



DRONERESPONDERS
Public Safety Alliance

UNMANNED AIRCRAFT SYSTEM PROGRAM CONSIDERATIONS/GUIDELINES

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The following guidelines/considerations are provided to ensure a safe, legal and effective implementation of an unmanned aircraft system (UAS) program.

General Thoughts:

Creating a Public UAS Program is a complex undertaking. Based on the experience of successful programs, the following information is provided to assist in starting a UAS program.

1. Know what is involved. Creating a UAS program requires governance, policies and procedures, defined missions, selection of unmanned aircraft and payloads, training/proficiency, data management, maintenance, and thorough documentation of training and flights.
2. Understand the cost implications for the unmanned aircraft system, extra batteries, payload sensors, data storage, software applications, video streaming, training, operational and personnel resource costs.
3. Agency remote pilots should be Federal Aviation Administration (FAA) 14 CFR Part 107 certified which requires passing a written knowledge test and \$150 fee for each remote pilot every 2 years.
4. As a public agency, it is recommended to obtain an FAA Certificate of Authorization (COA) which provides additional operational flight options. The combination of Part 107 and COA offer the most versatile options for flight.
 - a. Blanket COA
 - i. is usually issued within two weeks of completed application
 - ii. allows flight anywhere in the U.S. as specified by regulations
 - iii. provides night flight & flight over people within operational perimeter
 - b. Jurisdictional COA
 - i. is a defined geographic area, does much more coordination with airports and other aspects
 - ii. takes much longer time (months) because of the complexity and interactions necessary
 - iii. once approved, assists with flights near airports easier
5. As a remote pilot, there is a great responsibility as each is considered an aviation pilot as they are flying in the National Airspace (NAS) and potentially flying among other UAS and/or manned aircraft.
6. Understand the airspace in the respective UAS operational area. Areas that include military bases, commercial airports, national parks and other restricted airspace may require additional planning and FAA waivers.
7. What mature public UAS programs have learned:
 - a. They fly more missions than ever expected
 - b. They fly many more types of missions than originally planned
 - c. Most agencies start out small with one aircraft to learn
 - d. Some departments are reluctant to let their remote pilots leave for extended periods of time as public safety drone programs transition from “nice to have” to “need to have”
 - e. If they had known what they know now, they would have purchased a different UAS with different payloads.
8. Today, some popular models of UAS provide both visual image and thermal image capabilities which can show both views side by side or separately.
 - a. Most desired payloads/capabilities:
 - i. Hi-Def digital imaging/video

- ii. Thermal imaging camera
 - iii. Live streaming video
 - iv. Video zoom
 - v. Catch/release mechanism
 - vi. Spotlight
 - vii. Speaker
9. In addition to the aircraft & payload, there will be additional costs for extra batteries, parts, controllers, tablets, etc. It's important to know the full costs before starting a UAS program.
10. Utilization of software solutions for mapping, 3-D modeling and others require training

UAS Implementation Guidelines:

- Address privacy concerns at very beginning by engaging your jurisdiction's administration and elected officials from the start. Be transparent, with elected officials, the public and engage the ACLU. **DRONERESPONDERS has a Public Outreach Program (Presentation and Methodology for Town Hall meetings as a Template).**
- Obtain and share success stories from other localities (there are plenty), learn from and share them with officials and the public.
- Define potential missions, plan to use the UAS for multiple mission types. Identify mission types from the beginning and learn from other agencies experiences.
- Purchase UAS or consider a service provider that will be able to meet your defined mission requirements. Consider one or two smaller/less expensive UAS to learn on and to use in precarious situations where the UAS may be contaminated.
- Identify & Implement a Fleet Management Program that can capture flights, battery usage, training, certifications and basically manage all of your operational data.
- Once UAS is purchased, identify if the UAS has programmed geofencing. If so, you can work with the manufacturer to have it removed. DJI will remove the geofencing permanently if a public agency.
- Create a multi-agency and/or multi-discipline UAS team when possible. This brings agencies together and shares the burden of cost of equipment, training and staffing resources.
- Develop a clear policy as to when UAS will be used for law enforcement surveillance and evidentiary purposes.
- Use search warrants as required.
- Establish guidelines within policy to ensure privacy.
- Develop policies and standard operating procedures that address governance, operations, risk assessment, remote pilot qualifications, job performance requirements, training, maintenance, flight documentation, airworthiness, data retention.
- Develop and explain a data plan for streaming/recording and retention policy (similar to police body-worn cameras).
- Develop and explain the training and skills proficiency plan and safety protocols.
- Utilize the NIST Standard Test Methods for Small Unmanned Aircraft Systems (RobotTestMethods.nist.gov) as minimum basic flight requirements and proficiency assessment.
- UAS is an air operation – if operating at an emergency incident, UAS Ops must be incorporated into the Incident Command System (ICS) to ensure airspace deconfliction from other UAS and manned aircraft (medical helicopter, wildland firefighting aircraft, news media, etc.).
- Develop a maintenance plan for aircraft, batteries, controllers, payload sensors and overall airworthiness.
- Identify liability issues, risk management planning and implement appropriate insurance.
- Hobbyist and recreational remote pilots should NOT be used in public missions as they are not allowed to do so by FAA Rules and regulations.

Tethered Drone Alternative

- Unlike free flight drones, tethered drones do NOT require a certificated remote pilot (as referenced in the FAA Reauthorization Act). This operation allows tethered public drone operations without a Certificated remote pilot.
- Utilize Public UAS Standards & Information to organize a UAS Program for more specific and detailed guidance:
 - Public Safety Aviation Accreditation Commission UAS Standards as a reference which can be accessed by visiting www.publicsafetyaviation.org

- National Fire Protection Association Public Safety UAS Standards - www.nfpa.org/2400
- ASTM Operational Standards for Small UAS - <https://www.astm.org/standardization-news/?q=update/operations-standards-for-small-unmanned-aircraft-systems-mj14.html>
- ASTM F38 Subcommittee F38.03 on Personnel Training, Qualification and Certification - <https://www.astm.org/COMMIT/SUBCOMMIT/F3803.htm>
- ASTM 3379-20 - Standard Guide for Training for Public Safety Remote Pilot of Unmanned Aircraft Systems (UAS) Endorsement - <https://www.astm.org/Standards/F3379.htm> NEW
- For various examples of Public Safety UAS policies and procedures, visit the National Council on Public Safety UAS – www.publicsafetyUAS.org
- ANSI UAS Standards Collaborative Roadmap - https://www.ansi.org/standards_activities/standards_boards_panels/uassc/overview
- To join and participate in a nationwide grassroots public safety UAS initiative, visit www.DRONERESPONDERS.org

Join DRONERESPONDERS (it's FREE) and gain access to the Resource Center which contains over 300 public safety UAS documents (SOPS's, training info, checklists, best practices, reports and more.

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