

American Bar Association  
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Federal Laws, Regulations and Programs Affecting Local Land Use Decision Making  
Drones<sup>1</sup>

In the United States, it is impossible to disentangle the laws and regulations that govern the use of small, civil uncrewed aircraft system (UAS) — otherwise known as drones — from the history that led to their creation. An understanding of one is impossible without an understanding of the other, as even the definition of common terms, such as “aircraft” and “drone,” have shifted throughout the creation of the current regulatory framework.

While larger, military-type UAS — such as the MQ-1 Predator and the Insitu ScanEagle — have operated and continue to operate in domestic airspace under special permission from the Federal Aviation Administration (FAA) granted to other federal agencies or large corporations, the regulations put in place over the past decade are focused almost entirely on UAS weighing less than 55 pounds, and often less than five pounds. These are the drones that appear most often in the popular media: small, battery-powered aircraft with four propellers and a gimbal-mounted camera — along with their fixed-wing cousins.

#### Early Regulatory Programs

Although they would not have recognized it at the time, the first rules for the safe operation of civilian UAS were laid down by an organization founded in 1936 — 22 years before the FAA. The Academy of Model Aeronautics (AMA) was established to promote the nascent hobby of building and flying model airplanes, with a particular emphasis on preparing young people for careers in the fast-growing field of aviation.

The AMA continues to exist today, with nearly 200,000 members and more than 2,500 affiliated flying sites across the United States. To this day, its one-page safety code remains the bedrock for a diverse portfolio of activities ranging from drone racing to the operation of model aircraft powered by working jet turbines. Practiced in accordance with the AMA's guidelines, model aviation has achieved an enviable safety record, with only six recorded fatal accidents in more than 80 years of flying. Traditional aeromodeling has been viewed as so safe for so long that the FAA did not promulgate any significant rules and regulations to govern its activities for many decades. In 1981, the FAA did introduce an advisory document (AC 91-57) laying out a few common sense guidelines for model aviation that largely reflected the AMA's own guidance to its members.

This system of self-regulation began to break down in the first decade of the new century. Enterprising hobbyists took existing model aviation components and paired them with wireless video transmission systems to create the first, primitive drones of the type that have become commonplace today. It quickly became apparent that these new systems had potential real-world applications never envisioned by either the FAA or the AMA, such as aerial photography and emergency response.

Furthermore, while traditional aeromodeling had largely been confined to flying fields affiliated with

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the AMA, the pilots of these home-built drones took their aircraft into places and situations where radio-controlled flight had never been contemplated: landmarks, public parks, events and festivals, and so on. It did not take long for these activities to evolve into commercial operations, as these pilots could provide aerial imaging at a tiny fraction of the cost of a conventional aircraft, or even in environments that would be impossible by any other means.

To guide their operations, these industry pioneers referred back to AC 91-57 and complied with its recommendations. The FAA viewed this as going well beyond the intention of the original advisory circular, so in 2007 the agency released docket number FAA-2006-25714, clearly stating that commercial operations were not permitted under the auspices of AC 91-57.

### Early Commercial Drone Operations

Effectively, the FAA's action outlawed all private, commercial UAS operations in the United States. Public entities, such as a fire department or law enforcement agencies, could seek a Certificate of Authorization (COA) from the FAA to permit limited operations, but these were difficult and time-consuming to acquire — and were not available to private individuals or businesses. Nevertheless, innovation continued among hobbyists and companies operating overseas, beyond the reach of US regulatory authorities.

Through these efforts, aircraft became more capable, more reliable and less expensive. In spite of the FAA's blanket prohibition, commercial activities continued to expand, with some operators openly advertising their services on the Internet. Especially in film and television production, UAS operations were becoming increasingly common. By providing no legitimate means to permit such operations, the FAA had created a pressure vessel without an emergency relief valve — and the overwhelming market demand for this technology threatened to burst the regulatory framework meant to contain it. When Congress passed the 2012 FAA Modernization and Reform Act (FMRA 2012), it opened the door to limited commercial operations in Section 333 of the law. It permitted the FAA to approve individual private operators on a case-by-case basis. However, it was 2014 before the agency actually took advantage of this clause and approved six “Section 333 exemptions” for aerial film crews based in Los Angeles.

The requirements to receive permission to operate under Section 333 were onerous. The person operating the drone had to be a licensed full-sized aircraft pilot and possess a Class 2 medical certificate — a standard even higher than is required for private pilots. Applicants for Section 333 exemptions had to submit voluminous paperwork related to their qualifications, maintenance procedures and safety protocols, and were limited to flights within a “sterile” environment on a movie or television production set.

Although Section 333 established a high standard — too high, in the estimation of many industry participants — it nevertheless provided a lawful avenue to conduct commercial UAS operations. Demand for Section 333 exemptions quickly spread beyond Hollywood to operators around the country interested in a portfolio of business opportunities beyond film and television production.

### The Ponderous Start to Integrating Drones Into the National Airspace System

FMRA 2012 also set a 2015 deadline for the FAA to achieve “full integration” of UAS into the National Airspace System (NAS) — a goal that has not yet been accomplished, nor will be in the

foreseeable future. However, the agency has achieved several important milestones: none more significant than the establishment of 14 CFR Part 107 in 2016, which puts in place a regulatory framework for widespread deployment of commercial drones.

### Part 107 – a Framework For Commercial Use of Drones

Part 107 establishes a clear set of rules for drone pilots to follow. Highlights include:

- No operations at an altitude higher than 400 feet above ground level
- No operations in excess of 100 miles per hour
- No operations of an aircraft weighing 55 pounds, or more
- No operations at night or with less than three statute miles of visibility
- No operations above persons not directly involved in the flight
- The aircraft must remain within the pilot's visual line of sight at all times
- Pilot must only operate one aircraft at a time
- The UAS must yield the right of way to all other aircraft
- Operations in uncontrolled airspace are permitted without authorization
- Operations in controlled airspace are permitted with authorization

Part 107 also established a standard for the qualification of drone pilots: a 60-question Airman Knowledge Test (AKT) administered in a manner identical to private pilots and every other rating established by the FAA. Applicants must pass with a minimum score of 70 percent and must re-test every two years in order to keep their certification current.

