Staff Update

Drone Use Regulation

October 1, 2014

Legislative Program Review
and Investigations Committee
Connecticut General Assembly

2013-2014 Committee Members

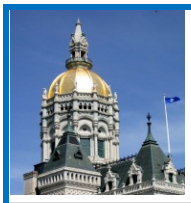
Senate	*House*
John A. Kissel, *Co-Chair*	Mary M. Mushinsky, *Co-Chair*
John W. Fonfara	Christie M. Carpino
Steve Cassano	Brian Becker
Eric D. Coleman	Marilyn Giuliano
Anthony Guglielmo	Brenda L. Kupchick
Joe Markley	Diana S. Urban

Committee Staff on Project

Eric Michael Gray, Associate Legislative Analyst

Legislative Program Review and Investigations Committee
Connecticut General Assembly
State Capitol Room 506
Hartford, CT 06106

(860) 240-0300 www.cga.ct.gov/pri/index.asp PRI@cga.ct.gov



PRI Staff Update Highlights

October 2014

Drone Use Regulation

Background

In June 2014, the committee authorized a study to examine potential drone use regulation in the state. The study focus is on describing the current state of drone regulation, federally and in other states, and determining what, if any, regulatory actions the state should take to address stakeholder concerns regarding this emerging technology. This study partially follows up on the concerns raised about legislative efforts to implement drone regulation in the 2014 session.

Drone is the most common name used for unmanned aerial systems (UAS) or unmanned aerial vehicles (UAV). This class of vehicle refers broadly to any unmanned, powered aircraft that sustain flight through remote operation or autonomous control.

In 2011, the Federal Aviation Authority (FAA) estimated that as many as 30,000 drones would be owned and regularly operated by the year 2030. More recently, the FAA revised its estimate to predicting that 7,500 drones may be commercially used in the next five years. This downward revision reflects a definition of drone that excludes aircraft exclusively used for hobby or recreation and a far more limited time frame.

Study methods used to complete this update include reviewing relevant literature, including federal law, rules, regulations, and opinions, following ongoing developments in the drone industry and drone regulation, and reviewing the regulatory efforts put in place in other states. Interviews were conducted with key stakeholders, including consultations with multiple state agencies and representatives of stakeholder groups (e.g., local law enforcement, drone users, privacy rights organizations).

Main Points

The FAA Modernization and Reform Act of 2012 sets federal policy regarding drone use and regulation and directs the FAA to "develop a plan to accelerate the safe integration of unmanned aircraft systems into the national airspace system" no later than September 30, 2015.

The federal distinction between drones and model aircraft is problematic, as the same aircraft can be considered model aircraft or not depending on the use, user, or location of the drone in proximity to the user. Model aircraft are exempt from most FAA regulation, while non-model aircraft and their users are subject to FAA certification requirements. The 2012 definitions include requirements that model aircraft are "flown strictly for hobby or recreational use," "operated in accordance with a community-based set of safety guidelines," and weigh less than 55 pounds. **This definition strictly excludes those drones used for commercial or monetary purpose from the model aircraft exemption.**

Jurisdiction over drones generally belongs to the FAA, which oversees all flight in the national airspace, as well as certification of all non-governmental aircraft and aircraft operators. **States have authority to place restrictions on use or users of governmental aircraft.**

Twenty states have enacted drone-related laws, while at least 43 states have considered some drone legislation since the beginning of 2013. **Twelve states have drone laws with provisions pertaining to law-enforcement restrictions**, most of which require a warrant to authorize drone use, except in the case of emergencies. Seven states have instituted laws that criminalize some use of drones, typically for use of drones for non-governmental surveillance. Two states have placed moratoriums on government use of drones until mid-2015, with some exceptions.

The primary concerns of drone use are privacy and safety issues, which can, at times, be at odds with one another. Stakeholders indicate there are economic benefits of drone use and are concerned about how regulation might lessen any potential positive economic impact.

Next Steps

Program review staff will continue to monitor developments at the federal level and gather information on stakeholder concerns in the state. Staff will develop further description of the regulations put in place in other states, including an analysis of:

1. the concerns addressed by regulations in other states;
2. how well those concerns were addressed;
3. any measureable impact as a result of the regulations; and
4. the extent to which the concerns and remedies used elsewhere are applicable within the state of Connecticut.

