Into Uncharted Airspace: Here Come the Drones

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In some respects, municipal lawyering bears a similarity to parenting a middle-schooler. Without much of an operating manual, local government attorneys are challenged by constant societal change which cannot be ignored or circumvented. To be sure, other species of legal practice--ERISA, estate planning, bankruptcy, mergers and acquisitions--undergo change, but not with the velocity and constancy of the leading-edge, disruptive, and completely interesting issues continually confronting the local government law practitioner.

So it is that *Municipal Lawyer*, having recently looked into urban chickens, marijuana, fracking, e-cigarettes, social media, Uber, gay marriage, police body camera's, Airbnb and a stable of other emergent subjects, now explores the brave new world of unmanned aerial vehicles (UAV's), also called unmanned aerial systems (UAS's) and best known as "drones."

The story of UAV's is yet another instance of technology outpacing regulation. The law--whether federal, state or local--is scarcely prepared for the coming onslaught as police, hobbyists, realtors, videographers, naturalists, engineers, farmers and others prepare to send thousands of camera-bearing, hardly-detectible devices hovering through the air.

Species of drones: Unlike the massive winged avatars deployed in military service which ply the stratosphere bristling with top-secret navigation, reconnaissance mechanisms and lethal weaponry, the drones that municipalities will likely encounter are much less the stuff of rocket science. Some are simple "model airplanes" but most consist of an array of propellers mounted on a geometric frame. Commercially available UAV's can weigh as little as one pound and cost less than $30. If outfitted with three rotors, they are called "tricopters;" with four rotors (the most common species) they are "quadcopters." More powerful are six-rotored "hexacopters," and when still more lift is needed, an "octocopter" arrayed with eight propellers may be the ticket. As with many of today's gadgets, battery life is an issue—even UAV's priced well into the thousands of dollars are limited to less than 30 minutes of flight time.[1]

Video capability is enabled by a menu of photographic technologies ranging from elementary cameras to middle-tier GoPro products to sophisticated, super high-acuity offerings from Sony and the like. (To some enthusiasts, the camera makes the drone: without video capability, the device is just a remote-controlled toy). Aerobatic control and range is governed by software, microprocessors and transducers, and varies widely.

The lightest, lowest-end UAV models are relatively unsophisticated, being limited to a range of 200 feet or less from the controller. These hobbyist devices are readily available from familiar sources including Amazon (Costco appears to have discontinued the sale of UAV's). But a quick perusal into the cyber-marketplace reveals a much more robust catalogue of drone choices, offering a broad spectrum of power systems, operational agility, flight distance and video resolution. One such vendor, the inventively-named "UAVdronesforsale.com" lists dozens of products. For example, the "Black Ops Tricopter" is offered by a Tokyo-based company and sells for $150. Constructed of high-impact plastic and featuring carbon-fiber propellers, it weighs less than two pounds. It is described as "An advanced UAS/ Drone / Multicopter platform for FPV Aerial Filming day or night design from the ground up for everyone."[2]

Amazon's drone offerings include the "DJI Phantom 3 Professional Quadcopter Drone with 4K UHD Video Camera" available for under $1300. Manufactured by China's DJI, a leader in the industry, the Phantom 3 features a "UHD video recording with fully stabilized 3-axis gimbal," allowing "live viewing of 720p video (full resolution video is simultaneously recorded on the internal microSD card)." Would-be purchasers are reminded by Amazon of the FAA requirement that "Flying this product is restricted within 15 miles radius (sic) of the White House."[3]

Other commercially-available products are exponentially more capable, weighing up to 55 pounds and priced at $25,000 or more. These high-end UAV's can carry substantial payloads, execute deft maneuvers, produce highly detailed camera feeds and be controlled over great distances. The Penguin B, a 49-pound, single propeller, airplane-shaped drone manufactured by UAV Factory USA LLC of Irvington, New York (with a subsidiary in Latvia), recently set a record for flying more than 54 consecutive hours. It can haul a payload of nearly nine pounds in addition to fuel. This spring, the company demonstrated

its controller functionality by piloting a Penguin at a European UAV conference—from 5,000 miles away.[4]

Who flies drones: The broad spectrum of drone capabilities will attract--and in fact necessitate--a spectrum of operators. At the low-end, hobbyists with little training may be able to pilot inexpensive UAV's over local playgrounds. But where the flying machines cost many thousands of dollars and are deployed in difficult, long-distance missions for governmental or commercial customers, formally trained and certified professionals will be required, not only for their skills but because FAA rules demand it. The incipient drone tsunami will accelerate the growth of institutions such as California-based "Drone Universities" which offers a wide menu of UAV training and certifications, stating on its website that the average drone pilot salary is "$50,000 to $60,000" and that top earners "can make $160,000".[5]