Most critically, the FAA acknowledged UAS as “aircraft” — no different under the law from Cessnas and 737s — and their pilots as full members of the aviation community. However, this created a regulatory paradox that persists even today. If a drone is an aircraft, defined as “a device that is used or intended to be used for flight in the air,” then so is a model airplane.

### Of Drones and Model Airplanes

Complicating the matter further, in FMRA 2012, the AMA had achieved a long-standing goal of its congressional lobbying efforts with Congress’s adoption of Section 336: the Special Rule for Model Aircraft. In short, it said that the FAA had no authority to create new rules governing model aircraft and shifting responsibility for their regulation to a community-based organization (CBO). Under the definitions in the law, only the AMA qualified as a CBO.

However, the FAA refused to acknowledge the AMA's role as a CBO, arguing that the law did not define how a CBO would be formally recognized. This left the FAA as the sole arbiter of a critical distinction: between commercial and recreational operations. Ultimately, the FAA settled on a very broad definition of commercial operations, and a very narrow definition of recreational operations. In essence, the FAA determined that UAS flights shall be considered commercial operations if they yield any benefit to any person, at the time of the flight or at any time in the future — regardless of whether or not money actually changes hands.

If an unpaid search-and-rescue volunteer, for example, deploys a drone as part of a search for a lost hiker, that is a commercial operation because of the benefit to the hiker. If a farmer flies a UAS over her own fields to monitor the status of her crops, that is a commercial operation because those crops

will eventually be sold for money. In theory, even capturing aerial video for fun and posting it on a personal Facebook page is a commercial operation, because Facebook will profit from the web traffic it generates. It is now settled, that to count as a recreational operation, a flight must be made purely for the enjoyment of the activity itself, in the moment it is occurring.

### FAA: Reversing Regulatory Progress

Not only has progress on UAS regulation been slow over the past decade — occasionally, it has even moved in reverse. One such example began in November 2015. Faced with the possibility of hundreds of thousands of new drones appearing under Christmas trees on the morning of December 25, the FAA used its emergency rule-making powers to establish a national system of UAS registration.

Under the system, all drone owners were required to visit an FAA website, pay a \$5 registration fee and label their aircraft with a unique alphanumeric code. Failing to comply could result in a \$27,500 civil penalty and criminal penalties up to \$250,000 and three years in prison. Also, the regulation made no distinction between “drones” and “model airplanes,” so the traditional aeromodeling community was swept up in the effort, as well.

This action provoked a sharp response from the modeling community, centered on two key points: first, that the FAA had abused its emergency powers to sidestep the public comment period that is requisite in federal rule-making under the Administrative Procedures Act, and; second, the FAA was prohibited from putting in place new regulations affecting model aircraft under Section 336 - the Special Rule for Model Aircraft. In spite of those protests, these registration regulations and penalties were put into effect and resulted in more than 700,000 registrations and allowing the FAA to take in more than \$3.5 million from the new fee.

Opponents filed a lawsuit against the FAA, led by John Taylor — an attorney and drone enthusiast living in the Washington, D.C. area. In May 2017, an appeals court ruled in Taylor's favor, holding that the FAA had indeed overstepped its authority and ran afoul of Section 336. *Taylor v. Huerta*, 856 F.3d 1089 (2017).

However, Taylor's victory proved to be short-lived. In January 2018, Congress enacted the National Defense Authorization Act, which included an amendment requiring all UAS to be registered with the FAA. With the requirement now written into law, it has become a permanent component within the industry. While registration remained unpopular with hobbyists, its reinstatement was welcomed by industry participants eager to see continued growth in the commercial use of drones. These included the Association for Unmanned Vehicle Systems International (AUVSI) and DJI, the world's leading manufacturer of small, civil UAS, which saw registration as essential to the development of the market.

That same year, Congress passed the FAA Reauthorization Act of 2018 (FRA 2018), which repealed Section 336 of FMRA 2012 and established in its place Section 349, giving the agency the explicit authority to regulate all UAS, including model aircraft flown for recreation. It also requires that all recreational UAS pilots pass an aeronautical knowledge test. The test remains a work in progress as of this writing; however, early indications are that it will be much simpler than the test required to earn a certificate under Part 107, with the goal of insuring model aircraft and recreational drones do not interfere with the safe operation of manned aircraft.

## Controlling Airspace

With drone operations now a recognized component of the National Airspace System or NAS, the FAA began work to provide better access to airspace for remote pilots. The division of airspace within the NAS is a complex subject. However, it can broadly be divided into two categories: controlled and uncontrolled. Uncontrolled airspace is typically found over rural, sparsely populated areas and exists between the surface of the Earth and an altitude not more than 1,200 feet above the local terrain elevation. Under Part 107, UAS pilots are permitted to operate in uncontrolled airspace without clearance.

Controlled airspace generally surrounds larger airports with an active control tower and tends to occur in more densely populated urban and suburban areas, where such airports are located. Any aircraft wishing to enter controlled airspace — be it a Boeing 737, a Cessna 172, or a two-pound multirotor — must receive authorization. In the case of manned aircraft, this is accomplished by means of two-way radio communications with the control tower. However, the FAA was concerned that if UAS pilots sought authorization from local control towers via radio or telephone, air traffic controllers could become overwhelmed, to the detriment of their ability to manage crewed air traffic.

When Part 107 went into effect in 2016, the only method available to drone pilots for gaining authorization to operate in controlled airspace was to contact the FAA headquarters in Washington, D.C., via the agency's website. The process was extremely cumbersome, and the minimum time required to receive authorization was about six weeks. Individually reviewing each request and performing a safety analysis also placed a heavy burden on the FAA's staff. The need for a more efficient alternative was immediately apparent.