Legislative Program Review and Investigations Committee Staff Office
State Capitol * 210 Capitol Avenue * Room 506 * Hartford, CT 06106-1591
P: (860) 240-0300 * F: (860) 240-0327 * E-mail: PRI@cga.ct.gov

Acronyms

COA	Certificate of authorization
FAA	Federal Aviation Authority
NCSL	National Conference of State Legislatures
UAS	Unmanned aerial system
UAV	Unmanned aerial vehicle

PRI Study Update

Drone Use Regulation

In the 2014 legislative session, a bill was raised that addressed some aspects of drone regulation. Specifically, the bill (H.B. 5217) limited law enforcement use of drones to emergencies or when use is authorized by a warrant and added penalties for certain uses of drones more generally. Response to the bill, as demonstrated in the testimony received by the Judiciary Committee, was mixed, depending on the stakeholder group viewpoint. Some of the testimony called for deliberately-paced development of any regulations, including further study of the issue. This study is intended to help address those concerns, as well as determine what actions may be necessary to regulate drones in the state, what the legislature can do without crossing into federal authority, and what, if anything, the legislature should do to ensure concerns over drone use are mitigated.

This study update provides background information and answers some common questions on drones, drone use, and drone regulation, including both a preliminary explanation of jurisdiction issues and a listing of concerns raised by stakeholders. The update also provides information on the study's next steps.

1. What is a Drone?

Drone is the most common name used for unmanned aerial systems (UAS) or unmanned aerial vehicles (UAV). This class of vehicle refers broadly to any unmanned, powered aircraft that sustains flight through remote operation, autonomous control, or some combination of the two.[1]

Drones come in many different forms and span a vast range of size. Drones can be as large as commercial airliners or small enough to fit in the palm of your hand. Similarly, the weight of small drones can be less than a pound whereas large drones can go up to several tons.

Styles of drones generally fall into two basic categories – fixed wing and helicopter. Fixed wing craft have the same basic design as manned airplanes. Helicopter type drones, often called quad-copters when they use four separate propellers, are generally capable of vertical takeoff and landing. To get a better sense of the range of drone types, Table 1 provides some details of a few examples of common drones:

[1] This description intentionally leaves out other forms of unmanned flight, such as paper airplanes or kites (i.e., non-powered flight).

Table 1 - Examples of Drone Specifications				
Drone Name	MQ-1 Predator	Phantom 2 Vision	Hubsan X4 (H107c)	ShadowHawk
Manufacturer	General Atomics	DJI	Hubsan	Vanguard Defense Industries
Type	Fixed wing	Quadcopter	Quadcopter	Helicopter
Target Users	Military	Hobbyist/ Commercial	Hobbyist	Military/ Law Enforcement
Dimensions	55 ft. wingspan 27 ft. long	~ 16" wingspan 14" diagonal	less than 3" x 3"	86" L x 17" W x 30" H
Weight	2550 lbs.	~ 3 lbs.	~ 1 lbs.	49 lbs.
Payload Capacity	450 lbs. int./ 300 lbs. ext.	< 2 lbs.	-	22 lbs.
Non-flight equipment	Weapons/Camera	HD Video Recorder	SD/HD Video Recorder	Weapons/Camera (military only)
Flight Time Estimate	40 hours	25 minutes	~ 7 minutes	45 - 180 minutes
Source: PRI analysis of manufacturers technical information and reviews				

2. What are Drones Being Used For?

At their core, drones are substantially similar to manned aircraft in their wide array of designs, uses, and users. While there are not yet unmanned equivalents to every type of manned aircraft, automated control technology, such as those currently being tested and used in self-driving cars, is expected to quickly advance to greatly reduce many disadvantages to using unmanned aircraft.

Rather than discuss specific applications, it is helpful to identify a few important types of drone users. Existing federal law or regulation has created three basic types of use based on the user and the purpose of the use.

