

GETTING A SAFER BIRDS-EYE VIEW:  
ESSENTIAL CONSIDERATIONS  
FOR DRONE OPERATION.



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### INTRODUCTION

Just a few short years ago, most "small, unmanned aircraft systems" (sUAS) were simple gadgets utilized by weekend hobbyists. The defense industry has utilized this technology for decades, in a far more sophisticated form, but until recently these devices hadn't cracked the mainstream, and commercial demand was all but non-existent. All of this has quickly changed as sUAS, or "drones" as they're popularly known, now offer myriad opportunities for businesses with very little up-front cost. But while the sky may be the limit for this technology's growth, the rapid adoption of drone use comes with its own set of unique risks.



## Know Who's Up In the Air.

Construction companies, especially roofing contractors, utilize drones to improve photo and video images for various purposes including marketing, assessing roof conditions, capturing images of possible damage from large storms, and thermal imaging purposes. Real Estate professionals use drones for similar purposes as roofers. sUAS operations offer realtors and other real estate professionals tools to view full properties, exterior roof condition, and the ability to capture aerial photographs for marketing purposes. Appraisers and inspectors may also utilize drones for inspection purposes but as with the roofing industry, there are limitations in the ability to determine certain condition aspects of buildings. Architects and Engineers are also increasingly utilizing drones for commercial purposes. The technology proves beneficial when assessing progress and capturing images of large projects spanning acres in a short amount of time. With projects that require periodic progress updates, drones provide a cost-effective method for generating images than hiring a piloted-aircraft operator or "walking the job" to capture similar images.

<sup>1</sup> FAA Aerospace Forecast – Fiscal Years 2017-2037

<sup>2</sup> 8 Incredible Drone Industry Stats – Drone Life, Jul 19, 2016

<sup>3</sup> Drone Registrations are Still Soaring - Fortune, Jan 6, 2017

<sup>4</sup> Ibid.

<sup>5</sup> The Drones Report – Business Insider, Jun 10, 2016

<sup>6</sup> FAA Aerospace Forecast – Fiscal Years 2017-2037

<sup>7</sup> Current Unmanned Aircraft State Law Landscape – NCSL, Jul 25, 2017



## DRONES BY THE NUMBERS

**445,000** Potential commercial drones in use by 2018<sup>1</sup>



## WHO OWNS ALL THESE DRONES?<sup>2</sup>

### 2016 Market Share by Region

United States 35%

Europe 30%

Everyone Else 20%

China 15%



**7 MILLION**

Anticipated U.S. drone sales, by 2020<sup>3</sup>

**670,000**

Number of drones registered with FAA in 2016<sup>4</sup>

**\$12 BILLION**

Potential drone sale revenue in 2021, alone<sup>5</sup>

FAA projects the number of small commercial drones to grow from

**42,000**

in 2016 to

**420,000**

by 2021<sup>6</sup>



Number of U.S. States considering drone legislation in 2017<sup>7</sup>

## Understand the Basics.

According to the US Federal Aviation Administration (FAA), a small, unmanned aircraft system (sUAS) is defined as an aircraft, without a human pilot on board, that is operated remotely by a human on the ground.

If compensation is received in part from use of the drones, then it is considered commercial use. This would include a company using the drone to capture images to assist in bids/estimates, job progress, etc. In addition, a realtor or photographer using photos captured by a drone for the purpose of assisting in the sale of the property (images for listing or marketing purposes) is also considered commercial use.