## Enter Low-Altitude Authorization and Notification Capability

In 2017, the FAA began prototype deployment of the Low-Altitude Authorization and Notification Capability (LAANC, pronounced “lance”) to solve this problem. LAANC divided up the controlled airspace around major airports into one-mile squares and, based on an analysis of air traffic patterns at each site, assigned each of those squares a maximum altitude where UAS flight operations could be conducted safely without further analysis.

In keeping with the general requirements of Part 107, the maximum altitude for any square within a LAANC grid is 400 feet above ground level. Based on proximity to the airport and other factors, squares can also be assigned lower altitudes, such as 300, 200, 100 or even 50 feet above the surface — or zero, where drone flights are not permitted without further safety analysis.

To get authorization, drone pilots merely need to enter their credentials into an app on their smartphone and request clearance to fly within a LAANC square with an altitude greater than zero. Within a few seconds, the request is recorded by the system and the pilot receives an automated text message, providing them with authorization to fly up to the indicated altitude.

After its basic functionality was proven in testing, LAANC was rolled out by regions, across the United States, over a seven-month period, beginning in April 2017. At present, LAANC grids are available for more than 600 controlled airports across the country and beginning in mid-2019, the FAA made the LAANC system available to recreational UAS pilots, as well.

## Commercial Drone Flights by Waiver

The FAA has made no significant changes or additions to Part 107 since establishing it in 2016, nearly four years ago. Unlike crewed aviation, where pilots can receive a plethora of different ratings and certificates — recreational pilot, private pilot, commercial pilot, airline transport pilot, instrument-rated pilot, multi-engine pilot, and so forth — the Remote Pilot In Command (RPIC) certificate remains the only official status available for UAS operators.

Instead, the FAA has allowed operations that go beyond the scope of Part 107 through regulatory waivers issued to individual pilots or organizations. To qualify for a waiver, the applicant must submit a written plan through the agency's website describing their intended operation, the procedures that they will follow and how safety will be assured. Once again, it is a slow, cumbersome process that must be completed for each individual application.

The “daylight operations waiver,” which ironically permits nighttime operations, is the overwhelming favorite, accounting for 89 percent of all waivers issued by the FAA. The remaining 11 percent are distributed among the following categories:

- Operating in controlled airspace that is not accessible through the LAANC system;
- Allowing a single pilot to control multiple UAS simultaneously (i.e., a drone swarm);
- Operating when visibility is less than three statute miles or in close proximity to clouds;
- Operating beyond the pilot's visual line of sight (BVLOS);
- Operating above unprotected persons on the ground; and,
- Operations from a moving vehicle or aircraft.

Several of these waiver types — including flying at night, beyond visual line of sight (BVLOS) and over people — are capabilities regarded within the industry as essential if UAS are to achieve their full potential. BVLOS operations, for example, would be a huge benefit to activities such as linear infrastructure inspection: checking the length of a pipeline or high-tension power lines. Flights over people would allow for more effective applications in the media, academic studies and public safety.

However, rather than establishing a foundation of knowledge and a list of the minimum required equipment need to undertake each of these mission types safely, the FAA continues to require that each be assessed on a case-by-case basis — slowing the development of new capabilities and applications for commercial drones.

## Remote Identification

The regulation of UAS is an ongoing process and, as of this writing a major issue that has implications for the future of the industry is being decided. All serious participants in the commercial drone space agree that it is necessary to establish a system referred to as Remote Identification (Remote ID or RID). RID is meant to instill accountability among drone operators — in a manner similar to the way license plates hold drivers accountable. If a car is involved in a hit-and-run collision, witnesses can record the license plate and the police are then able to track down the offending vehicle and its occupant.

In crewed aviation, much the same mechanism exists. Each aircraft is assigned a unique alphanumeric tail number, and FAA regulations specify where and how large it must be displayed on every aircraft

operating in the NAS. UAS present a unique challenge in this regard. While the FAA requires drone operators to display their registration numbers on an external surface of their aircraft, the aircraft themselves are so small that it cannot be discerned unless it is within arm's reach. While this has some limited utility in identifying the pilot of a crashed drone, it does not offer the same functionality as a car's license plate or an airplane's tail number.

RID is universally viewed as a prerequisite to expanding commercial UAS operations, especially for operations BVLOS and in sensitive areas: near airports, power plants and other critical infrastructure. The industry has largely achieved consensus that the solution to RID is for each drone to broadcast a unique radio signal, not unlike the transponder used on board crewed aircraft, that could be decoded using a dedicated system available to law enforcement, homeland security and FAA flight inspectors — or even a common smartphone. Were such a functional system available to the public through a smartphone app, it would reveal the drone's registration number, which could then be given to authorities who would access a secure database to identify the pilot and take action, if necessary.

Beginning in 2017, Chinese drone manufacturer DJI unilaterally implemented a RID system on all of its drone aircraft. Simultaneously, it released the AeroScope: a product intended for use by government officials to identify and track drones built by the company. DJI also made the underlying protocols, which employ the same basic technology as wireless earphones, available to other drone manufacturers, as well — in an effort to establish a de facto industry standard, today known as “broadcast ID.”

This approach was accepted by industry and seemingly endorsed by Congress, as well. In 2016, it directed the FAA to establish a consensus standard for RID, resulting in the formation of a 74-member Aviation Rule-Making Committee (ARC). In spite of the fact that the committee was weighted heavily with representatives of law enforcement and other agencies that would bear responsibility for identifying and tracking wayward UAS, it ultimately endorsed broadcast ID as its favored approach, with an optional system tied to the cellular network.

According to the ARC's final report, broadcast ID was favored because it would be inexpensive and easy to install on existing drones, achieve widespread compliance among pilots and offer robust performance. The cellular option was described as expensive, burdensome and potentially intrusive on a pilot's privacy. European regulators agreed with this consensus judgment, and the FAA itself had been relying on broadcast ID for several years, using DJI's AeroScope product to investigate and resolve incidents involving small UAS. So, broadcast ID appeared to be well-positioned to become the standard for RID.

