FAA News

Federal Aviation Administration, Washington, DC 20591

Updated March 2015
Contact: Les Dorr or Alison Duquette
Phone: (202) 267-3883

FACT SHEET
UNMANNED AIRCRAFT SYSTEMS (UAS)

Unmanned aircraft systems (UAS) come in a variety of shapes and sizes and serve diverse purposes. They may have a wingspan as large as a jet airliner or smaller than a radio-controlled model airplane. Regardless of size, the responsibility to fly safely applies equally to manned and unmanned aircraft operations.

Because they are inherently different from manned aircraft, introducing UAS into the nation's airspace is challenging for both the FAA and aviation community. UAS must be integrated into the busiest, most complex airspace in the world, and one that is evolving from ground-based navigation aids to a GPS-based system in NextGen.

Integration of UAS has to be three things:

- It has to be *safe*, because safety is the FAA's primary mission.
- It has to be *efficient*, because the agency is committed to reducing delays and increasing system reliability.
- It has to be *timely*, because this is a new form of aviation technology with significant potential for safety and economic benefits. .

The FAA is taking an incremental approach to safe UAS integration as the agency acquires a better understanding of operational issues such as training requirements, operational specifications, and technology considerations.

Safety First
The FAA maintains the world's safest aviation system. As a provider of air traffic control services, the agency also must ensure the safety and efficiency of the nation's entire airspace.

The FAA first authorized use of unmanned aircraft in the nation's airspace in 1990. Since then, the agency has allowed limited use of UAS for important missions in the public interest, such as firefighting, disaster relief, search and rescue, law enforcement, border patrol, scientific research, military training, and testing and evaluation. Recently, the FAA has started authorizing some commercial UAS operations in controlled, low-risk situations.

UAS operations potentially range from ground level to above 50,000 feet, depending on the specific type of aircraft. However, no operations are currently authorized in the airspace that exists over major urban areas and contains the highest density of manned aircraft.

Flying model aircraft/UAS for a hobby or recreational purpose does not necessarily require FAA approval, but all model aircraft operators must fly according to the law.

The FAA authorizes UAS operations that are *not* for hobby or recreation on a case-by-case basis, and there are several ways to get agency approval.

Government (Public) UAS Operations

A "Certificate of Waiver or Authorization" (COA) is available to government entities that want to fly a UAS in civil airspace. Common uses include law enforcement, firefighting, border patrol, disaster relief, search and rescue, military training and other government operational missions.

Applicants must submit their COA request through an online system. The FAA then evaluates the proposed operation to see if it can be conducted safely. If granted, the COA lets an operator use a defined block of airspace, and includes special provisions unique to the proposed operation. For instance, a COA may require flying only under Visual Flight Rules (VFR) and/or only during daylight hours.

Today, the average time to issue an authorization for non-emergency operations is less than 60 days, and the renewal period is two years. The agency has expedited procedures to grant one-time COAs for time-sensitive emergency missions such as disaster relief and humanitarian efforts – sometimes in just a few hours.

Most COAs require coordination with an appropriate air traffic control facility on the UAS to operate in certain types of airspace. Because UAS technology cannot yet comply with "see and avoid" rules that apply to all aircraft, a visual observer or an accompanying "chase plane" must maintain visual contact with the UAS and serve as its "eyes" when operating outside airspace restricted from other users.

Year	2009	2010	2011	2012	2013	2014
COAs Approved	143	289	309	383	407	609

Civil UAS Operations

Private sector manufacturers and technology developers can obtain a Special Airworthiness Certificate in the experimental category to conduct research and development, crew training, market surveys, and flight demonstrations. Experimental certificates preclude carrying people or property for compensation or hire and typically include operating limitations such as altitude and geographical area.

Commercial firms may elect to fly a UAS that has received an FAA Restricted Category Type Certificate. The agency issues these certificates to UAS models previously flown by the military. They allow limited operations, such as wildlife conservation flights, aerial surveying, and oil/gas

pipeline patrols. As of October 2014, the FAA had approved operations using two certificated UAS, with flights limited to Arctic areas.

Since June 2014, the agency also has accepted petitions for exemptions under Section 333 of the FAA Modernization and Reform Act of 2012 to ascertain if commercial UAS operations can be expanded before a small UAS rule is finalized. Under that section of the law, the Secretary of Transportation can determine whether certain airworthiness requirements are necessary to authorize specific UAS fly safely in narrowly-defined, controlled, low-risk situations.

Commercial entities typically ask for relief from airworthiness certification requirements as allowed under Section 333, in addition to relief from regulations that address general flight rules, pilot certificate requirements, manuals, and maintenance and equipment mandates.

To receive the exemptions, the firms must show that their UAS operations will not adversely affect the safety of persons or property in the air or on the ground, or will provide at least an equal level of safety to the rules from which they seek the exemptions. They also need to show why granting the exemption would be in the public interest.

As of March 2015, the FAA had received more than 600 Section 333 petitions.

Model Aircraft Operations

Recreational use of airspace by model aircraft/UAS is covered by Section 336 of the FAA Modernization and Reform Act of 2012.