### sUAS

### SMALL, UNMANNED AIRCRAFT SYSTEMS

#### FAA Requirements:

Weigh less than

**55 lbs.**

Fly under

**400 feet**

Fly at or below

**100 mph**



## Requirements for Commercial Drone/sUAS Operation

### Pilot Requirements

- Must have Remote Pilot Airman Certificate
- Must be 16 years old
- Must pass TSA vetting

### Aircraft Requirements

- Must be less than 55 lbs.
- Must be registered if over 0.55 lbs. (online)
- Must undergo pre-flight check to ensure UAS is in condition for safe operation

### Location Requirements

- Class G airspace\*

### Operating Rules

- Must keep the aircraft in sight (visual line-of-sight)\*
- Must fly under 400 feet\*
- Must fly during the day\*
- Must fly at or below 100 mph\*
- Must yield right of way to manned aircraft\*
- Must NOT fly over people\*
- Must NOT fly from a moving vehicle\*

### Example Applications

- Flying for commercial use (e.g. providing aerial surveying or photography services)
- Flying incidental to a business (e.g. doing roof inspections or real estate photography)

### Legal or Regulatory Basis

- Title 14 of the Code of Federal Regulation (14 CFR) Part 107

\*Rule may be eligible for FAA waiver: [www.faa.gov/uas/beyond\\_the\\_basics/#waiver](http://www.faa.gov/uas/beyond_the_basics/#waiver)

Source: [FAA – UAS Getting Started](#)



## Consider the Exposures.

Detracting from the many benefits of drone adoption in the commercial space is the increased exposure to risk. These include personal injury and property damage potential as well as some privacy concerns. If drones are used in a professional setting, a number of best practices should be followed in an effort to limit exposures.

In addition to adhering to the items listed in the sections below, all companies using drones for commercial purposes should have trained operators who have the technical skill to operate the drones, including launching and landing, and navigation of the specific drones owned by the organization. They should always adhere to restricted use of drones near buildings or other occupied spaces, specifically areas of high occupancy. This will assist in limiting exposure to crashes and property damage and/or bodily injury.

## Follow Best Practices.

Current best practices for drones suggest that companies and operators of drones within the company utilize the aircraft for business purposes only, as well as adhere to all current FAA regulations. Operators should have the remote pilot certificate, issued by the FAA.

**To obtain a remote pilot certificate with a sUAS rating, you must meet the following eligibility requirements:**

- Be at least 16 years old
- Be able to read, write, and understand the English language
- Be in a physical and mental condition that allows for the safe operation of the sUAS
- Pass an initial aeronautical knowledge test
- Must undergo a TSA security check



**Other operational best practices that should be followed include:**

- The sUAS must weigh less than 55 pounds
- The sUAS must remain within visual line-of-site (VLOS) of the pilot
- Maximum altitude of 400 feet or within 400 feet of a structure
- Maximum ground speed of 100mph
- Daylight-only or civil twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting
- No person may act as a remote pilot in command or VO (visual observer) for more than one unmanned aircraft operation at a time
- No operations from a moving vehicle unless the operation is over a sparsely populated area
- No carriage of hazardous materials
- Never fly drones near major US airports, military bases, or US national parks
- All operators should be knowledgeable of FAA regulations pertinent to their sUAS

Source: Title 14 Code of Federal Regulations Part 107

## Ensure Everyone's Privacy.

Privacy concerns with the use of drones are ever present, and operators should use them in a responsible, ethical, and respectful way. Outlining the scope of operations and informing 3rd party individuals who may be impacted by drone operation could help limit concern, calls to the company, law enforcement crews, or other responders. For example, a roofer or real estate professional can inform building occupants of the day/time the drone will be present prior to flying the drone and capturing images. The operator of the drone should also be cognizant of the images captured as to limit liability of what is captured.

As part of a prudent Risk Control program, CNA encourages policyholders to outline internal guidelines on appropriate use of the sUAS. Accountability should be placed on both the operator(s) and owner(s). The following items are suggested for inclusion in the policy under **Voluntary Best Practices for UAS Privacy, Transparency, and Accountability**:

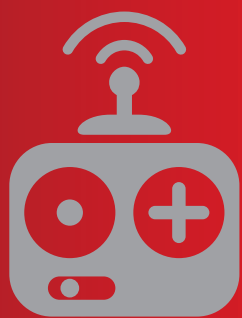
- 1 Defining Your Purpose**  
The purposes for which the sUAS will collect covered data
- 2 Collecting Data**  
The kinds of covered data sUAS will collect
- 3 Retaining Data**  
Information regarding any data retention and de-identification practices
- 4 Sharing Data**  
Examples of the types of any entities with who covered data will be shared
- 5 Handling Complaints**  
Information on how to submit privacy and security complaints or concerns
- 6 Law Enforcement Response**  
Information describing practices in responding to law enforcement requests



## Limit 3rd-Party Liability.

When a company contracts out the photography and marketing aspect of their operations, this may include drone usage. As with any contracted service, certain steps should be taken to ensure liability exposures are well controlled and documented.