### FAA Remote ID Rulemaking – Poorly Conceived, Poorly Received

Inexplicably, when the FAA announced its Notice of Proposed Rulemaking (NPRM) pertaining to RID on December 31, 2019, it opted for a cellular-based system that would require drone pilots to subscribe to a private, third-party tracking service. In its NPRM, the FAA estimated the cost for such a service would be \$2.50 per month. NERA Economic Consulting, a global financial analyst contracted by DJI to check the FAA's numbers, put the cost at approximately \$10 per month. Likewise, the FAA estimated a total economic impact of the rule's passage at \$582 million, whereas NERA put the cost at \$5.6 billion. Although there is ample cause to be skeptical of both estimates, it is clear that the economic impact on individual operators and the industry as a whole would not be negligible.

In addition to the financial burden, the FAA's Remote ID proposal would require significant new hardware, not currently integrated into any small, civil UAS now flying: of which there are about 1.3 million drone aircraft, at present.

That entire fleet would presumably need to be grounded permanently. Also, since a cellular connection would be required for any flight operations, this could put drone aircraft out of service without warning in the event of a network failure, or flights occurring outside cellular coverage areas.

The FAA's RID proposal also applies to most traditional aeromodelers, requiring their aircraft to incorporate the same cellular-based system as commercial drones, in most cases. There is an exception for established, fixed flying sites such as the model airfields affiliated with the AMA. However, the proposal does not put in place any mechanism to add new fields to the current inventory and anticipates that the number of modelers' fields will diminish over time — eventually becoming extinct. In addition to the financial burden it would put on hobbyists, there are entire categories of model airplanes and helicopters are too small to incorporate the required technology.

Across the industry and the broader UAS community, the reaction to the FAA NPRM was swift and negative. DJI was joined by the Association for Unmanned Vehicle Systems International (AUVSI) and other companies and organizations in calling out the FAA's RID proposal as expensive, burdensome, intrusive and likely to lower the rate of compliance with the final rule. The AMA declared that the rule poses an existential threat to traditional aeromodeling — requiring a monthly subscription for a child to play with a small model airplane occasionally in their own back yard, for example.

The AMA was supported in its strong rejection of the proposal by two organizations that represent primarily crewed aviation: the Aircraft Owners and Pilots Association (AOPA) and the Experimental Aircraft Association (EAA), both of which expressed concern that limiting childhood participation in aeromodeling would reduce the level of interest full-sized aviation in the future.

FAA's release of its RID NPRM was followed by a 90-day public comment period, which ended on March 3, 2020. In that time, it received more than 50,000 comments. A request from industry stakeholders to extend the comment period based on the high level of response was denied by the agency. At present, the FAA is reviewing the feedback it received as it must and is expected to announce its decision later this year.

### Unmanned Aircraft System Traffic Management

FAA has coordinated with NASA and other agencies and industry representatives to develop an unmanned aircraft traffic control system, known as UTM. UTM will perform as an automated air traffic control system for drones flying at 400' agl and below beyond the visual line of sight of people. UTM will identify services, roles and responsibilities, data exchange protocols, performance requirements and so forth for low altitude drone flights. UTM will work in concert with LAANC so that drones get from place to place, from mission to mission, via a communication system that is a network of automated systems accessed through programming interfaces (API). Those dynamic interfaces will enable, guide and restrict movements to include imposing UAS volume restrictions (UVR) to avoid congested low altitude airspace operations or other problems. On March 2, 2020, FAA distributed its "Version 2.0 of the Unmanned Aircraft Systems (UAS) Traffic Management (UTM) Concept of Operations" (Con Ops 2.0). A key focus of Con Ops 2.0 is security and the full



implementation of Remote Id.

### Federal Preemption

The division of authority between the FAA and state and local governments concerning drones has bright lines and some important gray areas. On December 17, 2015, the FAA Chief Counsel published “State and Local Regulation of Unmanned Aircraft Systems (UAS) Fact Sheet” that outlined the lines of authority. This advice memo featured prominently in FAA’s commentary to its Part 107 rules (for commercial flights) and states the Fact Sheet:

“[S]ummarizes well-established legal principles as to the Federal responsibility for regulating the operation or flight of aircraft, which includes, as a matter of law, UAS. The Fact Sheet also summarizes the Federal responsibility for ensuring the safety of flight as well as the safety of people and property on the ground as a result of the operation of aircraft.

“Substantial air safety issues are implicated when State or local governments attempt to regulate the operation of aircraft in the national airspace. The Fact Sheet provides examples of State and local laws affecting UAS for which consultation with the FAA is recommended and those that are likely to fall within State and local government authority.”

The FAA Chief Counsel fact sheet makes clear that FAA is in charge of drone flights, training and equipage and that before state or federal government attempts to regulate in these areas it is well-advised to consult with FAA to ensure that state and local governments do not overstep.

On the other hand, the Fact Sheet states that state and local government are responsible for “Laws traditionally related to state and local police power – including land use, zoning, privacy, trespass, and law enforcement operations;” “requirement for police to obtain a warrant prior to using a UAS for surveillance;” “specifying that UAS may not be used for voyeurism;” “prohibitions on using UAS for hunting or fishing, or to interfere with or harass an individual who is hunting or fishing;” and “prohibitions on attaching firearms or similar weapons to UAS”. At least one court has determined that the FAA UAS Fact Sheet “in the FAA’s interpretation of its own rule, which this Court accords deference \*\*\*.” *Singer v. City of Newton*, 284 F.Supp 125, n 5 (2017).

