Unmanned Aircraft
Policy, Operations, Integration

Public Works Roundup
July 16, 2015

North Central Texas
Council of Governments

What are Unmanned Aircraft Systems?

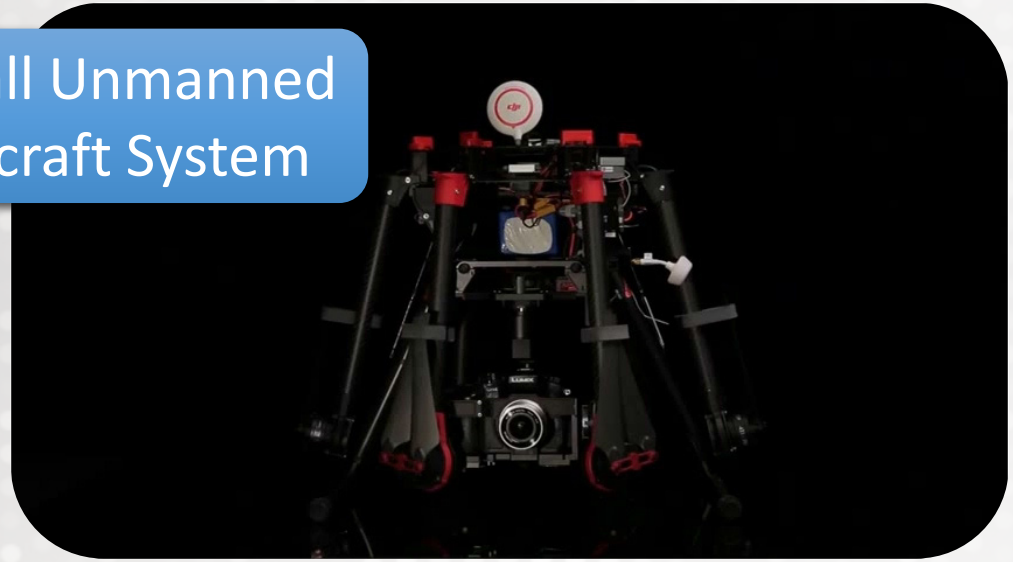
- Control station
- Data links
- Telemetry
- Communications, navigation
- Control, sensor operators

Source: FAA

High Altitude
Long Endurance

Medium Altitude
Long Endurance

Small Unmanned
Aircraft System



Micro Unmanned
Aerial Vehicle

Example Applications

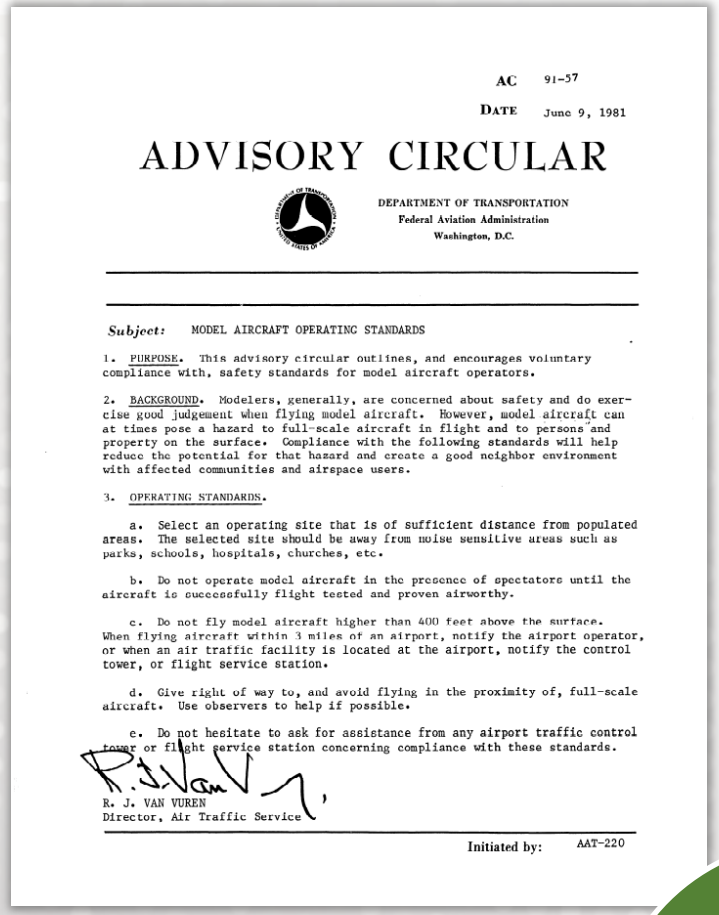
Transportation
- Accident Recreation
- Asset Management

Public Safety
- Missing Persons
- Disaster Response
- Police Force Multiplier

Environment
- Agriculture
- Conservation
- Weather Monitoring

Surveys/Inspections
- Utility Pipelines
- Cargo Trains, Passenger Rail Lines
- Construction

Real Estate, News/Media, and more…



AC 91-57
DATE June 9, 1981

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Washington, D.C.

Subject: MODEL AIRCRAFT OPERATING STANDARDS

1. PURPOSE. This advisory circular outlines, and encourages voluntary compliance with, safety standards for model aircraft operators.