- *Governmental users*: Any government employee (local, state, or federal) using drones as a duty as a government employee. Also included in this group are non-government employees who are operating a drone for a governmental function.[2]
- *Commercial users*: Commercial users of drones are those who operate a drone for monetary compensation.
- *Hobbyist users*: This group uses drones strictly for their own enjoyment or recreation, exclusive of governmental or commercial users.

Different groups may be using the same drones for different purposes (i.e., the same camera-equipped drone may be capturing images for recreation, as evidence in a law

[2]The FAA definition lists examples of "government functions" that include "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."

enforcement case, or as part of a business). In some cases, a single person may fall into multiple different groups depending on his or her role at the time of drone operation.

Though not differentiated by the Federal Aviation Authority (FAA), there are two main subgroups of commercial users: 1) those using drones exclusively on private property (e.g., a realtor using a drone to capture images of a client's house, or a camera operator using drones to film a particular shot of a movie on a privately owned set); and 2) those using drones in public space or across multiple private/public boundaries (e.g., journalists using drones to capture video of newsworthy events, or drone package delivery).

3. How are Drones Defined in Federal and State Laws?

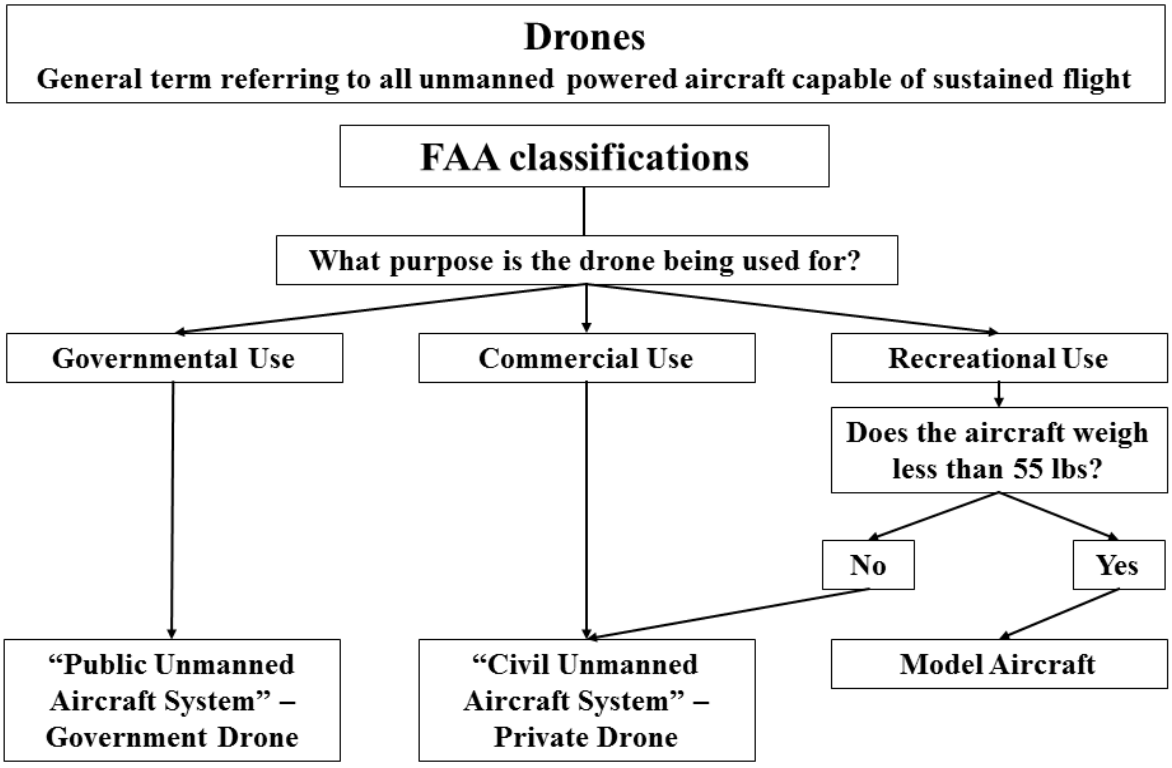
While this study uses the term drone inclusive of the entire range of unmanned powered aircraft and regardless of the use or user, federal law includes several different terms for different subsets of the broader category of drones. The FAA Modernization and Reform Act of 2012 defines unmanned aircraft as "an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft" and unmanned aircraft system as "an unmanned aircraft and associated elements (including communication links and the components that control the unmanned aircraft) that are required for the pilot in command to operate safely and efficiently in the national airspace system."

