

# Unmanned Aircraft Systems (UAS)

## *Small UAS Rule (Part 107)*

**Secure Commonwealth Panel  
Unmanned Aerial Systems Sub Panel  
September 19, 2016**

**Timothy Butters  
Senior Advisor  
Federal Aviation Administration**



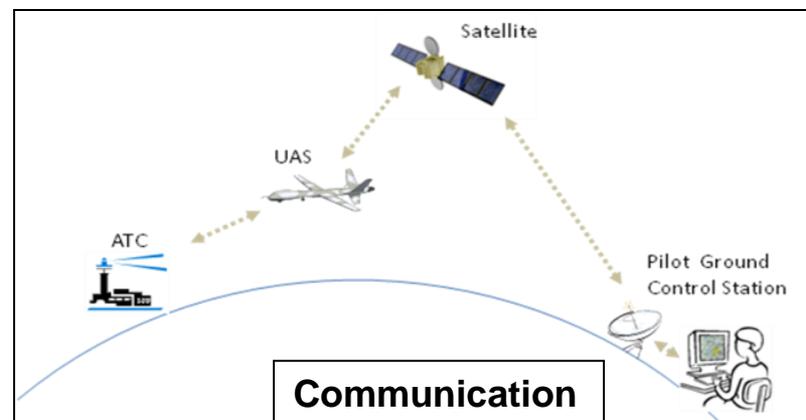
# Overview

- **Unmanned Aircraft Systems**
  - What, Why, & Where
- **FAA Authority**
- **Hobby/Recreational Operations**
- **UAS Registration**
- **Small UAS Rule (Part 107)**
  - Becoming a Pilot
  - Operating Rules
- **Next Steps in Integration**
  - Focus Area Pathfinders & Extended Operations
  - Operations Over People Rulemaking
- **Research, Security, & Enforcement**
- **Outreach Efforts**



# What is a UAS?

- **A UAS is a *system*:**
  1. Unmanned Aircraft
  2. Ground Control Station
  3. Command & Control Link(s)
  
- **Also known as:**
  - Unmanned Aerial Vehicle (UAV)
  - Remotely Piloted Aircraft System (RPAS)
  - RC Model Aircraft
  - Drone



# What is the FAA's Authority?

- **U.S. airspace is public space**
  - 49 U.S.C. §40103(a)(1)
- **UAS are aircraft subject to regulation**
  - 49 U.S.C. §40102(a)(6); 14 CFR 1.1; PL 112-95 §331, §336
  - An aircraft is any device used, or intended to be used, for flight
- **UAS must comply with FAA regulations**



# Types of UAS Operations

	Public Agency Operations	Non-recreational/Commercial Operations
<b>Requirements</b>	<ul style="list-style-type: none"> <li>• Must be verified public agency</li> <li>• Issued Certificate of Authorization (COA)</li> </ul>	<ul style="list-style-type: none"> <li>• Must have Remote Pilot Airman Certification</li> <li>• Must be 16 years or older</li> <li>• Must pass TSA vetting</li> </ul>
<b>Aircraft Requirements</b>	<ul style="list-style-type: none"> <li>• Under 55 pounds unless approved under COA</li> </ul>	<ul style="list-style-type: none"> <li>• Must be less than 55 pounds</li> <li>• Must be registered if over 0.55 pounds</li> <li>• Must undergo pre-flight checklist</li> </ul>
<b>Location Requirements</b>	<ul style="list-style-type: none"> <li>• Class G airspace w/o ATC</li> <li>• As approved in COA</li> </ul>	<ul style="list-style-type: none"> <li>• Class G airspace without ATC permission</li> <li>• Class B, C, D, and E require ATC permission</li> </ul>
<b>Operating Rules</b>	<ul style="list-style-type: none"> <li>• Detailed in COA</li> <li>• Self certification of operating crew and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Must keep aircraft in visual line-of-sight*</li> <li>• Must fly under 400 feet*</li> <li>• Must fly only during daylight hours*</li> <li>• Must fly at or below 100 mph*</li> <li>• Must yield right of way to manned aircraft*</li> <li>• Must NOT fly over people*</li> <li>• Must NOT fly from a moving vehicle*</li> </ul>
<b>Examples</b>	<ul style="list-style-type: none"> <li>• Federal</li> <li>• State</li> <li>• Local</li> </ul>	<ul style="list-style-type: none"> <li>• Industry</li> <li>• Manufacturers</li> <li>• Section 333 petitioners</li> </ul>

\*These requirements are subject to waiver.