In *Singer v. City of Newton*, 284 F.Supp 125 (2017), the City of Newton adopted an ordinance requiring all drone owners to register their aircraft and prohibited flights outside of the operator’s line of sight without a permit or FAA permission. Moreover, the ordinance included a ban on the use of a drone at an altitude of 400 feet over private property without the express permission of the owner of the private property. The ordinance also prohibited a drone operator from conducting surveillance or invading “any place where a person has a reasonable expectation of privacy.” *Singer* was a FAA licensed drone pilot. The court agreed with *Singer* that the ordinance was preempted by federal law. The court observed that since the FAA only allows drone flights at an altitude of 400’ and below, the ordinance effectively banned drones in the city, when both congress and the FAA were charged with integrating drones into that same airspace.

Drones  
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## **Introduction**

Drones are entering United States airspace in great numbers. In 15 years a landscape without drones will be unusual. Just as we are now used to Fed Ex and UPS trucks on our local streets and highways, in 15 years we will be equally or more used to, not to mention reliant upon, delivery and other drones for our day to day needs. These aerial robots fly in Federal Aviation Administration (FAA) declared “navigable airspace.” The greatest aerial drone growth has been and will be in small machines that will fly at 400 ft. AGL or less. As a consequence, the all but forgotten law informing the rights at the intersection of navigable airspace and private property rights, largely developed in early days when manned aircraft first became ubiquitous, is again important. These key older cases set useful, although incomplete, parameters about the rights of aircraft in navigable airspace vis á vis the rights of occupants and owners of private property.<sup>1</sup> However, exactly where private rights end, and the public’s right to flight in the navigable airspace without avigation easements begins, has no bright line. As is always the case with new technology, the law will be tasked to “catch up.”

This paper outlines the current state of the law respecting the authorization of drones to fly in navigable airspace, the law at the intersection of navigable airspace and property/personal rights and analyzes the likely legal envelope for small drones in navigable airspace as it unfolds in the future. It also offers some food for thought on preemption and privacy, in the era of drones.

## **The Federal Regulatory World of Drones**

The FAA Modernization and Reform Act of 2012 together with its reauthorization – FAA Extension Safety and Security Act of 2016 require the FAA to integrate drones in the National Airspace System. The 2016 act requires the FAA in conjunction with NASA to establish a pilot “Unmanned Traffic Management” (UTM) system (think air traffic control for small drones flying below 500 ft AGL) on very tight timelines – the entire pilot program must be completed by 2019. NASA has done an impressive job so far with the UTM program and in fact has been at it a while. NASA announced on September 2, 2014 that it was then developing an air traffic control system for drone flights up to 500 feet AGL.

“The system would check for other low-flying drone traffic, help the small unmanned vehicles avoid buildings, and scan for adverse weather conditions that might knock a drone out of the sky.”

The federal government is of course supposed to manage such things. 49 USC § 40103 declares that “[t]he United States Government has exclusive sovereignty of airspace of the United States.” 49 USC § 40101 declares that the public has a right of freedom of transit through

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<sup>1</sup> See for example *United States v. Causby*, 328 U.S. 256 (1946).

this airspace. 49 USC § 4102(32) defines navigable airspace to mean: “airspace above the minimum safe altitude of flight prescribed by the Secretary of Commerce \* \* \*”. Further, Congress has determined that the Federal Aviation Administration (FAA) has authority to regulate the use of navigable airspace, its management and efficiency, air traffic control, safety, navigational facilities and aircraft noise at its source, per 49 USC § 44502 and 49 USC § 44701-44735, and see State Land Local Regulation of Unmanned Aircraft Systems (UAS) Fact Sheet - FAA General Counsel FAQ Sheet, p 1. It is clear that the FAA has the right to declare the location of the navigable airspace. For winged aircraft that has generally meant airspace above 1,000 feet in urban areas and 500 feet in rural areas,<sup>2</sup> plus the airspace needed for taking off and landing.<sup>3</sup> Helicopters may operate at lower levels as long as they do so without hazard to persons or property below.<sup>4</sup> Small commercial drones must fly at 400 ft AGL or lower, without special exception granted by the FAA.<sup>5</sup> Much to the chagrin of affected property owners, FAA Special Use Airspace (SUA) rules claim to make the navigable airspace reach from the ground level to 60,000 feet. Such SUAs can be designated by the FAA where it wants merely on the finding that an agency claims that surface airspace existed in December 1, 1967.<sup>6</sup>

However, the power of Congress and the FAA to declare navigable airspace does not give anyone, including pilots, the right to trespass, or to create nuisances, to unconstitutionally take private property, or invade privacy or commit crimes or to commit state law torts. Thus, the location of navigable airspace for low flying aircraft, like small drones potentially has great impact on real property rights and personal rights of privacy. Yet, the location of navigable airspace is not recorded in real property records (unless an owner in the chain has given an avigation easement) and is not readily identifiable to non-pilots. Worse still, the intersection between rights to navigate the navigable airspace and perhaps the most cherished private property right stick in the bundle -- the right to exclude others – not to mention the federal right to privacy found in the Fourth Amendment to the U.S. Constitution and that underlies cases like *Roe v. Wade*, is murky at best.

The below offers a partial roadmap through the federal miasma, with the unapologetic caveat that there is a lot of gray and much work to be done by the courts, Congress, FAA, and state and local legislatures. But the reader must keep in mind: drones are here to stay. It is up to the policy makers and lawyers to facilitate the balance between the work that robots can and need to do for people, and people’s needs to be free from harassment.

### **Flying in Declared Navigable Airspace Does not Immunize Governmental Airport Owners/Operators from Unconstitutional Taking Liability**

Congress by statute cannot arbitrarily limit the scope of the Fifth Amendment taking clause to any particular distance above the ground. In *United States v. Causby*, 328 US 256, 258 (1946), the government claimed, among other things, a property owner does not own any airspace adjacent

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<sup>2</sup> 14 C.F.R. §§ 91.119(b), 91.119(c).

<sup>3</sup> 49 USC § 40102(32).

<sup>4</sup> 14 CFR § 91.119(d).