Generally, all drones fit the basic FAA definition of unmanned aircraft. However, the 2012 law distinguishes between three subgroups of unmanned aircraft for federal regulatory purposes: governmental unmanned aircraft systems, commercial/private unmanned aircraft systems, and model aircraft. The definitions of drone subgroups include provisions based on the purpose the drone is being used for, rather than exclusively on technical specifications or characteristics of the equipment itself. The distinction between subgroups of drones is noteworthy, as each group is regulated differently by the FAA.

If a drone is used for a governmental or commercial purpose, it is classified by that purpose, regardless of the size, shape, or capabilities of the drone itself. The FAA definition of governmental drones includes any drone being used while performing a governmental function. The commercial group includes any drone being used for monetary benefit.

A model aircraft is a drone that "is capable of sustained flight in the atmosphere, flown within visual line of sight of the person operating the aircraft, and flown for hobby or recreational purposes." Model aircraft have additional guidelines, including a 55 pound weight maximum. Figure 1 provides a flowchart for FAA drone classification.

Figure 1 – FAA Drone Classifications



Source: PRI Staff

Concerns have been raised with the federal definition of model aircraft, as it excludes some vehicles from the classification because of how or where the device is used. This can create confusion within the definitions, as the same model drone with the exact same specifications is considered by the FAA to be both a model aircraft, exempt from most FAA restrictions, when used by one person or for one purpose (i.e., recreationally) or a UAS, subject to strict FAA regulation, when used by another person or for another purpose (i.e., commercially).

State definitions of drones. At least four states have adopted their own statutory definition of drones (or a synonymous term), though each definition is limited to the context of each state's statutes or a section within. Those definitions are as follows:[3]

- Florida (SB 92): "'Drone' means a powered, aerial vehicle that:
    1. Does not carry a human operator;
    2. Uses aerodynamic forces to provide vehicle lift;
    3. Can fly autonomously or be piloted remotely;
    4. Can be expendable or recoverable; and
    5. Can carry a lethal or nonlethal payload."
- Illinois (HB 1652): "Drone" means any aerial vehicle that does not carry a human operator.

[3] The parenthetical references are the bills by which these laws were enacted.