# Public Aircraft Operations

- **Federal or state government, or subdivision**
- **Aircraft is government-owned, or exclusively leased for 90 days**
- **Performing only government functions**
- **Agency self-certifies aircraft and crew**
- **FAA issues a Certificate of Waiver or Authorization (COA) since UAS cannot meet certain rules**



# Public Safety Program

## Phased Approach

### ✓ Training COA

- Defines training location(s)
- Practice missions



### ✓ Jurisdictional COA

- Defined operating area where UAS operations anticipated
- Allow for rapid response



### Broad Area Public Safety COA

- Same benefits as 333 Exemption with rapid access into NAS

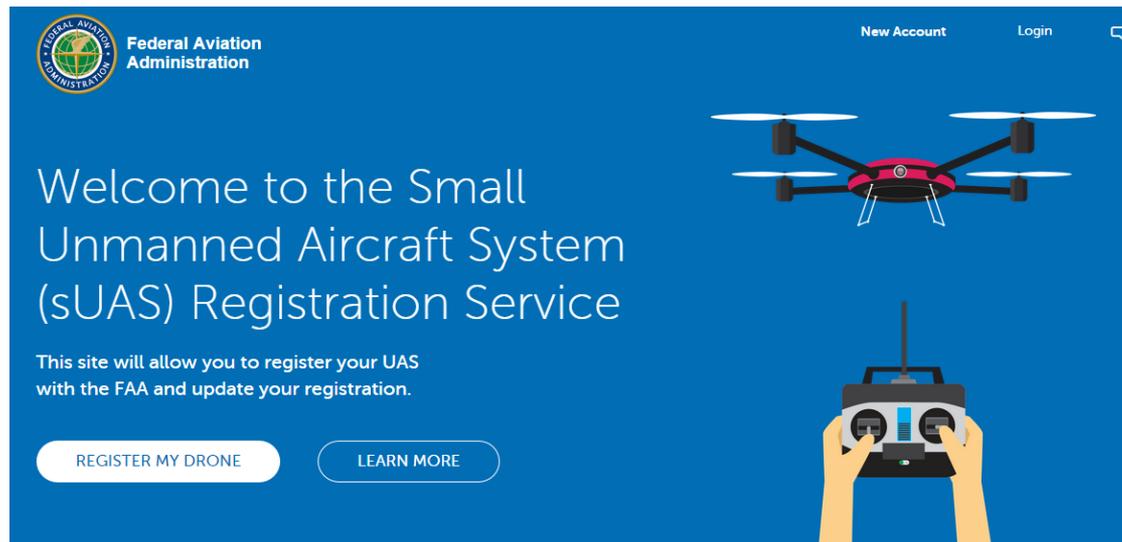
### ✓ Emergency COA

- Must have Active COA
- Operate outside of approved COA location



# Online UAS Registration

- **Applies to small UAS 0.55-55 lbs. flown outside**
- **Owner must provide name, address, email**
  - Non-recreational owners must provide make, model, and serial number (if available) of each sUAS



# The Small UAS Rule (Part 107)

- First rules for routine operation of small UAS (<55 pounds)
- Took effect August 29, 2016
- Recreational operators may fly under part 107 or Public Law 112-95 Section 336 criteria



# The Basics

- UAS operators must obtain a Remote Pilot Certificate
- Visual line-of-sight, daylight operations
- 400 feet or below in uncontrolled (Class G) airspace; other airspace use requires authorization
- UAS must weigh less than 55 lbs. and be registered