2. BACKGROUND. Modelers, generally, are concerned about safety and do exercise good judgement when flying model aircraft. However, model aircraft can at times pose a hazard to full-scale aircraft in flight and to persons and property on the surface. Compliance with the following standards will help reduce the potential for that hazard and create a good neighbor environment with affected communities and airspace users.

3. OPERATING STANDARDS.

a. Select an operating site that is of sufficient distance from populated areas. The selected site should be away from noise sensitive areas such as parks, schools, hospitals, churches, etc.

b. Do not operate model aircraft in the presence of spectators until the aircraft is successfully flight tested and proven airworthy.

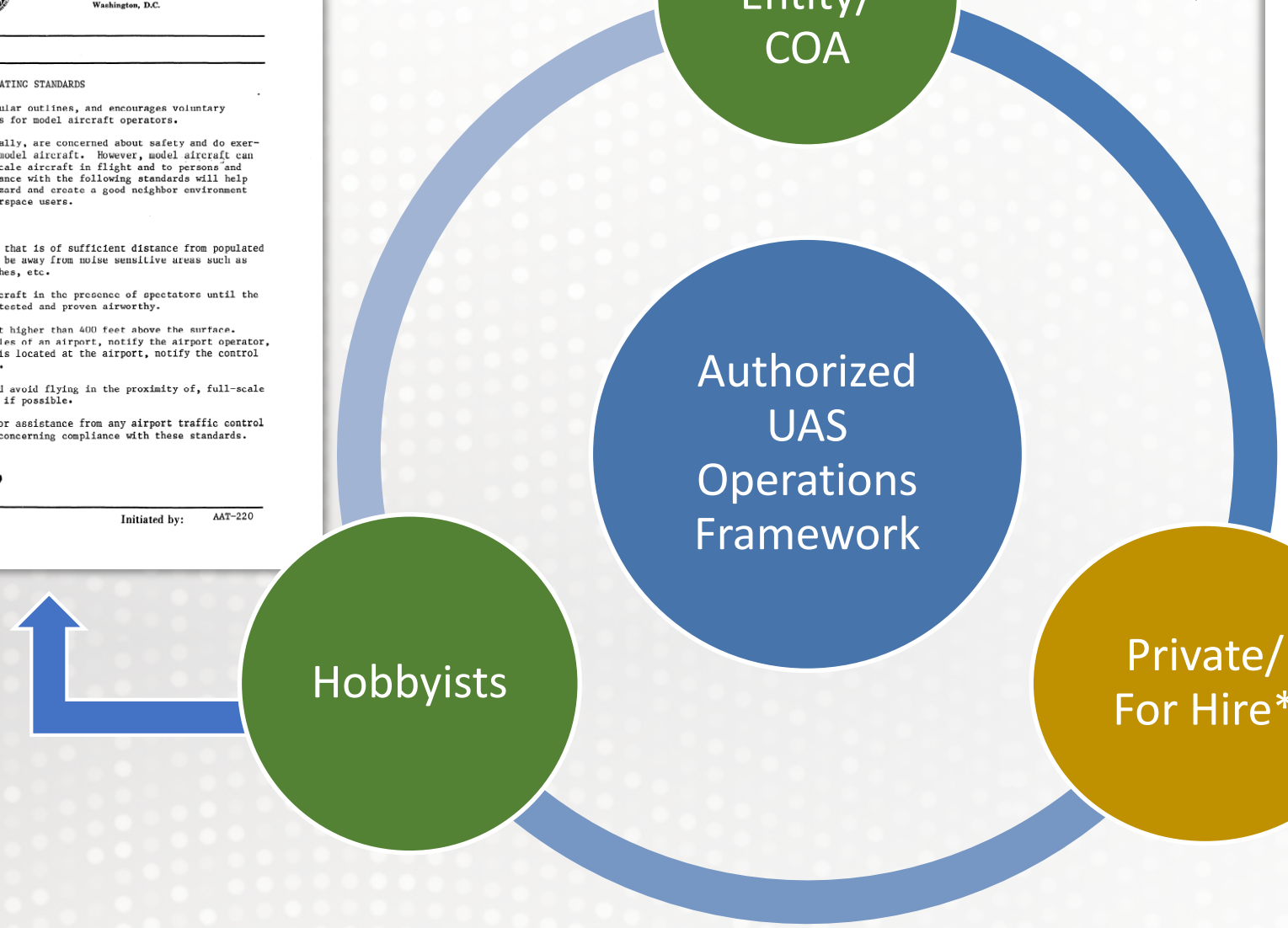
c. Do not fly model aircraft higher than 400 feet above the surface. When flying aircraft within 3 miles of an airport, notify the airport operator, or when an air traffic facility is located at the airport, notify the control tower, or flight service station.