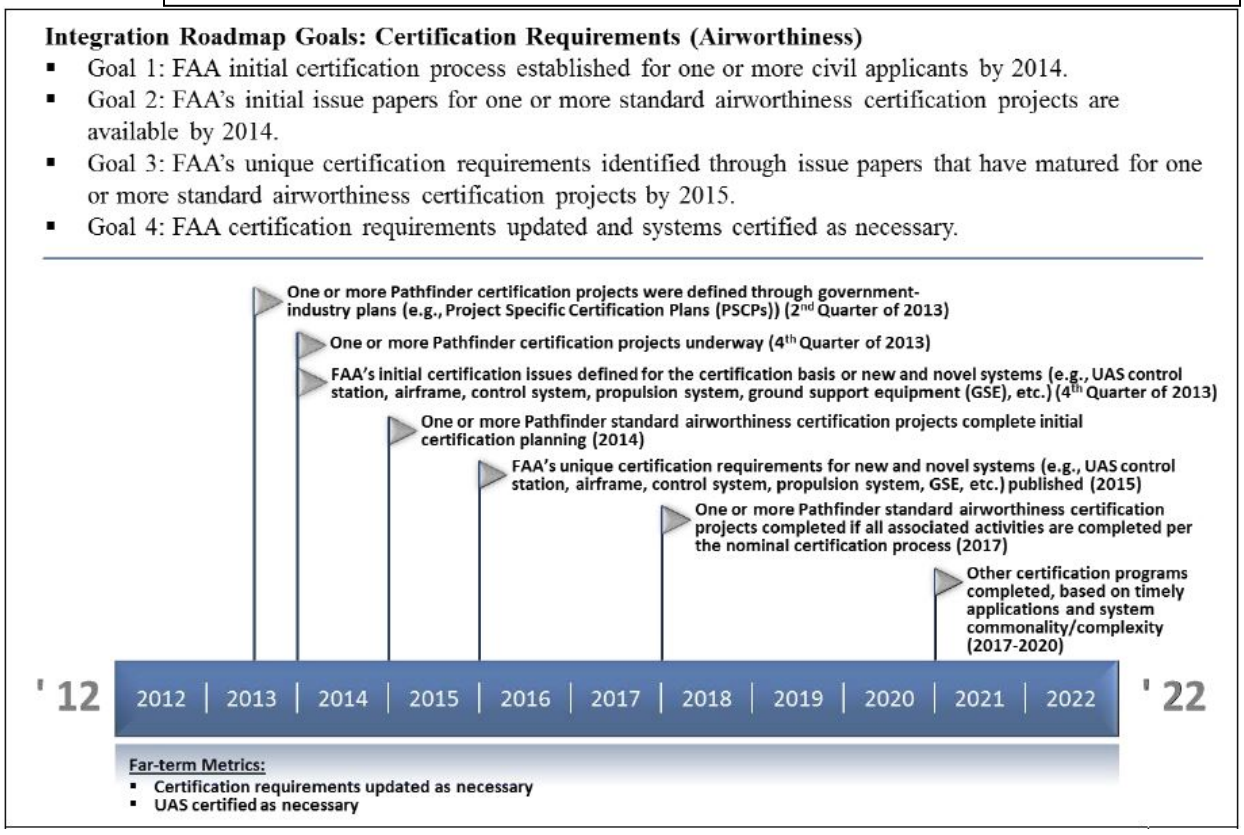
- Montana (SB 0196): "'Unmanned aerial vehicle' means an aircraft that is operated without direct human intervention from on or within the aircraft. The term does not include satellites."
- Oregon (HB 2710): "Drone" means an unmanned flying machine. "Drone" does not include a model aircraft as defined in section 336 of the FAA Modernization and Reform Act of 2012 (P.L. 112-95) as in effect on the effective date of this 2013 Act.

4. What is the Federal Role in Drone Regulation?

Regulation of drones primarily falls to the FAA, but some drone-related areas are outside FAA jurisdiction. Restrictions and requirements about flight, most aircraft, and most operators are controlled by the FAA. A major exception is that the FAA does not certify the airworthiness of governmental aircraft, as it does with commercial or private commercial aircraft.

As part of the 2012 FAA Modernization Act, the FAA was directed to "develop a plan to accelerate the safe integration of unmanned aircraft systems (UAS) into the national airspace system" no later than September 30, 2015. As part of this charge, in 2013 the FAA developed a roadmap and comprehensive plan to achieve such purposes. The plan details the goals of the agency to set up various aspects of drone regulation (e.g., certification requirements for drones and drone operators). One aspect of this, certification requirements of airworthiness, is summarized in the timeline presented in the document, shown here in Figure 2.

Figure 2 – FAA 2013 Comprehensive -Plan Certification Requirements Timeline (page 13)



While pursuing the 2015 deadline, the FAA has been changing, updating, and implementing various drone-related policies. The agency has worked with multiple public partners to set up six drone test sites throughout the country – Alaska, North Dakota, Nevada, New York, Texas, and Virginia. These test sites were created to inform the drone regulations being developed by the FAA while allowing the drone industry to test drones, or components of drones, in a controlled setting.

While regulations are pending, the FAA has prohibited the use of non-model aircraft, except when users have obtained a certificate of authorization (COA) for governmental use or a "special airworthiness certification" for private or commercial use. While over 400 COAs are in place to allow governmental use of drones, only two special airworthiness certifications have been put in place to allow commercial operation of drones, both of which are limited to certain locations in Alaska.

Model aircraft. Within the FAA's drone regulatory authority comes an exemption for model aircraft. These aircraft remain under FAA jurisdiction, but the rules and laws that apply to them differ from those that apply to non-model aircraft. Historically, model aircraft were subject to guidelines based on industry best practices, rather than to specific enforceable law or regulation through the FAA, except when such aircraft interfered with non-model aircraft. The guidelines for model aircraft included rules to keep model aircraft out of the airspace used by larger, non-model craft – namely, that model aircraft need to remain below 400 feet elevation to avoid larger crafts, most of which have a 500 feet minimum elevation. Many drones on the market today, especially those available to the general public, can fall under the model aircraft exemption based on their size, but may be excluded from this classification, and thus are subject to more strict regulation, because they are being used for a commercial or governmental purpose.