### CONTRACTED COMPANY AND OPERATOR SHOULD:



✓ Be FAA-certified to use the sUAS in question

✓ Comply with all current FAA regulations surrounding use of sUAS

✓ Have liability insurance that covers piloting a drone for the intended services

✓ Provide a contract outlining services provided and responsibility for drone liability

## Look Online Before You Lift Off.

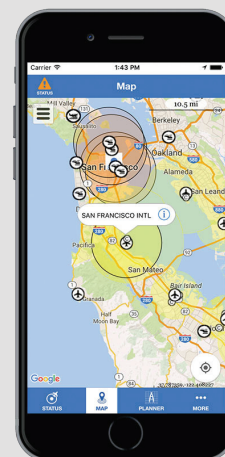
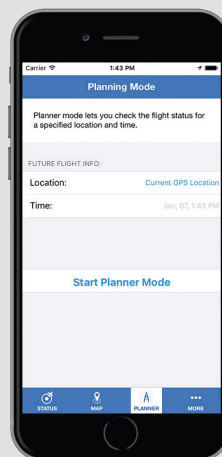
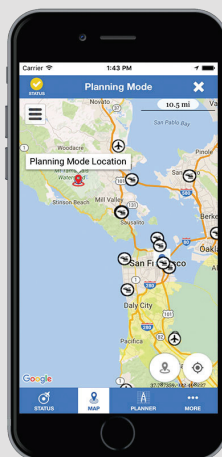
The FAA provides the B4UFLY easy-to-use smartphone app that helps unmanned aircraft operators determine whether there are any restrictions or requirements in effect at the location where they want to fly.



### Key Features:

#### The FAA B4UFLY App

- A clear "status" indicator that informs the operator about the current or planned location restrictions
- A "Planner Mode" for future flights in different locations
- Informative, interactive maps with filtering options
- Links to other FAA UAS resources and regulatory information



Source: [FAA – UAS B4UFLY Mobile App](#)

## Keep It Safe. And Keep a Log.

The FAA does not specify required maintenance practices for drones, but manufacturers may include guidelines as part of their included documentation. Ultimately, it's up to the owner/operator to determine an appropriate maintenance schedule. UAS crashes are most likely to occur as a result of mechanical failure (rotor breaks), battery failure, loss of connection to the control unit, weather, and operator error. Many of these risks can be mitigated with thorough maintenance checks and upkeep.

While the FAA does not require a flight log, one should be maintained. This should document, at a minimum, the date, time, purpose, and location of the flight. In addition, recording approximate distance or flight time can assist in determining when maintenance should occur.



### sUAS FLIGHT LOG RECOMMENDATIONS:

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 Date	 Location
 Time	 Distance
 Purpose	 Flight Time



### Key Resource: **FAA Rules**

- Complete FAA rules for sUAS operation are published under Title 14 of the Code of Federal Regulations (14 CFR) part 107, Small Unmanned Aircraft Systems (sUAS).

Pre- and post-flight inspections should also occur for every flight. These inspections should check common maintenance areas such as rotors, wires and connections, camera mounts, landing skids and any other area which can be visually seen for damage, wear and tear. If any concerns are noted, they should be documented and repaired prior to flight.

Ensuring a well-charged battery for all flights will help eliminate the potential of a mid-flight battery failure, resulting in a crash. The owner/operator should determine the useful life of the battery from the manufacturer or battery manufacturer. This may be based upon number of charges or flight time, and should be logged to determine when replacement is needed.

For more resources, visit [www.cna.com/riskcontrol](http://www.cna.com/riskcontrol).

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