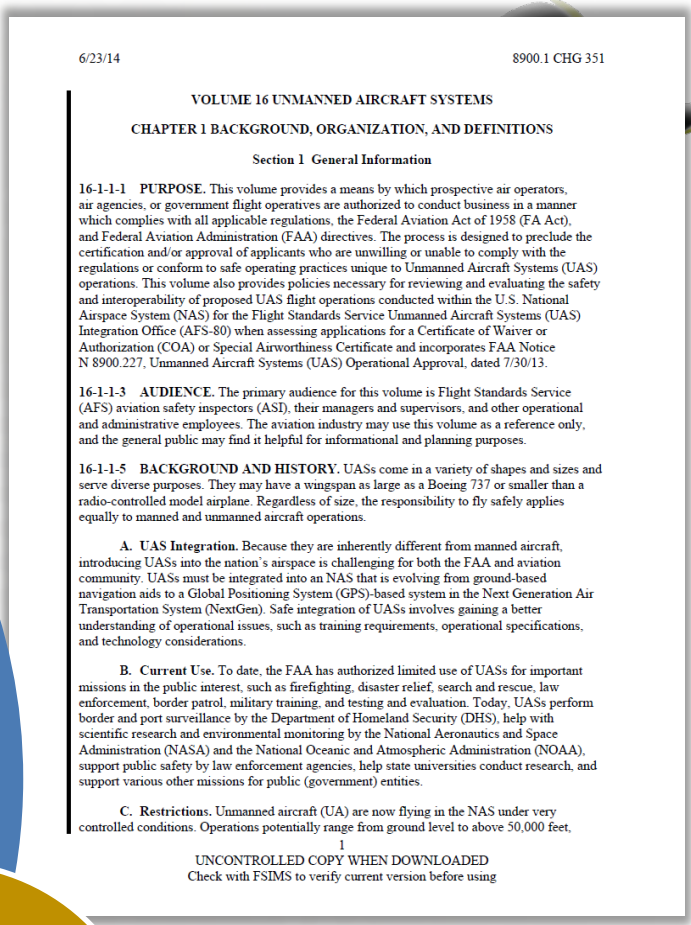
d. Give right of way to, and avoid flying in the proximity of, full-scale aircraft. Use observers to help if possible.

e. Do not hesitate to ask for assistance from any airport traffic control tower or flight service station concerning compliance with these standards.

R. J. VAN VUREN
Director, Air Traffic Service

Initiated by: AAT-220





6/23/14 8900.1 CHG 351

VOLUME 16 UNMANNED AIRCRAFT SYSTEMS

CHAPTER 1 BACKGROUND, ORGANIZATION, AND DEFINITIONS

Section 1 General Information

16-1-1-1 **PURPOSE.** This volume provides a means by which prospective air operators, air agencies, or government flight operatives are authorized to conduct business in a manner which complies with all applicable regulations, the Federal Aviation Act of 1958 (FA Act), and Federal Aviation Administration (FAA) directives. The process is designed to preclude the certification and/or approval of applicants who are unwilling or unable to comply with the regulations or conform to safe operating practices unique to Unmanned Aircraft Systems (UAS) operations. This volume also provides policies necessary for reviewing and evaluating the safety and interoperability of proposed UAS flight operations conducted within the U.S. National Airspace System (NAS) for the Flight Standards Service Unmanned Aircraft Systems (UAS) Integration Office (AFS-80) when assessing applications for a Certificate of Waiver or Authorization (COA) or Special Airworthiness Certificate and incorporates FAA Notice N 8900.227, Unmanned Aircraft Systems (UAS) Operational Approval, dated 7/30/13.

16-1-1-3 **AUDIENCE.** The primary audience for this volume is Flight Standards Service (AFS) aviation safety inspectors (ASI), their managers and supervisors, and other operational and administrative employees. The aviation industry may use this volume as a reference only, and the general public may find it helpful for informational and planning purposes.

16-1-1-5 **BACKGROUND AND HISTORY.** UASs come in a variety of shapes and sizes and serve diverse purposes. They may have a wingspan as large as a Boeing 737 or smaller than a radio-controlled model airplane. Regardless of size, the responsibility to fly safely applies equally to manned and unmanned aircraft operations.

A. UAS Integration. Because they are inherently different from manned aircraft, introducing UASs into the nation's airspace is challenging for both the FAA and aviation community. UASs must be integrated into an NAS that is evolving from ground-based navigation aids to a Global Positioning System (GPS)-based system in the Next Generation Air Transportation System (NextGen). Safe integration of UASs involves gaining a better understanding of operational issues, such as training requirements, operational specifications, and technology considerations.

B. Current Use. To date, the FAA has authorized limited use of UASs for important missions in the public interest, such as firefighting, disaster relief, search and rescue, law enforcement, border patrol, military training, and testing and evaluation. Today, UASs perform border and port surveillance by the Department of Homeland Security (DHS), help with scientific research and environmental monitoring by the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA), support public safety by law enforcement agencies, help state universities conduct research, and support various other missions for public (government) entities.