Current litigation. The combination of the FAA's broad definition of what constitutes commercial drone use and the effective prohibition on commercial use of drones has led to legal challenges on several fronts. In particular, two sets of cases have tested FAA rules interpretations.

In early 2014, a National Transportation Safety Board administrative law judge dismissed a case involving a photographer (Raphael Pirker) using a drone to capture video footage of the University of Virginia, which had hired the photographer to create a promotional video for the university. The FAA assessed a fine of $10,000 on the photographer based on his having operated a drone "in a reckless manner." The photographer's successful appeal was on the grounds that his drone was a model aircraft, not a UAS as specified by the FAA, and as such he was only subject to the voluntary guidelines for model aircraft use. The photography took place in October 2011, before the FAA Modernization Act of 2012.

The dismissal of this case was seen by some as a blow to the FAA's authority to limit commercial use of drones prior to the pending rollout of official regulatory efforts in 2015. The case is currently pending an appeal by the FAA. However, since one factor in the case's dismissal was that the incident occurred before a distinction was made between model aircraft and drones within the 2012 act, it may be that a similar incident that occurred today would be ruled on differently.

In June 2014, the FAA issued a document entitled "Interpretation of the Special Rule for Model Aircraft." The stated purpose of the document was to clarify that: "model aircraft must satisfy the criteria in the Act to qualify as model aircraft and to be exempt from future FAA rulemaking action; and consistent with the Act, if a model aircraft operator endangers the safety of the National Airspace System, the FAA has the authority to take enforcement action against those operators for those safety violations." The timing of the interpretation came after the Pirker case dismissal, so it is likely the new interpretation was informed by and related to the case.

Prior to the act and the recent rule interpretation, FAA authority over model aircraft was limited to "encourag[ing] voluntary compliance" with standards created by the model aircraft community. A strict reading of the recent rule interpretation seems to suggest that model aircraft that fail to follow the new guidelines are no longer to be considered model aircraft at all, putting them in violation of the FAA drone use policy while reclassifying them as non-model drones. This is explicitly the case for drones used for commercial activity, but users of drones not following other guidelines (e.g., the requirement to maintain line of sight contact with the drone) may find their drone reclassified, and their use thereof subject to FAA enforcement action well beyond the limited actions historically available towards model airplanes.

The rule interpretation prohibits some commercial activities that have been commonplace for model aircraft for decades. This is a major concern to some stakeholders, especially those long-time model aircraft hobbyists who routinely perform demonstrations at trade shows but can no longer receive payment for this as they may have in the past. Some universities are also concerned that the new rules may restrict research within the aeronautics field. Consequently, as of August 2014, the rule interpretation was challenged in the U.S. Court of Appeals for the District of Columbia in three different law suits. There has not yet been FAA comment on the challenge. It is unknown whether any further action on this issue will take place during the course of this study.

Use of drones on private property. There remain unanswered questions about the FAA's jurisdiction on or over private property. The FAA specifically addresses the possibility of using commercial drones on private property in a document titled "Busting Myths about the FAA and Unmanned Aircraft,"[4] saying "[y]ou may not fly a UAS for commercial purposes by claiming that you're operating according to the Model Aircraft guidelines (below 400 feet, 3 miles from an airport, away from populated areas.) Commercial operations are only authorized on a case-by-case basis. A commercial flight requires a certified aircraft, a licensed pilot and operating approval." However, FAA authority to regulate flight on private property is not a settled issue.

The FAA controls the national airspace, which is deemed a "public highway." However, there is not a clear delineation of where the public airspace ends and where private property begins. The closest thing to a demarcation of how far private property extends into the sky comes from the U.S. Supreme Court ruling on United States v. Causby, 328 U.S. 256 (1946), which held that flying aircraft at 83 feet from the ground was so low as to have a material negative impact on the property owner. Use of space at and below 83 feet was deemed a taking under the fifth amendment of the U.S. Constitution and, therefore, the space below 83 feet was not part of

[4] March 7, 2014

the public highway that is the national airspace in this case. But the 83 feet line is not specifically codified elsewhere as a clear minimum or maximum of the extent of the public highway.