<sup>5</sup> 14 CFR 107.51(b)

<sup>6</sup> Order JO 7400.2J 21-3-3 “SUA Proposals” “Proposal Content.” That is not to say the resulting intrusion is lawful, just that FAA opines that it is free to make the designation, and the offending operator or pilot will certainly have liability to the property owner if such flights are undertaken without an avigation easement.

to the surface “which he has not subjected to possession by the erection of structures or other occupancy.” The *Causby* Supreme Court rejected the government’s claim deciding that:

“the landowner owns at least as much space above the ground as he can occupy or use in connection with the land. The fact that he does not occupy it in a physical sense—by the erection of building and the like—is not material.”

The Court explained that the area around the surface of the ground was necessary to enable a person to use and enjoy one’s property and that the invasions thereof:

“are in the same category as invasions of the surface.”

The Court concluded that:

“flights over private land are not a taking, unless they are so low and so frequent to be a direct and immediate interference with the enjoyment and use of the land.”

The Court concluded that the flights at issue in *Causby* imposed a servitude similar to an easement that interfered with the use and enjoyment of the real property. Although all economically beneficial use was not lost, there was a compensable diminution in the value of the property because the property could not be used as for chicken farming as the owner intended. The Court admonished:

“It is obvious that if the landowner is to have full enjoyment of the land, he must have exclusive control of the immediate reaches of the enveloping atmosphere. Otherwise buildings could not be erected, trees could not be planted, and even fences could not be run.” *U.S. v. Causby*, 328 U.S. 256, 264 (1946).

Later, in *Braniff Airways v. Nebraska State Board of Equalization & Assessment*, 347 U.S. 590 (1954), the United States Supreme Court summarized *Causby* to hold “that the owner of land might recover for a taking by national use of navigable air space, resulting in destruction in whole or in part of the usefulness of the land property.”

Many lower courts have created a bright line of liability to private property owners for flights below 500 feet. *Argent v. United States*, 124 F.3d 1277, 1281-82 (Fed. Cir. 1997), citing, e.g., *Lacy v. United States*, 595 F.2d 614, 616 (Ct. Cl. 1979); *Aaron v. United States*, 311 F.2d 798, 801 (Ct. Cl. 1963). That bright line will not work well in the era of drones that, if they fly at all, must fly below 400 feet per FAA rule.

### **Traditionally, Airports Are Responsible for Aircraft Damages**

When flights are by military aircraft, the responsibility for damage belongs to the federal government.<sup>7</sup> But when the offending aircraft are civilian, operating from civilian airports, then the responsibility has been that of the airport operator (not, as you might suspect, the aircraft

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<sup>7</sup> *Causby*, *supra*.

owner). This is because the airport is the party that chose where to establish the airport and how much land to acquire to buffer its neighbors. *Griggs v. Allegheny County* 369 U.S. 84, 90 (1962).

#### **Fourth Amendment – Reasonable Expectation of Privacy that Society is Prepared to Accept**

- *Olmstead v. United States*, 277 US 438, 464-66 (1928), holding no unlawful search without trespass, police attached wires to public telephone lines outside of the defendant’s residences.
- *Katz v. United States*, 389 US 347, (1967); abandoning *Olmstead*, the Supreme Court held that trespass was no longer the controlling factor for determining whether a search violated the 4<sup>th</sup> Amendment. The Court decided that a wiretap of conversation in a public telephone booth was an unlawful search even though there was no trespass, holding famously that “the Fourth Amendment protects people, not places.” *Id* at 351. Justice Harlan’s concurrence described for the first time the new 4<sup>th</sup> Amendment test for a “reasonable expectation of privacy” having two parts: (1) “that a person [exhibits} an actual (subjective) expectation of privacy”, and (2) “that the expectation be one society is prepared to recognize as ‘reasonable.’” *Id.*, 361 US at 361.
- *Oliver v. United States*, 466 US 170 (1984); this case establishes the “open fields” doctrine in which even though police trespass on private property, the resulting search is not unlawful under the 4<sup>th</sup> Amendment. In *Oliver*, two police officers entered the defendant’s private property, bypassed a locked gate (which they walked around) and a no trespassing sign and eventually discovered marijuana growing. The marijuana grow site was approximately a mile from the defendant’s home. The marijuana was growing in an open field. Holding that open fields are different than a home’s curtilage explaining:

“[o]pen fields do not provide the setting for those intimate activities that the Amendment is intended to shelter from government interference or surveillance. There is no societal interest in protecting the privacy of those activities, such as the cultivation of crops, that occur in open fields. Moreover, as a practical matter these lands usually are accessible to the public and the police in ways that a home, an office, or commercial structure would not be. It is not generally true that fences or ‘No Trespassing’ signs effectively bar the public from viewing open fields in rural areas. And both petitioner *Oliver* and respondent *Thornton* concede that the *public and police lawfully may survey lands from the air*. For these reasons, the asserted expectation of privacy in open fields is not an expectation that “society recognizes as reasonable.” (Emphasis supplied.)

- *California v. Ciraolo*, 476 U.S. 207 (1986); holds there was no search, based exclusively on privacy grounds. The police had a tip that the defendant was growing marijuana in his back yard. The back yard was shielded from street view by two layers of fences, a six foot outer layer and a ten foot inner layer. There was no question that the owner had an expectation of privacy from ground level for what the Court called “his unlawful

agricultural pursuits.” So the police went airborne. They went up in a small aircraft, flew over defendant’s home *in the navigable airspace*, and took photos with “a standard 35mm camera.” Then they got a search warrant. The opinion concludes, and the state did not contest, that the back yard was within the curtilage of the home. But that was not the end of it. Was it reasonable for the defendant to believe that his yard was secure from observations by the naked eye? No. The Court concluded that either a passing aircraft or even “a power company repair mechanic on a pole overlooking the yard” could have seen the illicit crop. The Court’s conclusion was that “simple visual observations from a public space” (i.e. the navigable airspace) do not violate the 4th Amendment, even if they invade the curtilage.

