for expressing geographic annotation and visualization within two-dimensional maps and three-dimensional Earth browsers.

"We can import that data and bring it up as obstacle information on the screen," he explains. "The background maps are Apple maps, which we load by default as long as the system is connected to the internet."

With the online connection, AgPilotX could "check online for updates to a file—if one existed—to always show the latest obstacle file available from a group like the FAA."

Inero is aware of the FAA's Digital Obstacle File but cannot make use of it because the agency doesn't offer it in shapefile format. Ideally, the national database the FAA has been required to create for logging towers between 50 and 200 feet would be available in such a format. That way, AgPilotX could offer various cues to alert pilots to the presence of towers in a given field.

"We don't do warnings on the lightbar, for instance, but that is all part of our future plan to put that into place so all the data will come up on the screen so you can see it and put it out as a warning to the lightbar to tell the pilots that an obstacle is there," Guyette says. "However, that's dependent on that file existing, that file being updated and getting loaded."

Alan Haigood, business project manager for SATLOC, the maker of Falcon and Falcon Pro guidance systems, told us that the firm's software and systems would also be capable of displaying tower information if the FAA created the required database.

"From the initial design of the Falcon, Satloc has set a goal for pilot safety

through features such as ADS-B In alerts on the screen and lightbar, reduced screen distraction, and simplified pilot interface," he says. "We stand ready to implement alerts for [towers] when such a database is created. Critical to such a system is remotely keeping the data fresh on each unit and designing an alert to have the best impact to a pilot—noticeable but not so much that it becomes distracting."

Garmin, the maker of avionics for a wide swath of aviation, has the ability to display obstacles including towers as part of most of its GPS avionics, according to company spokesperson Mikayla Minnick.

"Garmin creates these databases based on FAA-provided data and thirdparty sources. The obstacle database contains known obstacles determined to be of interest to aviation users by the FAA. This may include obstacles such as towers, wind turbines, and other manmade objects," she explains.

Garmin has found a way to make use of the FAA's Digital Obstacle File and information from the FAA's Obstruction Evaluation/Airport Airspace Analysis website.

"For ag aviation operators, we typically recommend selecting our helicopter obstacle database with power lines. This database is actually supported by most of our fixed-wing avionics products and includes obstacles from the FAA data as low as 25 feet AGL, as well as transmission power lines."

A novel idea from one of the avionics makers is the possibility of equipping towers with ADS-B Out transponders. So equipped, the towers would broadcast signals that ADS-B In-equipped aerial application aircraft could receive, alerting pilots to their presence.

Asked about the idea, the pilots we spoke to opined that it might work but added that they already have too many in-cockpit distractions. They also pointed out that Class E and G airspace where ag aircraft typically operate, are not required to equip with ADS-B Out or its more costly counterpart, ADS-B In. They say that passing costly regulations and requiring towers to include ADS-B Out might be a hill too steep to climb.

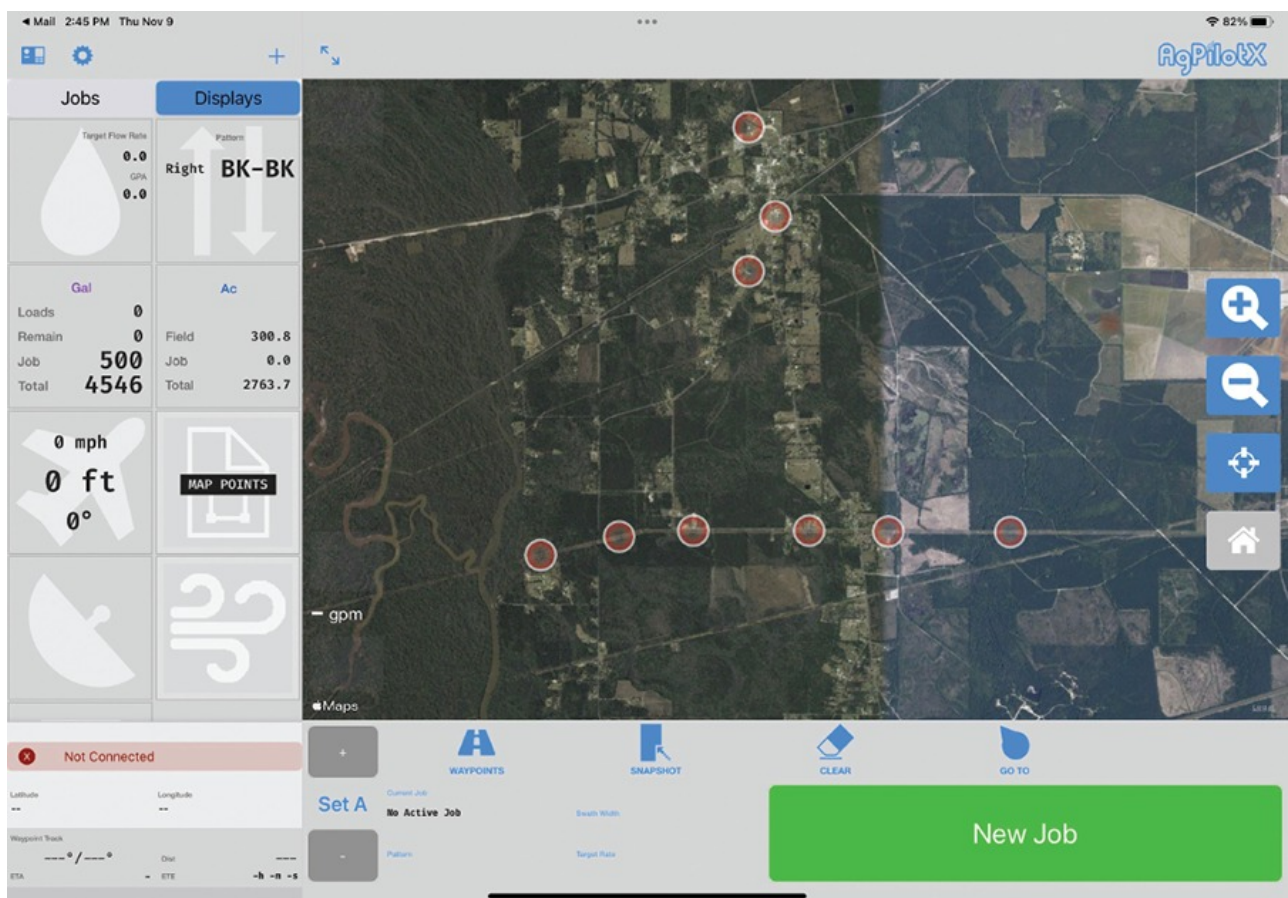
"It would definitely work," Ellett says. "But the expense would be greater than what we've proposed about marking towers. We've got red balls, spinning reflectors, lights—we've got all kinds of ways to mark these towers and guy wires that are less expensive. Let's use them." Required logging into a database, per the 2016 statute would also be of great service as the satellite manufacturers are already primed to offer readouts of these towers' locations.

## Push the Issue

Ryan Lubben concludes that tower issues, including marking, stand the best chance of being resolved if aerial applicators "push the issue."

"I think that's part of the problem," he says. "People aren't pushing the issue hard enough. They're just letting these wind companies do whatever. We need to maintain contact with our customers and get talking about this."

Ag pilot Sam Ellett, son of Nor-Wes' Tommy Ellett, sums the situation up this way, "Speak up!"



**INSERO'S** AgPilotX displays towers highlighted by red dots. The company has worked with a mosquito-spraying operation in Georgia that is compiling its



More from Spring 2024

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