While the FAA can regulate drones, including those below 400 feet, it may be limited in its oversight of flight that is strictly within the bounds of private property – that is, from ground level to some unspecified elevation. The FAA can regulate non-governmental aircraft, including drones that fall under the model aircraft exemption by the technical specifications of the vehicle, though the extent of rulemaking on model aircraft is specifically limited by the 2012 FAA Modernization Act. However, the FAA's interpretation of what constitutes commercial use is very broad, so this aspect of the model aircraft definition is potentially problematic.

The use of drones, commercial or not, relatively near the ground strictly by people on private property they own or with the permission of the landowner (e.g., for wedding photos, real estate listings, or production of films) may eventually be regulated differently than the use of drones above multiple properties or in public spaces (e.g., for delivery of goods or survey or mapping of land). However, at this time, the FAA does not recognize a distinction between these two types of commercial use.

5. What Can States Do to Regulate Drones or Drone Operation?

State and local governments can place restrictions on use or users of their own aircraft that would be preempted by FAA authority were they applicable to non-governmental uses or users. In regard to potential state or local drone regulation, the FAA released the following as part of a January 2014 Fact Sheet:

> *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.*[5]

Because this is an area of emerging technology, federal regulation has been, and will continue to be, in a state of flux. Because of this, the extent to which a state may make laws

[5] FAA Fact Sheet – Unmanned Aircraft Systems.
http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=14153

regarding drone use without infringing upon federal authority is subject to some interpretation. Below is a non-exhaustive list of drone issues that states may be able to regulate:

1) States may determine how drones are used for state and local governmental functions.

2) States can probably choose to prohibit or allow drone operation and takeoff/landing on state-held land. But the extent to which the state can limit the presence of drones over state land is unknown. In this case, the "operation" restriction may be limited to the physical location of the operator, not the aircraft itself.

3) States may be able to regulate actions performed with a drone. States may have the authority to specifically prohibit the use of drones to carry or operate weapons, but it is possible limiting such regulatory efforts to drones crosses into FAA authority regarding certification and operation of aircraft. Alternatively, states may ban all remote and/or unmanned use of certain equipment, regardless of whether such equipment is used in combination with a drone.

4) States may be able to limit the presence, but not the flight, of a drone on other's private property (i.e., trespassing). It is possible, though, that current trespassing law, or related laws pertaining to harassment or voyeurism, would already be applicable to drones in some manner.

The FAA has jurisdiction on all aspects of flight of the drone, so that is not an area states can regulate themselves. Of the four listed items, the least controversial is the first, which the FAA has specifically confirmed as an area of state control. The second area, limiting use on state lands, may be an area of state control, but laws concerning this aspect could have limited effectiveness if they can be circumvented by beginning and ending drone flights outside of state lands and subsequently flying over (i.e., in FAA-controlled airspace) state lands.

The third and fourth items both deal with establishing penalties for some aspect of drone use. The FAA has jurisdiction regarding when the flight of a drone, by itself, is a criminal act. States can probably add additional penalties for criminal activity performed with a drone, but those may be duplicative of the penalties for the crime in question. Likewise, states could try to criminalize certain uses of drones by focusing on the presence of a drone on private property, rather than on the flight of the drone, but it is not yet clear whether such laws would cross into federal authority.

6. What Have Other States Done to Regulate Drones?

According to the National Conference of State Legislatures (NCSL), as of September 2014, 20 states have passed some drone-related law. The purpose and breadth of the laws vary considerably – some states have a single bill with a single purpose, others have one bill with multiple facets, and others have passed multiple bills regarding various aspects of drone use in the last two years. Of these 20 states:

- Twelve (60 percent) include provisions limiting law-enforcement use of drones. The law enforcement restrictions most commonly require a warrant to

use a drone, except in the case of emergencies where there is an imminent threat of loss of life.