C. Restrictions. Unmanned aircraft (UA) are now flying in the NAS under very controlled conditions. Operations potentially range from ground level to above 50,000 feet,

**Limited approval through exemption process or special airworthiness certificate.*

Federal Policy, Guidance Examples

- FAA Modernization and Reform Act of 2012 (FMRA)
  Subtitle B: Unmanned Aircraft Systems (Sections 332-336)
- FAA Guidance for Law Enforcement
- Temporary Flight Restrictions for Sporting Events
- Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems

Source: FAA UAS Regulations & Policies

State of Texas Privacy Act

Examples of Lawful UAS Imagery Capturing

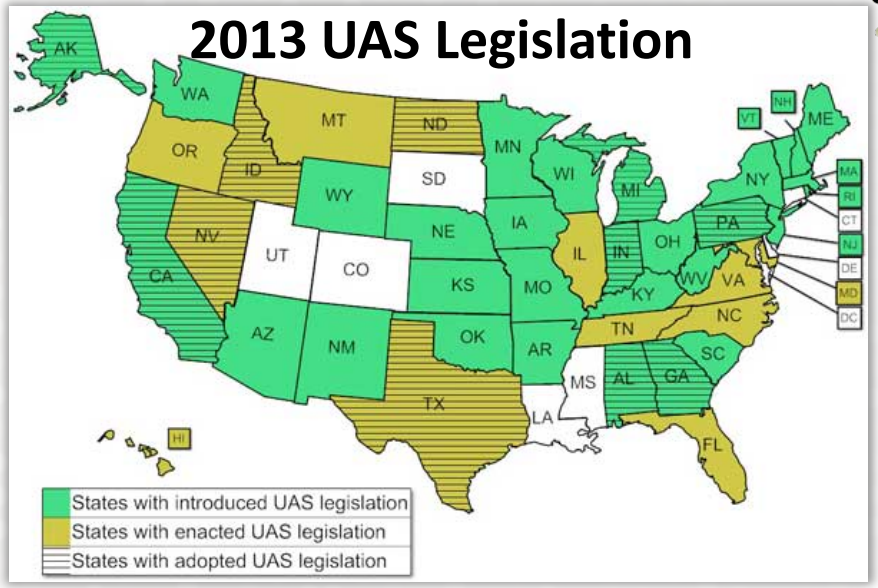
Professional, scholarly research

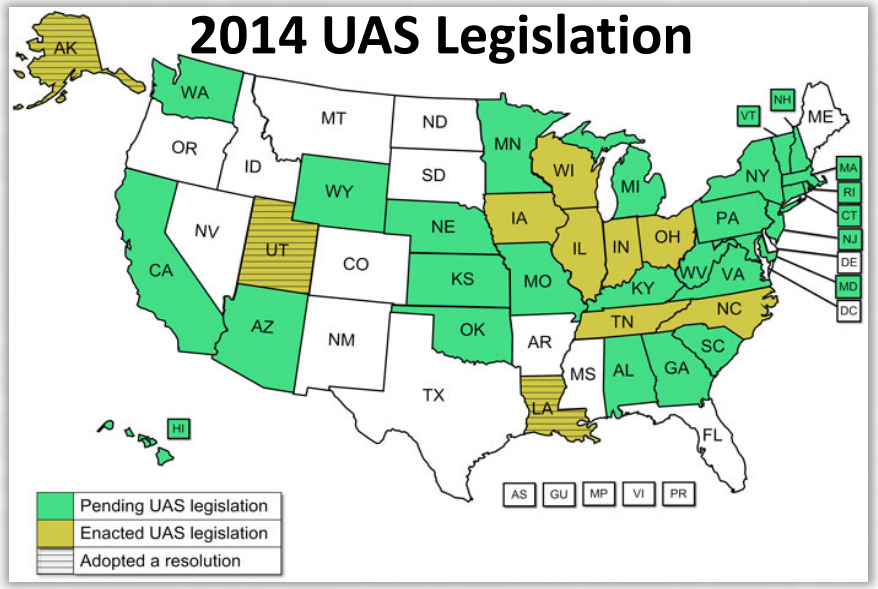
FAA UAS test site airspace

Operation, exercise, or mission of any branch of US military

Consent of real property owners/occupants

By law enforcement authorities



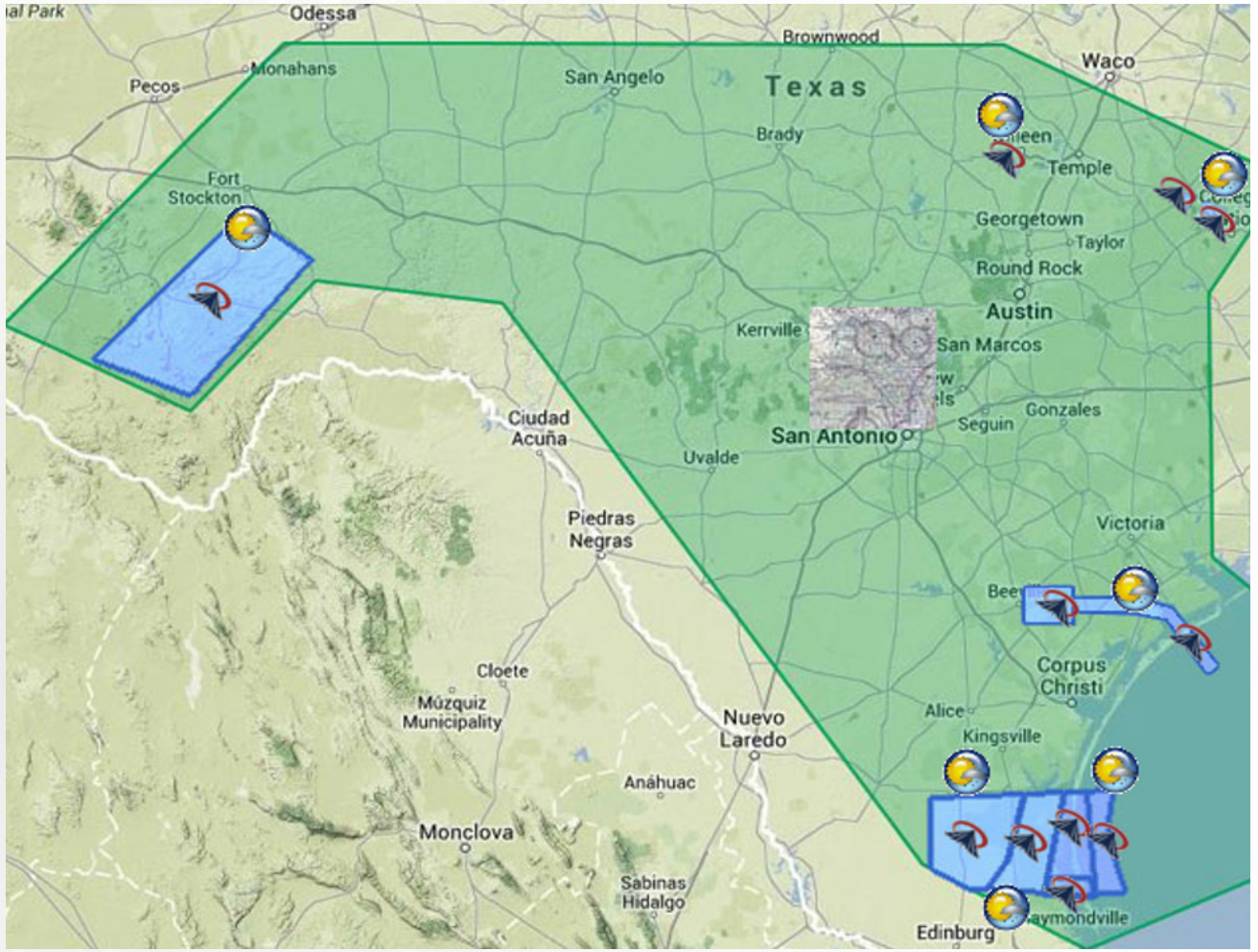


Source: National Conference of State Legislatures

Local, State UAS Initiatives

