

KNOW THE LAW

Properly Deploying Drone Detection

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Drone use is the fastest growing sector of aviation. Well beyond airborne public safety units, aviators are finding new opportunities for the commercial use of drones every day. In most applications, though, uncrewed aircraft are not replacing crewed aircraft, but rather adding to the operations and allowing more to be accomplished using technology than in the past.

Public safety drones have become commonplace throughout law enforcement and firefighting operations. Departments that never before had the budget for aircraft are

now incorporating UAS into daily missions, and departments that have crewed aircraft have added drones to their workforce.

Training programs for crewed and uncrewed aircraft require vastly different approaches, but the end goal is the same: to complete the mission or operation and do it safely and efficiently.

Some public safety departments flying helicopters keep their crewed operations totally separate from their drone operations. The units can operate successfully in their own respective areas; however, the crucial safety issue is strategic communication between the two divisions.

While they may have different mission objectives, they often must occupy the same airspace.

Multiple units in the airspace system lacking effective communication is a recipe for dangerous incidents. Effective communication must therefore be trained on both sides, and procedures must be put in place to prevent interference between the two divisions.

Additional potential hazards arise as hobbyist drones increasingly inhabit the airspace. The airspace needed for commercial flights, private aircraft, training flights, and public safety missions can easily be compromised by an unknowing hobbyist or unlawful drone operator. So, how do public safety operators protect their operational areas from incidents involving either recreational or commercial sector drones?

Drone detection is a rapidly evolving industry employing various technologies. The most common are radar- and radio-frequency-based detection systems. Radar-based detection is often used at airports, where radar is already used for tracking aircraft in the surrounding airspace. UAS operating at low altitudes, however, are often not detected by radar systems because the equipment cannot recognize drones among buildings, trees or other objects blocking the radar's view. Drones are also smaller than crewed aircraft and can be easily mistaken for birds on a radar screen.

Most drones use a radio frequency (RF) spectrum to communicate with their opera-





tors. RF-based detection equipment can pass through objects like buildings and trees, the same way cell phones work inside a building. RF systems only detect equipment emitting RF signals; therefore, the UAS emitting the signals cannot be confused for birds.

For drone detection equipment to be useful to law enforcement departments, RF detection sensors must be able to distinguish the type of drone in use and the location of the operator. Some RF detection software can access a library of drone characteristics to identify the aircraft's model and manufacturer. Then, GPS technology can identify the operator's location.

The approach brings up at least two questions. First, why is it necessary to detect, identify and locate drones and their operators? Second, is it legal to detect UAS? Several real-life scenarios show why detecting drones is important. Helicopters performing air medical and search and rescue missions have been grounded because of drones operating in their vicinity and potentially posing a flight hazard. Aircraft working over wildfires are often grounded for the same reason. In each case, the drones delay emergency services and put aircrews at risk.

Drones operating in crowded venues, such as over stadiums, parades or concerts, can create a direct hazard for those in attendance. Specifically, the drones could injure individuals due to low flight or by falling from the sky after

a malfunction. Drones operating near airports create the highest risk for flight operations, as they are conducted at low levels. Most of the risk cases on record are due to drones being operated by individuals unaware that their aircraft created a hazard in the first place. They are hobbyists, members of the media or other curious individuals.

In other cases, drones have been used intentionally in unlawful behaviors. The devices have been discovered surveilling secure areas, carrying contraband and carrying out other illegal acts. Using drone detection technology allows law enforcement to request operators to land their uncrewed aircraft after they have been identified and located.

The legality of drone tracking has been outlined by the Federal Aviation Administration, U.S. Department of Justice (DOJ), Federal Communications Commission (FCC) and Department of Homeland Security (DHS). In 2020, the four agencies published an interagency report, the "Advisory on the Application of Federal Laws to the Acquisition and Use of Technology to Detect and Mitigate Unmanned Aircraft Systems." Specifically, the advisory addresses two categories of federal laws that may apply to UAS detection and mitigation capabilities:

- ❶ Various provisions of the U.S. criminal code enforced by DOJ.
- ❷ Federal laws and regulations administered by FAA, DHS and FCC.

The advisory does not address state and local laws, which UAS detection and mitigation capabilities may also implicate.

Systems using RF capabilities to detect and track UAS by monitoring the communications passed between a UAS and its ground control station may also implicate the *Pen Register and Trap and Trace Statute*, as well as the *Electronic Communications Privacy Act*. Use or installation of a pen register or trap and trace device is prohibited by law unless conducted pursuant to a court order or when a statutory exception applies. The *Electronic Communications Privacy Act* prohibits, among other things: "Intentionally intercepting the content of any electronic communication unless it is conducted pursuant to a court order or a statutory exception applies." As drone detecting becomes a vital part of public safety operations, it is imperative that the equipment used is properly vetted before purchase to ensure its legal use with respect to both federal and state laws.

What can public safety units do now? Educational outreach in our communities is critical for mitigating the risk presented by careless operators and criminals. We must ensure the public understands the rules and regulations governing drone operations in our area. If done properly, drone detection will be the next step to allowing the safety and security of our crewed aircraft, drone missions and public venues. ➤