# Becoming a Pilot under Part 107

- **Must be 16 years old or older**
- **Must read, write, speak English**
- **Must pass an aeronautical knowledge exam at an FAA-approved Knowledge Testing Center**
  - Part 61 certificate holders can take online training at [faasafety.gov](http://faasafety.gov) instead of the knowledge exam
- **Must undergo TSA background security screening**



# Aeronautical Knowledge Exam Topics

- **Applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation**
- **Airspace classification and operating requirements, and flight restrictions affecting small unmanned aircraft operation**
- **Aviation weather sources and effects of weather on small unmanned aircraft performance**
- **Small unmanned aircraft loading and performance**
- **Emergency procedures**
- **Crew resource management**
- **Radio communication procedures**
- **Determining the performance of small unmanned aircraft**
- **Physiological effects of drugs and alcohol**
- **Aeronautical decision-making and judgment**
- **Airport operations**
- **Maintenance and preflight inspection procedures**



# Operating Rules

- Visual line-of-sight only
- Daylight or civil twilight only
- No operations over people
- Must yield right-of-way to manned aircraft
- One UAS per operator
- Max groundspeed of 100 mph
- External load operation only permitted if the load does not affect flight operations or control



# Part 107 Airspace Requirements



- Operations in Class G without ATC authorization
- Operations in Class B, C, D & Class E surface areas require ATC authorization
- Phased approach to airspace authorizations
- Online portal available at [https://www.faa.gov/uas/request\\_waiver/](https://www.faa.gov/uas/request_waiver/)

# Waivable Provisions of Part 107

- **Operation from a moving vehicle or aircraft (§ 107.25)**
- **Daylight operation (§ 107.29)**
- **Visual line of sight aircraft operation (§ 107.31)**
- **Visual observer (§ 107.33)**
- **Operation of multiple small UAS (§ 107.35)**
- **Yielding the right of way (§ 107.37(a))**
- **Operation over people (§ 107.39)**
- **Operation in certain airspace (§ 107.41)**
- **Operating limitations for small UAS (§ 107.51)**

**Online portal available at [www.faa.gov/uas/request\\_waiver/](http://www.faa.gov/uas/request_waiver/)**



# Broad Area Public Safety COA

- **Small UAS / Visual Meteorological Conditions**
- **At or below 400' AGL**
- **Beyond 5NM from towered airport; 3 NM from ILS airport (no tower); 2 NM from other airports or heliports (hospitals, etc)**



# Focus Area Pathfinders – Expanding Operations

- **3 Focus Area Pathfinder Partners:**



1. CNN

- Exploring visual line-of-sight operations over people



2. Precision Hawk

- Exploring extended visual line-of-sight operations in rural areas



3. BNSF Railways

- Exploring beyond visual line-of-sight operations in rural areas

# Operations Over People Rulemaking

- **Stakeholder committee recommended regulatory framework for UAS operations over people to FAA on April 1, 2016**
- **Report outlines four categories of small UAS operations**
  - Defined primarily by level of risk of injury posed
- **The FAA is considering these recommendations and developing a performance-based rule that would allow operations over people under part 107**
- **Proposed rule expected by end of 2016**