- Texas A&M Corpus Christi Texas UAS Test Site
- University of Texas at Arlington Research Institute
- University of North Texas
- City of Arlington Police Department
- Center for Innovation Unmanned Systems Consortium
- Mineral Wells, NCTCOG, other regional partners…

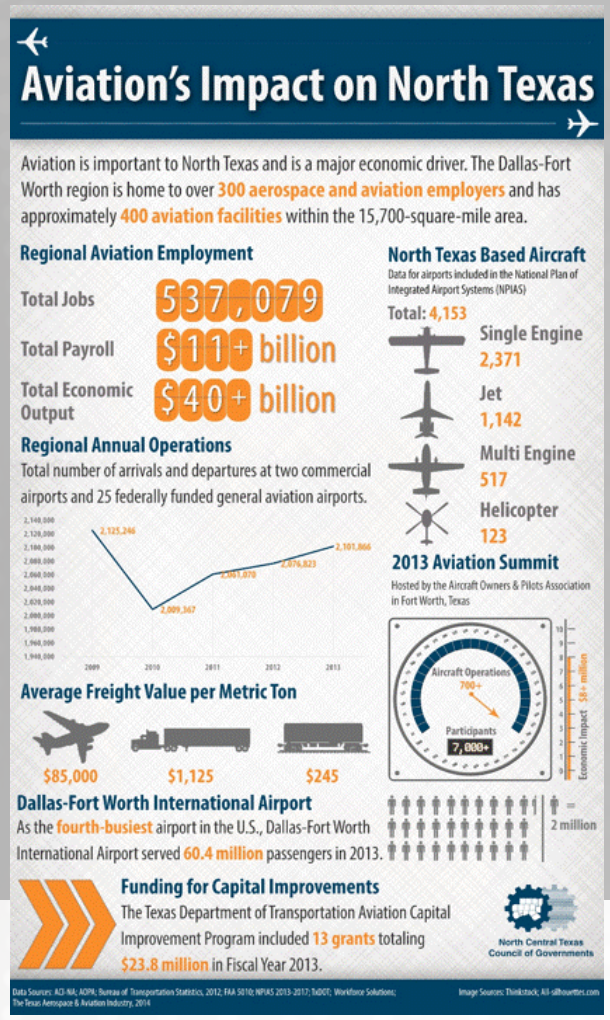
FAA Designated Texas UAS Test Site



Source: Lone Star UAS Center of Excellence and Innovation (LSUASC)

Regional Significance

- Privacy
- Airspace obstructions
- Lack of uniform rules, control
- Notification requirements
- Activity tracking
- Operator training, education



Coordination for Integration

ATTAC
Air Transportation Technical Advisory Committee

ATTAC Concerns

Privacy

Notification, approval

Operator training/education

Conflict with manned aircraft

Source: ATTAC UAS Survey

NCTCOG Staff Actions

- Committee UAS Workshops – 2014/2015
- Develop online information clearinghouse www.nctcog.org/uas
- Draft regional guidance report
- Engage industry stakeholders
- Brief policy officials, coordination with FAA