- Two states have issued moratoriums on some aspect of government use of drones, both of which expire in mid-2015. In North Carolina, government use of drones is prohibited except when specifically approved by the State Chief Information Officer. In Virginia, the moratorium is limited to law enforcement and regulatory agencies, with specific allowances for use of drones to aid in the search for missing persons.
- Seven states have instituted laws that criminalize some use of drones – typically the non-governmental use of drones for surveillance of others or others' property.
- Four states have added civil law remedies regarding potential consequences of inappropriate drone use.
- A few states' laws address concern about drones in regard to hunting and fishing, though these laws have primarily placed restrictions on the surveillance or monitoring of hunters and fishers, not on use of drones to hunt or fish. Most states already have bans on remote hunting, which may have alleviated concerns about hunting with drones.
- At least five states have passed bills specifically funding drone test sites, sometimes in connection with or contingent on federal funding of the same.

Along with these laws, NCSL has stated that numerous states have passed resolutions regarding drones, most of which are establishing or promoting the potential importance of the drone industry within the state.

7. What has Connecticut Done Regarding Drone Regulation?

Connecticut is one of 30 states that has yet to pass a drone-related law. It is also one of 35 states to have considered a drone-related bill in 2014 so far. In the 2014 session, the Judiciary Committee considered HB 5217, which dealt with some aspects of drones. The legislation was not referenced out of committee, partially due to requests for further study of the issue.

There have been a few high-profile incidents regarding private use of drones in the state, including local news coverage of a handful of uses. After one incident at Hammonasset Beach State Park earlier this year, the Department of Energy and Environmental Protection clarified that drones are not to be used at state parks except with specific permission (i.e., obtaining a special use permit or otherwise gaining the permission of the commissioner). The state park drone prohibition falls under existing disorderly conduct regulations, as DEEP considers use of drones in state parks potentially hazardous to "persons, wildlife, and property," partly because of noise concerns and the risk of uncontrolled descent in a crowded area.

More broadly, no drones are currently owned or being used for state government or law enforcement functions within Connecticut at this time. While drones have been used to aid in emergency situations on a couple of occasions, the drones used were not owned by state or local governmental organizations.

8. What are the Major Issues and Concerns Regarding Drone Use?

The most common concerns about drone use in the state are issues of privacy and safety, which at times can be at odds. Program review staff has interviewed representatives of several stakeholder groups in an effort to understand the range of concerns that exist surrounding drone use. One prominent theme is worry about the use of drones by private individuals to invade the personal privacy of others – namely, use of drones to capture images and videos of others without their consent or knowledge. An extension of this is concern that drones may erode society's expectations of an individual's right to privacy more generally, especially with regard to enabling law enforcement greater access to private information.

Drones may provide some benefit through safer working and living conditions, as well as possible assistance in life-threatening situations. For example, drones may be used in: helping to find missing persons more swiftly; providing information from an area or viewpoint that would be inaccessible without a drone; or keeping law enforcement officers out of harm's way when dealing with potentially life-threatening circumstances.

However, safety is also a concern when it comes to the operation of the drones themselves. Some people are worried about drones as falling hazards, while others fear drones may be used in actively harmful ways (e.g., bomb delivery). There is also concern over the possible negative interaction between drones and manned aircraft.

Stakeholders have also brought up issues about the economics of drones. There is the possibility that the manufacture of drones could bring jobs or money to the state economy. Various stakeholders see the potential for drones to make current services better, quicker, or cheaper, and do not want those options taken away (from the public or government). As with many technological developments, there is also the potential that drones replace some duties of certain jobs, ultimately leading to fewer jobs in those areas.

Next Steps

Program review staff, in cooperation with other non-partisan staff, will continue to monitor developments at the federal level and gather information on stakeholder concerns in the state. Staff will also develop more detailed descriptions of the regulations put in place in other states, including an analysis of what concerns the regulations in other states addressed, how well those concerns were addressed, whether there has been a measureable impact as a result of the regulations, and the extent to which the concerns and remedies used elsewhere may be applicable within the state of Connecticut.

Program review will host a panel discussion regarding possible drone regulations on October 8, 2014. The panel will include discussion of many aspects of drone use, with an emphasis on the interaction between law enforcement and drones. Following the panel discussion, there will be a public hearing on the topic.