- *Florida v. Riley*, 488 US 445 (1989), holding that a warrantless search from 400 feet in the air via helicopter that enabled police to discover marijuana growing on private property was not unlawful under the 4<sup>th</sup> amendment because police do not need a warrant to observe private property from public airspace. Justice O’Conner concurred that the police flyover observation was not an unlawful search, but her rationale was because such flyover was at an altitude at which members of the public travel with sufficient regularity that Defendant’s expectation of privacy was not one society is prepared to accept as “reasonable.” Importantly, however, she did not rely on FAA navigable airspace relevant to whether the warrantless search was reasonable. Instead, she explained:

“Because the FAA has decided that helicopters can lawfully operate at virtually any altitude so long as they pose no safety hazard, it does not follow that the expectations of privacy ‘society is prepared to recognize as reasonable simply mirror the FAA’s safety concerns.’”

- *Kyllo v. United States*. 533 U.S. 27 (2001); holds as unconstitutional a search using police thermal imaging from a car on a public street. A majority of five Justice found that using sense-enhancing technology to obtain information about what is going on inside a home was an unlawful search and seizure. Note, however that the four dissenting justices that saw nothing unconstitutional about the use of thermal imagery in a search included Justice Stevens, O’Conner and Kennedy.
- *Riley v. California*, 134 S. Ct 2473 (2014); is relevant to the drone discussion in how it wrestles with new technology using a balancing test. At issue was an alleged unlawful search of digital data from a cell phone found on a person after their arrest, forcing the court to adapt old cases to new technology: “These cases require us to decide how the search incident to arrest doctrine applies to modern cell phones, which are now such a pervasive and insistent part of daily life that the proverbial visitor from Mars might conclude they were an important feature of human anatomy. A smart phone of the sort taken from Riley was unheard of ten years ago; a significant majority of American adults now own such phones.” The court explained how it would begin its analysis in dealing with novel technology:

“Absent more precise guidance from the founding era, we generally determine whether to exempt a given type of search from the warrant requirement "by assessing, on the one hand, the degree to which it intrudes upon an individual's privacy and, on the other, the degree to which it is needed for the promotion of legitimate governmental interests.”

After a long and thoughtful discussion, Chief Justice Roberts concluded:

“The fact that technology now allows an individual to carry such information in his hand does not make the information any less worthy of the protection for which the Founders fought. Our answer to the question of what police must do before searching a cell phone seized incident to an arrest is accordingly simple — get a warrant.”

#### **Fourth Amendment: Trespass Analysis is not Dead**

- *US v. Jones*, 132 S.Ct 945 (2002); holding that installation of a GPS tracking device on a private car for 28 days was a trespass on the suspect’s car and thus an unconstitutional search. A majority of the justices relied on the trespass rationale. Four justices relied on invasion of privacy. All agreed the search violated the 4<sup>th</sup> Amendment.
- *U.S. v. Jardines*, 133 S.Ct. 1409 (2013); a drug sniffing dog was brought by police to the front porch of a home (easily within the curtilage) and once there exhibited behavior that indicated the presence of drugs inside. The Court held that the search was unlawful, relying upon trespass grounds. Justice Scalia termed the dog an “unlicensed physical intrusion” (even though the police had a right to come to the front door – they did not have a right to bring the enhancement of a dog) and explained that the *Katz* “reasonable expectation of privacy test” supplemented the trespass basis of the Fourth amendment. The Court determined it was unnecessary to reach the privacy issue. Justice Kagan’s concurring opinion provides perhaps a useful analogy for drones:

“A stranger comes to the front door of your home carrying super-high powered binoculars. . . . He doesn’t knock or say hello. Instead, he stands on the porch and uses the binoculars to peer through your windows, into your home’s furthest corners. It doesn’t take long (the binoculars are really very fine): In just a couple of minutes, his uncommon behavior allows him to learn details of your life you disclose to no one. Has your ‘visitor’ trespassed on your property, exceeding the license you have granted to members of the public to, say, drop off the mail or distribute campaign flyers? . . . Yes, he has.”

Because the dog sniffing was a trespass, the search was unlawful under the 4<sup>th</sup> Amendment.

## **Fourth Amendment Reasonable Expectation of Privacy is Diminished in the Industrial/Commercial Setting**

*In Dow Chemical v. United States*, 476 US 227 (1986) the Supreme Court decided that technological perception enhancements that did not reveal “intimate details” such as penetrating the walls of buildings or recording conversations, were not an unlawful search and seizure of an *industrial complex*. *Dow* distinguished the reasonable expectation of privacy in the curtilage of a person’s home from that of the owner of a 2000 acre industrial complex. In *Dow*, EPA hired an airplane to take investigative photographs of an industrial facility that was guarded against ground level public views to determine compliance with Clean Air Act standards. EPA did not have a warrant. *Dow* got wind of the aerial investigation and brought suit claiming the investigation from the air was beyond EPAs authority, violated the 4<sup>th</sup> Amendment of the US Constitution, and should be enjoined by the court. The parties stipulated that the investigation was a “search” within the meaning of the 4<sup>th</sup> Amendment.

### **Trespass, Nuisance and State Drone Specific Rules**

Generally, a person is liable for private trespass when they enter property belonging to another without permission. In this regard, the Restatement (Second) of Torts § 159 (1965) restates the following regarding public and private liability for trespass:

Flight by aircraft in the air space above the land of another is a trespass if, but only if:

- (a) it enters into the immediate reaches of the air space next to the land, and
- (b) it interferes substantially with the other's use and enjoyment of his land.

In many state, including Oregon, it appears at least to be a defense to criminal trespass if a statute or rule gives you a right to be on private property. *See* for example ORS 164.205(3):

“Enter or remain unlawfully means:

- (a) To enter or remain in or upon premises when the premises, at the time of such entry or remaining, are not open to the public and when the entrant is not otherwise *licensed or privileged to do so*;

Further, respecting trespass (again in in Oregon), the case of *Thornburg v. Port of Portland*, 233 Or 178 (1962) is instructive albeit as a taking case involving aircraft noise. The Oregon Supreme Court analyzed *Causby* explaining that the offending flight was essentially “at tree-top level” and could have constituted a trespass. *Id.*

On the other hand, private nuisance typically does not depend on whether the offender has a right to do what they are doing under some statute or rule. The issue is unreasonable interference with an occupant/owners use and enjoyment of their land.