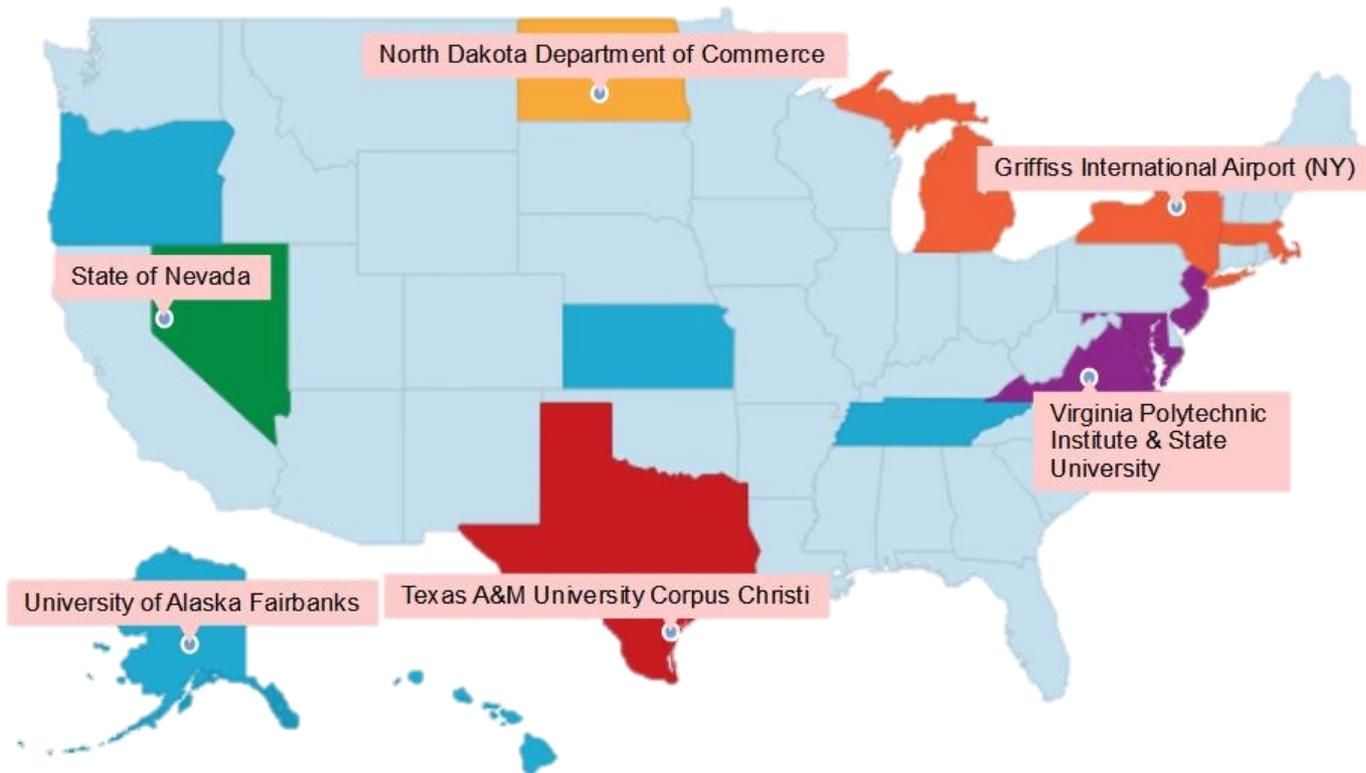
# UAS Detection Initiative

- Growing concerns about potentially unsafe small UAS operations
- The FAA co-leads an interagency group with DHS to research UAS detection technology
- In October 2015, the FAA signed a CRDA with CACI International to test its detection technology
- In May 2016, the FAA signed additional CRDAs with Gryphon Sensors, LitEye, and Sensofusion



# UAS Test Sites

- Provide an avenue for UAS industry to conduct more advanced UAS research and concept validation



# UAS Outreach and Education



## I FLY SAFE

All drones are aircraft—even the ones at the toy store. So when I fly a drone I am a pilot. Before I fly I always go through my pre-flight check list. I regularly check the safety guidelines at [faa.gov/uas](http://faa.gov/uas)

**FLY SMART, FLY SAFE, AND HAVE FUN!**

[knowbeforeyoufly.org](http://knowbeforeyoufly.org)  
[faa.gov/uas](http://faa.gov/uas)

### PRE-FLIGHT CHECKLIST

- I fly below 400 feet
- I always fly within visual line of sight
- I'm aware of FAA airspace requirements: [faa.gov/go/uas/fr](http://faa.gov/go/uas/fr)
- I never fly over groups of people
- I never fly over stadiums and sports events
- I never fly within 5 miles of an airport without first contacting air traffic control and airport authorities
- I never fly near emergency response efforts such as fires
- I never fly near other aircraft
- I never fly under the influence

**Federal Aviation Administration**



# Questions?



[www.faa.gov/uas](http://www.faa.gov/uas)

# Backup Slides

