

# The Uses Continue to Emerge: Public Safety Drones and Considerations

## Abstract

Public safety agencies across the country are adopting drones at increasing rates to enhance emergency response operations. However, many public safety agencies run into roadblocks in leveraging this technology because public safety use cases generally are not considered in most state legislatures. This whitepaper describes some of these use cases, the potential legal impacts of using drones, and a myriad of other options to consider.

## What are Drones?

Drones, also referred to as unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UAS), are aircraft operated without a physical human onboard, i.e., they are piloted remotely. A drone may be remotely controlled by a human or may fly independently through software-controlled flight plans in their embedded systems, which work in conjunction with onboard sensors and the drone's Global Positioning System (GPS) technology.

Flight is a drone's main purpose, but the aircraft may be equipped with technology capable of recording audio and video. For example, a drone may provide live streaming or aerial images from the scene of an emergency incident, directly to the individual (or agency) controlling it.

## Drone History

Drones, as we know them today, have been in use for more than two decades; however, the idea of drones' dates to the nineteenth century when Austrian soldiers attacked the city of Venice with unmanned balloons filled with explosives.<sup>1</sup> Since that time, drones have evolved technologically and were quickly adopted for military use, especially during World War I and World War II. Modern military drones typically are used for combat surveillance as well as tactical reconnaissance, which allows the military to not only reach areas that they may not be able to access otherwise but also safeguards military personnel from unknown dangers. Although many of the most notable drone flights have been for military purposes, drone technology is continuing to advance, and usage has exploded especially across the commercial and public safety sectors.

## Drone Use Cases

From manning sensitive military areas to delivering packages, drone technology has developed and prospered over the last few years. Individuals, commercial entities, and governments have developed a variety of uses for drones, some of which include:<sup>2</sup>

- Aerial photography
- Express shipping and delivery

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<sup>1</sup> <https://www.dronethusiast.com/history-of-drones/>

<sup>2</sup> <https://www.businessinsider.com/drone-technology-uses-2017-7>

- Disaster management
- Search and rescue operations
- Geographic mapping of inaccessible terrain
- Building safety inspections
- Precision crop monitoring
- Unmanned cargo transport
- Law enforcement and border control surveillance
- Storm tracking and forecasting
- Delivering medical equipment
- Hazmat situations
- Structural firefighting
- Shore patrols
- Tactical operations
- Pursuit of criminals
- Water rescues and dropping floatation devices

The above are just a few examples, and a multitude of uses are being developed, to include additional uses for public safety agencies. Although public safety agencies typically have been adopting drones at a more gradual pace than commercial industries, they are now increasingly adopting them at unprecedented rates to enhance the safety of citizens, assist local emergency responders, and allow for enhanced efficiency and effectiveness in operations. As the national drone industry continues to take off, unmanned aerial vehicle experts say it is likely that drones will be used by almost every law enforcement agency across the country within the next few years.<sup>3</sup>

### Considerations for Public Safety

For public safety, drones can be particularly useful in situations pertaining to large-area search and rescue of a missing person or suspect; thermal-imaging capabilities; active-shooter incidents; special weapons and tactics (SWAT) standoffs; monitoring for hotspots during fire incidents; monitoring hazmat or hostage situations, investigation of fires or car crashes; crowd monitoring at public events; reconstructed 3D models for security planning, and subdivision addressing for 911. In the future, it is anticipated that public safety may be able to use drones for hostage negotiation, bomb investigations, missing persons, and crime-scene analysis.<sup>4</sup>

Drones that will be used by public safety agencies will differ from the type of drones used by commercial entities and hobbyists. Public safety drones will need to be durable enough to withstand any type of situation, including long flight time. In connection to flight time, another important element is the charging time. The charging time of a drone can range from 30 minutes to two hours, but for public safety, the charging time typically is desired to be as low as possible. This is an important consideration, given that battery life for a drone typically lasts 20-30 minutes.<sup>5</sup> In addition, the greater range the drone is given, the farther it can travel—with a longer span, the drone will be capable of completing a greater variety of missions. Another important consideration will be the drone's camera, with the higher the resolution the

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<sup>3</sup> <https://www.reviewjournal.com/business/drones-increasingly-being-used-for-public-safety/>

<sup>4</sup> <https://www.autodesk.com/redshift/drones-in-police-work-future-crime-fighting/>

<sup>5</sup> [https://www.faa.gov/uas/public\\_safety\\_gov/media/Law\\_Enforcement\\_Drone\\_Card.pdf](https://www.faa.gov/uas/public_safety_gov/media/Law_Enforcement_Drone_Card.pdf)

better. In some cases, it may be a better advantage to purchase a drone without a camera and apply a high-performance camera to it, such as a GoPro. Finally, Band 14 capability as an option also could be useful for potential First Responder Network Authority (FirstNet) operations.