So, for example, in Oregon, ORS 837.380 provides:

[A] person who own or lawfully occupies real property may bring an action against any person or public body that operates [a UAS] that is flown over the property if:

- (a) the operator of the unmanned system has flown the [UAS] over the property on at least one previous occasion; and
- (b) the person notified the owner or operator of the unmanned system that the person did not want the unmanned aircraft system flown over the property.

### **Conclusions from these precedents and principles**

- In the home and curtilage, people have a reasonable expectation of privacy, free from the prying of people with “uncommon” technological enhancements.
- Private property includes the “immediate reaches of the enveloping atmosphere” such as that needed for the reasonable use and enjoyment of land.
- What is society prepared to accept as reasonable?
- Federal government specifically refused to adopt a “field preemption” clause in FAA’s new Pt 107 rules.
- FAA Chief Counsel Memo
- Likely flights that whiz by that don’t interfere with reasonable use and enjoyment of residential land are probably ok so long as they do not create unreasonable noise, employ unauthorized (by the subject without a warrant) private data collection or other problems for the residential land occupier / land owner. For example, if land is rural and needed for wind turbines, can’t presume to run your drones at 200 feet AGL and below without an avigation easement; hovering over a backyard or near home windows that drives people crazy is likely to lead to liability for the drone operator. This to be contrasted from an Amazon or Fed Ex delivery drone which will be an invitee when it delivers your package. The non-invitee hovering drone is likely to be enjoined as unlawful, punished criminally or result in taking if authorized by local, state, federal government – regardless of whether activity is in the navigable airspace.

### **A Word About Preemption**

The specific division of authority between state and local governments concerning drones is a very gray area, with smudges of black and the rainbow. The FAA Chief Counsel has written an “FAQ” memo that takes a positions about preemption that are probably generally correct as far as they go, but it leaves significant and frustrating gaps where the rubber hits the road: what is the area private property owners own such that they can exclude drones, and in which local law enforcement can enforce private rights? Nevertheless the FAA General Counsel FAQ sheet memo features prominently in the commentary to the FAA’s new Part 107 rules<sup>8</sup> promulgated

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<sup>8</sup> 14 CFR 107.

to regulate small commercial drones. The Pt 107 commentary endorses that memo and declares that it:

“summarizes well-established legal principles as to the Federal responsibility for regulating the operation or flight of aircraft, which includes, as a matter of law, UAS. The Fact Sheet also summarizes the Federal responsibility for ensuring the safety of flight as well as the safety of people and property on the ground as a result of the operation of aircraft.

Substantial air safety issues are implicated when State or local governments attempt to regulate the operation of aircraft in the national airspace. The Fact Sheet provides examples of State and local laws affecting UAS for which consultation with the FAA is recommended and those that are likely to fall within State and local government authority.”

The FAA Chief Counsel Memo is attached to this paper, because it’s important to those of us to represent state and local governments and private property owners (*i.e.* all of us).

The Chief Counsel Memo issues important warns for state and local governments, considering the regulation of drones:

- Consult with FAA before operational bans, altitude, or “any regulation of the navigable airspace.”
- Consult with FAA before mandating equipment or training because it is believed to be preempted”

Tidbits from the commentary for the Pt 107 rules include the following additional marginally helpful nuggets:

- [T]his rule does not address preemption issues because those issues necessitate a case-specific analysis that is not appropriate in a rule of general applicability.”
- The FAA notes, however, that **state governments** have historically been able to **regulate the takeoffs and landings of aircraft** within their state boundaries.”
- [c]ertain legal aspects concerning small UAS use may be best addressed at the State or local level. For example, State law and other legal protections for individual privacy may provide **recourse for a person whose privacy may be affected through another person’s use of a UAS.**

The Pt. 107 rules, in turn, refer the reader to the Chief Counsel memo, which says things like state and local governments retain authority with respect to:

- “Laws traditionally related to state and local police power – including land use, zoning, privacy, trespass, and law enforcement operations;”
- “Requirement for police to obtain a warrant prior to using a UAS for surveillance.

- “Specifying that UAS may not be used for voyeurism.
- “Prohibitions on using UAS for hunting or fishing, or to interfere with or harass an individual who is hunting or fishing.
- “Prohibitions on attaching firearms or similar weapons to UAS”.

## **A Word About Privacy**

Regardless of great pontifications on the topic, individual privacy in the era of robots and the internet is not well understood or very well protected. The danger is that there will be a overreaction to fill the void that will crush the emerging industry.

States are free to regulate in the area of privacy protections of citizens. While the lack of federal intervention on the topic of privacy leaves a tremendous gap and puts enormous pressure on state and local government to act, state and local government clearly have power. So long as the exercise of that power does not adversely affect the uniform federal regulation of low flying aircraft (equipage, time, date or house or flights) so that they can fly, those regulations are on as solid a ground as any.

The federal protections of privacy are underwhelming to date. What the author knows about is below. There may be other things.

There is the February 2015 Presidential Memorandum for the federal agency use of drones. It requires federal agencies to develop, maintain and update privacy policies for collection, retention and dissemination of information obtained by drone, and assorted other rather boring policies.

The FCC – has core enforcement authority under Section 5 of FTC Act 15 USC Sec 45(n) where, if in interstate commerce, a company’s data security or privacy practices cause or are likely to cause substantial injury to consumers or to competition. Most citizens and law enforcement can’t successfully call the FCC and get any help with a problem of a drone collecting personal data.

The federal Department of Commerce, Nation Telecommunications Information Administration has adopted voluntary best practices for privacy protection – data collection retention, facial recognition etc. It’s unlikely this will address the problems associated with local photographers, ex-lovers and newsies driving people crazy with their ill-mannered use of drones.