On June 23, 2014, the FAA issued an interpretation of the law providing clear guidance to model operators on the "do's and don'ts" of flying safely in accordance with the Act. In the document, the FAA restates the law's definition of "model aircraft," including requirements that they not interfere with manned aircraft, be flown within sight of the operator, and be operated only for hobby or recreational purposes. The agency also explains that model aircraft operators flying within five miles of an airport must notify the airport operator and air traffic control tower.

The FAA reaffirms that the Act's model aircraft provisions apply only to hobby or recreation operations and do not authorize the use of model aircraft for commercial operations. The notice gives examples of hobby or recreation flights, as well as examples of operations that would not meet that definition.

Operating and Certification Standards

Integrating UAS into the nation's airspace presents both opportunities and challenges. However, everything the FAA does is focused on ensuring the safety of the nation's aviation system. New policies, procedures, and approval processes are needed to deal with the increasing desire by civilian operators to fly UAS. Developing and implementing these new UAS standards and guidance is a long-term effort.

In November 2013, the FAA released its first annual Integration of Civil UAS in the National Airspace System (NAS) Roadmap outlining efforts needed to safely integrate unmanned aircraft into the nation's airspace. The Roadmap addresses current and future policies, regulations,

technologies, and procedures that will be required as demand moves from today's limited accommodation of UAS operations to the extensive integration of UAS into the NextGen aviation system in the future.

In addition to the Roadmap, the Department of Transportation has released a Comprehensive Plan that dovetails with the FAA's Roadmap. This Comprehensive Plan details the multi-agency approach to the safe and timely integration of unmanned aircraft. The plan establishes goals to integrate both small and larger unmanned aircraft, and to foster America's leadership in advancing this technology.

The FAA chartered a UAS Aviation Rulemaking Committee in 2011, which is still active, to develop inputs and recommendations on appropriate operational procedures, regulatory standards and policies before allowing routine UAS access to the nation's airspace.

The FAA also has asked RTCA – organized in 1935 as the Radio Technical Commission for Aeronautics, a group that facilitates expert advice to the agency on technical issues – to work with industry to help develop UAS standards. RTCA's technical group (Special Committee 228) is addressing how UAS will handle communication, command and control and how they will "sense and avoid" other aircraft.

The FAA continues to work closely with its international aviation counterparts to harmonize standards, policies, procedures, and regulatory requirements.

UAS Test Sites

After a rigorous 10-month selection process involving 25 proposals from 24 states, on December 30, 2013, the Federal Aviation Administration chose six UAS test sites across the country.

In selecting the six test sites, the FAA considered geography, climate, location of ground infrastructure, research needs, airspace use, safety, aviation experience and risk. In totality, these six test sites achieve cross-country geographic and climatic diversity and help the FAA meet its UAS research needs.

The six Test Sites, which were operational as of mid-August 2014, include:

- University of Alaska – Fairbanks
- State of Nevada
- Griffiss International Airport (Rome, NY)
- North Dakota Department of Commerce
- Texas A&M University – Corpus Christi
- Virginia Polytechnic Institute and State University (Virginia Tech)

Each test site operator manages the site in a way that gives access to parties interested in using the site. The FAA's role is to ensure each site sets up a safe testing environment and operates under strict safety standards.

Small Unmanned Aircraft

Use of small unmanned aircraft is likely to grow most quickly in civil and commercial operations because of their versatility and relatively low initial cost and operating expenses. The FAA is working on a proposed rule governing the use of a wide range of small civil unmanned aircraft systems.

The 2012 FAA Modernization and Reform Act of 2012 also directed the agency to expedite the COA process for government public safety agencies that want to use small unmanned aircraft. In May 2013, the FAA and the Justice Department signed an agreement to streamline the COA process for law enforcement – an agreement that meets the mandate. The agreement expanded the allowable UAS weight up to 25 pounds, an increase from the 4.4 pounds specified in the Act.

Today, a law enforcement organization first receives a COA for training and performance evaluation. When the organization has shown proficiency in flying its UAS, it receives a "jurisdictional" COA.

States, Cities, and UAS

A number of states and municipalities have passed or are considering limitations on unmanned aircraft. The effect of such restrictions depends on the precise nature of the limitation.

By law, the FAA is charged with ensuring the safe and efficient use of U.S. airspace. This authority generally preempts any state or local government from enacting a statute or regulation concerning matters – such as airspace regulation -- that are reserved exclusively to the U.S. Government.

For example, a state law or regulation that prohibits or limits the operation of an aircraft, sets standards for airworthiness, or establishes pilot requirements generally would be preempted. But state and local governments do retain authority to limit the aeronautical activities of their own departments and institutions. Under most circumstances, it would be within state or local government power to restrict the use of certain aircraft, including a UAS, by the state or local police or by a state department or university.

Meeting the Challenge

For more than 50 years, the FAA has maintained a proven track record of introducing new technology and aircraft safely into the national airspace system. The agency will successfully meet the challenges posed by UAS technology in a thoughtful, careful manner that ensures safety and addresses privacy issues while promoting economic growth.

While aviation is unquestionably an industry known for innovation, it is also an industry with a strong history of collaboration between government and industry. This collaboration has helped the FAA achieve a position of international leadership. By working together, government and industry will overcome the challenges UAS integration presents and open the door to a more diverse and dynamic aviation future for both manned and unmanned aircraft.

For more information: http://www.faa.gov/uas/

###