Airspace Concerns

"**FAA reports** pilots have seen **up to 25 cases per month of drones flying above the regulated limit of 400 feet**, with some flying as high as 2,000 feet in the air." -CNN

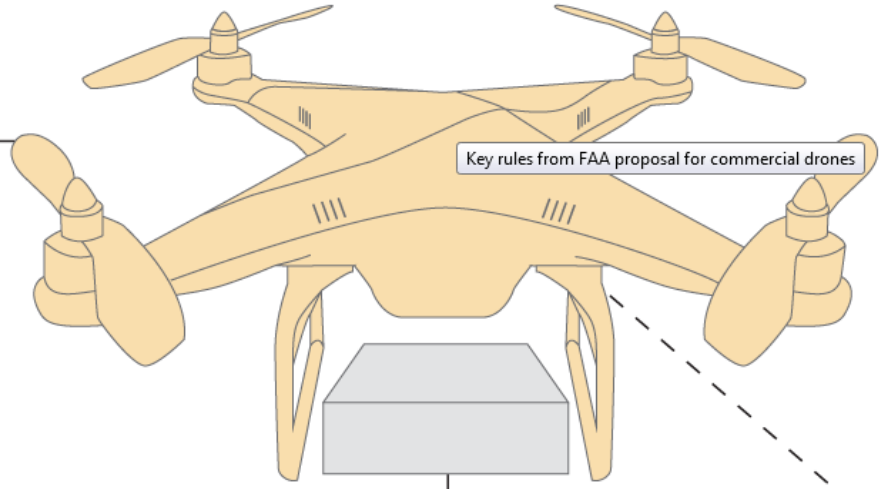
October 2014: FAA investigates **UAS crash in Dallas Love Field's airspace.** -NBC DFW

FAA Small UAS NPRM

Key rules from FAA proposal for commercial drones

Max speed: 100 mph
Max weight: 55 lbs
Max altitude: 500 ft.

Fly during daylight only

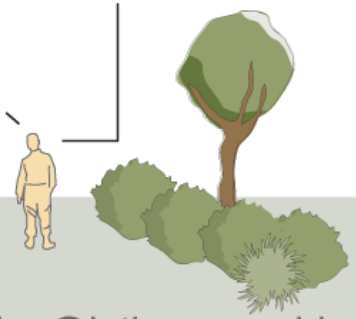


Rules don't allow for drone deliveries as envisioned (sorry Amazon)

Operator requirements:

- At least 17 years old
- Have passed initial, recurring tests
- Obtain operating certificate
- Vetted by TSA

Must be directly visible by operator



Source: Federal Aviation Administration

Kyle Kim @latimesgraphics

Overview of Small UAS Notice of Proposed Rulemaking

Summary of Major Provisions of Proposed Part 107 The following provisions are being proposed in the FAA's Small UAS NPRM.	
Operational Limitations	• Unmanned aircraft must weigh less than 55 lbs. (25 kg). • Visual line-of-sight (VLOS) only; the unmanned aircraft must remain within VLOS of the operator or visual observer. • At all times the small unmanned aircraft must remain close enough to the operator for the operator to be capable of seeing the aircraft with vision unaided by any device other than corrective lenses. • Small unmanned aircraft may not operate over any persons not directly involved in the operation. • Daylight-only operations (official sunrise to official sunset, local time). • Must yield right-of-way to other aircraft, manned or unmanned. • May use visual observer (VO) but not required. • First-person view camera cannot satisfy "see-and-avoid" requirement but can be used as long as requirement is satisfied in other ways. • Maximum airspeed of 100 mph (87 knots). • Maximum altitude of 500 feet above ground level. • Minimum weather visibility of 3 miles from control station. • No operations are allowed in Class A (18,000 feet & above) airspace. • Operations in Class B, C, D and E airspace are allowed with the required ATC permission. • Operations in Class G airspace are allowed without ATC permission • No person may act as an operator or VO for more than one unmanned aircraft operation at one time. • No careless or reckless operations. • Requires preflight inspection by the operator. • A person may not operate a small unmanned aircraft if he or she knows or has reason to know of any physical or mental condition that would interfere with the safe operation of a small UAS. • Proposes a microUAS option that would allow operations in Class G airspace, over people not involved in the operation, provided the operator certifies he or she has the requisite aeronautical knowledge to perform the operation.

Operator Certification and Responsibilities	• Pilots of a small UAS would be considered "operators".
	• Operators would be required to:
	  ○ Pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center.
	  ○ Be vetted by the Transportation Security Administration.
	  ○ Obtain an unmanned aircraft operator certificate with a small UAS rating (like existing pilot airman certificates, never expires).
	  ○ Pass a recurrent aeronautical knowledge test every 24 months.
	  ○ Be at least 17 years old.
	  ○ Make available to the FAA, upon request, the small UAS for inspection or testing, and any associated documents/records required to be kept under the proposed rule.
	  ○ Report an accident to the FAA within 10 days of any operation that results in injury or property damage.
	  ○ Conduct a preflight inspection, to include specific aircraft and control station systems checks, to ensure the small UAS is safe for operation.