Along with deciding on the right drone for your public safety agency, another challenge is figuring out how to stand up a drone program within an agency. One of the first steps is to decide if you want to stand up the program around the individuals in the department, or around the agency itself; a hybrid approach is recommended<sup>6</sup> by drone instructor Douglas Spotted Eagle:<sup>7</sup> each individual flying would need to have a Remote Pilot Certificate (RPC) from the FAA<sup>8</sup> and would be the only people authorized to physically control the agency's drones.

However, a public safety agency also can apply for Certificates of Waiver or Authorization (COA) to fly on specific missions. Public safety agencies that chose to obtain both a COA and RPC (i.e., a Part 107 certification) generally pursue parallel paths, working on and submitting the COA application while also having their pilots study for and take the Part 107 test to obtain their RPC—pursuing both paths helps to create a thorough, well-organized drone operation.<sup>9</sup>

As an example, when the Las Vegas Route 91 Harvest Festival shooting occurred in October 2017, the Las Vegas Metropolitan Fire Department was just weeks away from implementing newly purchased drones. The FBI arrived and wanted to begin mapping the scene, but airspace restrictions were a challenge. The Nevada Highway Patrol had individually certified pilots, and a Class B waiver, which allowed them to fly the drones close to the airport. With their agency and individual licenses, they were able to put drones in the sky.<sup>10</sup>

In addition to training and certification, align your program with your current policies and procedures, and make sure your agency is covered by insurance in case of accidents.<sup>11</sup> The Federal Aviation Administration (FAA) doesn't require insurance for drone operators, although local regulations may require operators to have insurance. In any case, drone insurance should be seriously considered by the public safety agency, as well as any potential agencies to which the drone is lent.

Some potential drone liability issues include<sup>12</sup>:

- Invasion of privacy

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<sup>6</sup> <https://www.firerescue1.com/emergency-response-in-the-drone-age/articles/376292018-Drone-use-in-fire-EMS-and-public-safety/>

<sup>7</sup> [www.sundancemediagroup.com/about/](http://www.sundancemediagroup.com/about/)

<sup>8</sup> <https://www.aopa.org/go-fly/aircraft-and-ownership/drones/guide-to-remote-pilot-certification>

<sup>9</sup> <https://www.dronepilotgroundschool.com/coa-part-107/>

<sup>10</sup> <https://www.firerescue1.com/emergency-response-in-the-drone-age/articles/376292018-Drone-use-in-fire-EMS-and-public-safety/>

<sup>11</sup> <https://www.firerescue1.com/emergency-response-in-the-drone-age/articles/376292018-Drone-use-in-fire-EMS-and-public-safety/>

<sup>12</sup> [www.wevegoyoucoveredblog.com/potential-drone-liability-issues/a-comprehensive-look-at-potential-drone-related-liability-and-insurance-coverage-implications/](http://www.wevegoyoucoveredblog.com/potential-drone-liability-issues/a-comprehensive-look-at-potential-drone-related-liability-and-insurance-coverage-implications/)

- Property damage from a drone crash
- Injury from a drone crash

In the event of property or bodily damage, liability insurance can mitigate the damages. Here are some types of insurance to consider:

- Drone liability insurance protects you financially from third-party claims of injury or property damage
- Hull insurance protects from any accidental damage that occurs to your drone
- Payload insurance covers accidental damage to any equipment attached to the drone

In addition to public safety agencies possessing insurance, a template should be developed depicting instructions and requirements of drone usage.

