FAMA BUYER'S GUIDE

TC083

Public Safety Drone Program

Prepared by the FAMA Technical Committee

This guide does not endorse any manufacturer or product.

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Introduction – sUAS Programs

The use of Small Unmanned Aircraft Systems (sUAS) in public safety has increased exponentially in recent years due to their ability to improve response-scene situational awareness at a relatively low cost.

According to Bard College's most recent report, 1,578 state and local public safety agencies in the U.S. have drones. Since 2018, there has been a 45% increase in the number of counties with at least one drone program, as well as a 90% increase in counties with at least two agencies with a drone program. These figures only continue to rise as sUAS are becoming efficient tools in the public safety space.

This guide aims to provide foundational principles and information of an sUAS program.

What is sUAS

sUAS stands for Small Unmanned Aircraft Systems. Other common names include UAV (unmanned aerial vehicle) or drones.

Main Components of sUAS:

- Aircraft
- Controller
- Payloads/Cameras

For legal use in the United States, the FAA (Federal Aviation Administration) requires the sUAS to meet the following basic criteria:

Weight at takeoff between 0.55 lbs AND 55 lbs including batteries and fuel.

Inclusion of all equipment necessary for a safe and efficient operation.

Enhancing an agency's capabilities

The proper use of a drone program can enhance an agency's operations with:

- Faster response times
- Better situational awareness
- Additional data gathering
- Increased personnel and community safety
- Preventing event escalation

Several use cases exist for sUAS:

- Search and rescue
- Accident reconstruction
- Hazmat operations
- Wildfire detection, surveillance, and mapping
- Structure fire surveillance and thermal imagery
- Arson investigation
- Accident/incident review
- Swift water rescue

Implementing an sUAS Program

- Implementation of a sUAS program must be well planned and adhere to the appropriate FAA regulations covering the aircraft, the pilot, and the support staff.

REGULATORY CERTIFICATIONS

Certifications for any commercial use of a drone require pilots to possess a Part 107 license.

- Initial test, administered at an FAA approved testing facility (fee required)
- Certificate valid for 24 months
- Renewal test is completed online at no cost
- Places responsibility of flight on the pilot
- Must follow Part 107 rules
- For departmental training at least one Part 107 licensed pilot must be present, department cannot flight train under COA
- Flight at night permitted with a 3-mile beacon on drone*
- Flight over people permitted within certain categories*

  *Only allowable if pilot has completed and passed updated initial test or recurrent training

Certificate of Authorization (COA) - COAs can only be obtained to achieve governmental functions. The term "governmental function", as defined by the FAA, is "an activity undertaken by a government, such as national defense, intelligence missions, firefighting, search and rescue, law enforcement (including transport of prisoners, detainees, and illegal aliens), aeronautical research, or biological or geological resource management."

Other advantages and aspects of COA certification include:

- Places responsibility of flights on the department, not the pilot
- Department must file monthly flight logs online in the FAA's portal
- Department has the ability to self-certify pilots, maintenance, airworthiness and currency
- Allows for special provisions that are not available for Part 107 pilots

Depending upon your jurisdiction's airspace, and mutual aid policies, one or any combination of the following offerings may be necessary:

- Blanket COA
- SGI (Emergency COA)

- Jurisdictional COA

The following options are only available after obtaining a Blanket and/or Jurisdictional COA and can increase the capabilities of your drone program.

- Tactical beyond visual line of sight waiver
- Beyond line of sight

FAA REGULATIONS

- Maximum flight ceiling of 400ft AGL (Above Ground Level)

  *Exceptions available with jurisdictional COA only. Must request when filing.

- Must maintain VLOS (Visual Line of Sight) when operating the sUAS

  *Exceptions available through BVLOS (Beyond Visual Line of Sight) and TBVLOS (Tactical Beyond Visual Line of Sight) add-ons.

- Must be able to see and avoid other aircraft
- Minimum of 3 miles of visibility to fly
- Must fly slower than 100MPH
- Cannot fly sUAS from a moving vehicle
- Pilots Flying Under a Part 107 or COA are required to file a Notice to Airman (NOTAM) at least 24 hours prior to a planned flight operation.
- For emergency operations, public safety agencies may file a NOTAM at the time of the incident or as soon as practical post incident. If none are filed, the agency must be able to justify why a NOTAM filing was not practical at the time of the incident.

STANDARD OPERATING PROCUDURES (SOP)

Standard operating procedures (SOP)s establish the interdepartmental framework for your sUAS program, setting your program up for success and safe operation. Standard operating procedures should contain the following details at a minimum:

- Purpose

- Authority
- Scope
- Policy
- Rules and responsibilities
- sUAS acquisition
- sUAS flight services
- sUAS airworthiness certification
- Periodic inspections
- Remote pilot responsibilities
- sUAS use reporting
- Flight time and duty day
- Visual observer (VO) requirements
- Visual observer responsibilities
- sUAS inspections
- Initial and ongoing sUAS training
- Flight proficiency and currency
- sUAS operations in the National Airspace System (NAS) sUAS operations general provisions
- sUAS mishap reporting
- Privacy, civil rights, and civil liberties

TRAINING

Frequent and ongoing pilot training is key to a successful public safety sUAS program. Essential elements include dedicated pilot and training staff, adequate and ongoing dedicated financial resources to support the program, support of organizational leadership and on-going integration of sUAS in daily operations.

Many successful public safety sUAS programs utilize pilot task books to ensure standardized and appropriate skill proficiency and documentation. Subsequent pilot training activities are often documented using the organization's in-house training record retention software programs. COAs require that you have a training framework in place which is specifically outlined in a COA.

EQUIPMENT

Equipment varies depending on needs and operations. There are various types of aircraft that serve different purposes with varying limitations.

Consumer Off The Shelf (COTS)

- COTS are drones you can find at places such as Walmart, Best Buy, or Amazon. They are commonly less expensive than Enterprise aircraft and come with minimal features and capabilities.

Enterprise

- Enterprise drones may only be purchased through approved distributors. These drones have a vast amount of public safety focused capabilities such as varying degrees of inclement weather tolerance, high powered zoom cameras, thermal cameras, LIDAR, gas detections, etc.

Aircraft Variations

- Cost average $500 - $30,000
- Unique and non-mainstream drones cost on average $30,000 - $60,000
- Flight times vary from 20 minutes to 50 minutes depending on weather and aircraft
- Camera Capabilities for enterprise aircraft include Thermal, Visible, and zoom
- Larger aircraft have the ability to carry small loads and drop on targets

Common Hurdles of sUAS Program Include:

- Public Perception
- Funding
- Convincing Executive Leadership/ Council
- Manpower/ Mutual Aid
- Training
- FAA Certifications
- Drone Options
- Maintenance & Software Issues
- Lapses in Program Management
- Program Development

Summary

This Buyer's Guide provides an overview on sUAS public safety drone programs. It is meant to provide a starting place for information and research but is not meant to be all-inclusive.