Aircraft Requirements	• FAA airworthiness certification not required. However, operator must maintain a small UAS in condition for safe operation and prior to flight must inspect the UAS to ensure that it is in a condition for safe operation. Aircraft Registration required (same requirements that apply to all other aircraft). • Aircraft markings required (same requirements that apply to all other aircraft). If aircraft is too small to display markings in standard size, then the aircraft simply needs to display markings in the largest practicable manner.
Model Aircraft	• Proposed rule would not apply to model aircraft that satisfy all of the criteria specified in Section 336 of Public Law 112-95. • The proposed rule would codify the FAA's enforcement authority in part 101 by prohibiting model aircraft operators from endangering the safety of the NAS.

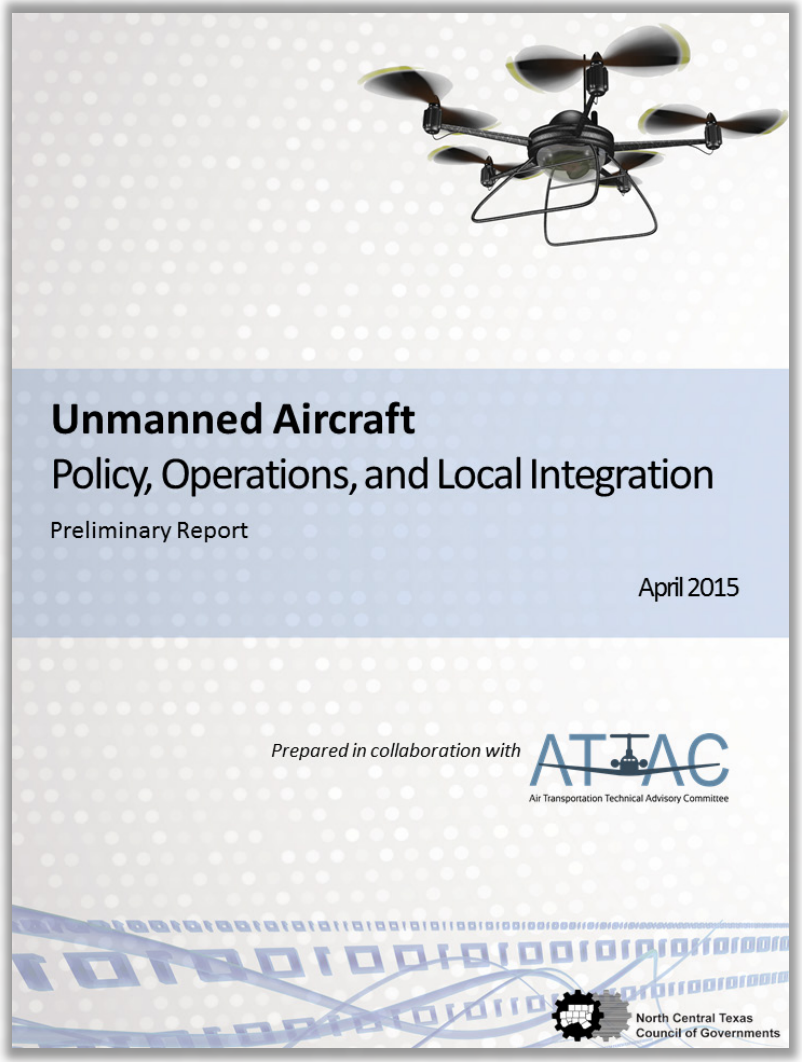
ATTAC Unmanned Aircraft Workshop

Date/Time: TBA (July or August)
NCTCOG Offices, Transportation Council Room

Discussion Topics

- Policy
- Integration recommendations
- Local-level planning strategies

Previous Workshop Materials at www.nctcog.org/attac.