## Legal Impacts

Current federal law does not specifically address the use of drones with respect to privacy, and the FAA's drone regulations do not govern privacy. Many organizations within the drone industry are concerned about the emergence of a regulatory patchwork with a variety of state and local laws, making it difficult for the industry to continue to develop. States likely will have their own regulations pertaining to drones, and even though federal regulations may be less restrictive, public safety entities need to understand and follow their state's laws. To date, 41 states have enacted laws addressing drones and an additional three states have adopted resolutions.<sup>13</sup> Common issues addressed in the legislation include defining what a UAS, UAV or drone is, how they can be used by law enforcement or other state agencies, and how they can be used by the public. It is recommended that public safety agencies fully review and understand any state or local laws before standing up a drone program or developing use cases.

In addition to understanding state and local laws, another area with which to become intimately familiar concerns the FAA's regulations under Part 107.<sup>14</sup> The Part 107 rules are relatively few but have the potential to greatly impact a public safety agency's drone program. For example, drone operations generally are not allowed within five miles of an airport. To fly near an airport for commercial operators, the class of airspace in which you would like to fly will need to be identified. If that airspace is controlled,<sup>15</sup> an airspace authorization—i.e., flying near airports/in controlled airspace (§ 107.41) Part 107 waiver—will need to be obtained from the FAA.

Another example concerns Part 107. The FAA mandates that aircraft cannot be flown over people, but that rule is subject to a waiver (§ 107.39). A waiver application can be submitted via the FAA's DroneZone portal.<sup>16</sup> In addition, the FAA also has the authority to issue a COA for a public agency that seeks to operate a drone for a specific activity, as discussed above in the "Considerations for Public Safety" section.<sup>17</sup>

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<sup>13</sup> <http://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx>

<sup>14</sup> [https://www.faa.gov/uas/getting\\_started/part\\_107/#or](https://www.faa.gov/uas/getting_started/part_107/#or)

<sup>15</sup> [www.knowbeforeyoufly.org/air-space-map/](http://www.knowbeforeyoufly.org/air-space-map/)

<sup>16</sup> <https://faadronezone.faa.gov/#/>

<sup>17</sup> [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ato/service\\_units/systemops/aaim/organizations/uas/coa/](https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/aaim/organizations/uas/coa/)

## Conclusion

Consumers have ranked public safety the highest as an application for drone technology they would like to see, such as for police and security efforts, and search and rescue. However, 96 percent of consumers surveyed also cited concerns about the use of drones. This discrepancy points to the need for more awareness of public safety rules, technologies, regulation of airspace, as well as drone safety and security.<sup>18</sup>

The usage of drones by public safety agencies is beginning to turn from “nice to have” into “must have,” as additional use cases begin to emerge, and results are demonstrated regarding how drones can save more lives and increase the efficiency and effectiveness of emergency response operations. For example, drones recently saved four people in three separate incidents, which involved dropping life jackets into life-threatening water-rescue situations and utilizing a thermal-imaging camera to locate a stranded hiker.<sup>19</sup> In addition, drone manufacturer DJI released a report in May 2018 detailing 27 separate incidents in which 65 people were saved by drones.<sup>20</sup> However, this demonstrated need also must be carefully balanced with navigating around state and federal laws, potentially appealing to legislators and decisionmakers to relax certain restrictions for public safety. The future of drones depends on regulation, not just technology.<sup>21</sup>

## How Mission Critical Partners Can Help

Mission Critical Partners (MCP) has worked with multiple state public safety agencies to discover their needs and current roadblocks, and to research questions related to standing up drone programs. Research conducted thus far not only has encompassed state and local laws, but also federal regulations, to include the FAA’s Part 107 program. As a partner, MCP can help your public safety agency navigate regulations, conduct research, and find solutions. In addition, MCP can assist in helping your public safety agency stand up your drone program by providing recommendations for drone specifications, training, and use cases. If you are looking for guidance and support, please contact us today!

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<sup>18</sup> <https://www.prnewswire.com/news-releases/survey-finds-public-safety-to-be-consumers-top-choice-for-future-application-of-drone-technology-300641723.html>

<sup>19</sup> <https://www.prnewswire.com/news-releases/drones-saving-more-lives-being-adopted-by-more-public-safety-agencies-reports-skyfire-consulting-300679235.html>

<sup>20</sup> <https://uavcoach.com/dji-lives-saved/>

<sup>21</sup> <https://www.economist.com/technology-quarterly/2017/06/10/the-future-of-drones-depends-on-regulation-not-just-technology>