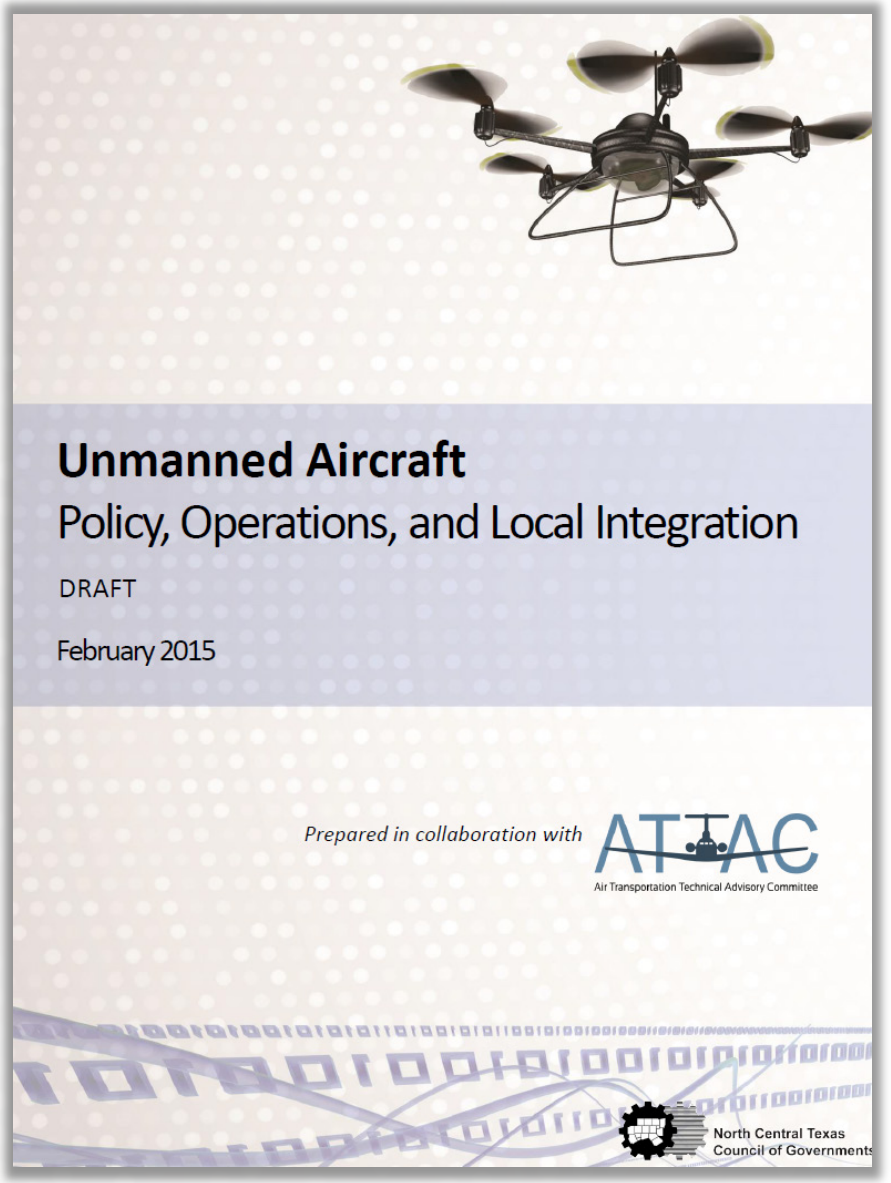


More at: www.nctcog.org/uas

ATTAC Workshop: Unmanned Aircraft

Wednesday, April 1, 2015
10am – 12pm

Where: NCTCOG Offices, Council Room
Topics: Policy, FAA UAS rulemaking, local-level planning strategies, draft report
Attendees: Municipal staff, Industry Groups, Local Stakeholders



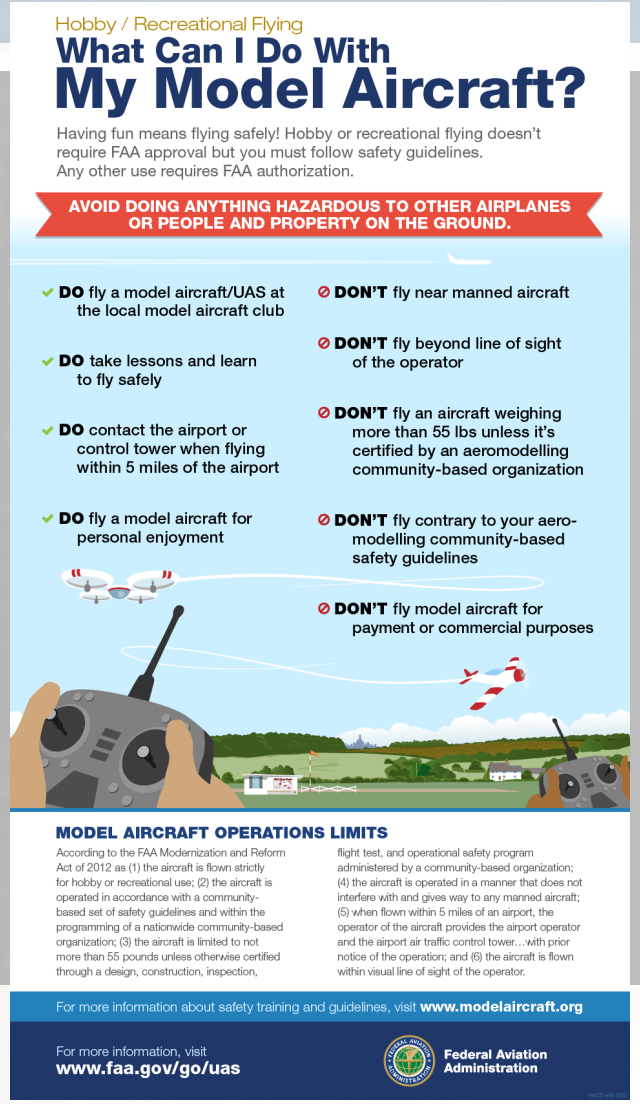
More at: www.nctcog.org/uas

Operator Outreach

- Operator resources
  - Government, Industry – FAA, AMA, AUVSI, Small UAV Coalition
  - Aircraft Owners & Pilots Association (AOPA)

KNOW BEFORE YOU FLY

AMA ACADEMY OF MODEL AERONAUTICS
GET THE BUG!™ it's awesome!!



Discussion/Questions

Mike Branum (UAS Projects Lead)

Senior Transportation Planner
mbranum@nctcog.org
817-704-5642