A massive industry: The tri-, quad-, hexa-, octo- and other species of unmanned aircraft and their associated training enterprises add up to a massive and rapidly accelerating commercial juggernaut. Not surprisingly, the industry is already far ahead of the game, with advocacy organizations such as the Association of Unmanned Vehicle Systems International (AUVSI)[6] lobbying on Capitol Hill and at statehouses across the country for minimal restrictions on access to the air. AUVSI has projected that over the next decade, the drone business in aggregate will produce some 100,000 jobs in the US, generating over $80 billion.[7] Other market surveys point to similarly meteoric expansion of the US drone economy.[8]

Pro's and con's: Growth will not be without controversy. On one hand, enthusiasts and industry groups point to the many beneficial uses to which commercially available UAV's can conceivably be put, including locating missing or injured persons in far-away, inhospitable terrain; checking on crops; rushing medical supplies to front-line responders; inspecting or assessing damage to buildings, cell towers, pipelines and other infrastructure; filming movies, sports and newsworthy events; cataloging the spread of wildfires; tracking at-risk game and wildlife; and so on. Even Amazon hopes to reduce its next-day delivery proposition to a mere 30 minutes from distribution centers using drones that can fly up to 10 miles at below 500 feet of altitude for a new Amazon "Prime Air" service.[9]

In some cases these purposes are already being served. For some time, AeroVironment Inc. has been operating its "Puma" drone to monitor oil pipelines, infrastructure, roads and wildlife across hundreds of lonely miles in the Arctic, with full authorization from the Federal Aviation Administration (FAA).[10] Closer to home, on July 17, 2015 the first FAA-sanctioned commercial drone delivery of medicine took place without a hitch, ferrying 24 packages from the Wise County, Virginia airport to local fairgrounds where a pop-up medical facility serves the economically-stricken coal region one weekend per year.[11]

On the other hand, risks of unregulated drone use are obvious. The public and law enforcement alike worry about safety and privacy when propeller-hoisted cameras and payloads can fly indiscriminately through the air, potentially colliding with power lines, interfering with other aircraft, or falling on—or looking into—space previously considered private. These concerns are aggravated by incidents such as the saga of the diminutive UAV which recently traversed the Washington DC secret service security perimeter at 1600 Pennsylvania Avenue NW, undetected in the darkness until it crashed on the White House lawn less than a football field away from the President of the United States.

Unseen drones are hardly the biggest problem. Last month, several unauthorized hobbyist UAV's were observed in airspace above a line of blazing semi-trailers and auto's which had been ignited by a massive wildfire that engulfed portions of California's I-5. The rogue drones hindered firefighting helicopters attempting to subdue the inferno.[12] (That incident sparked a proposal by California legislators that police and first responders be permitted to jam and disable drones that are interfering in rescue operations, without incurring liability to the UAV's owners.)[13] Only days later, national news outlets reported on a Connecticut teenager's video showing a drone equipped with a handgun, clearly firing via remote control as it flew above private property.[14]

More likely for the rest of us perhaps is the experience of a suburban Virginia man who heard a whirring sound and looked skyward in time to witness an out-of-control drone smash against the upper level of his split-level home in broad daylight and spiral to the ground nearby—whereupon he confiscated the runaway device, setting off a legal demand from the owner that it be returned. (No charges were filed because Virginia does not yet regulate the use of private drones).[15]

The coming drone-driven challenges to government lawyers are manifest, at every level.

Federal Authority: Is a "drone" an "aircraft"? The boundaries of most drone regulation at the state and local level will be largely determined by the FAA. It has repeatedly asserted its preemptive authority over UAV's, with particular scrutiny of for-profit drone activities. Sometimes this has resembled the proverbial atomic bomb where a flyswatter would presumably suffice—if in fact any action was warranted.

A case in point arose in January 2014. Hoping to cash in on the spike in beer consumption during Superbowl season, tiny Minnesota-based Lakemaid craft brewery let fly an innovative television ad campaign. The spot featured an octocopter as it deftly lifted a 12-bottle carton of Lakemaid's "Frosty Winter Lager" prominently displaying the company's mermaid logo, whisked the cargo in a straight line above a frozen lake to a specific ice fishing hut, and placed its alcoholic payload at the doorway for the lucky anglers waiting within. The advertisement was a sensation and immediately took its place among "Best Beer Commercials Ever" in YouTube parlance.[16] Presumably Lakemaid beer sales surged and the mermaid gained in popularity.

But one viewer--the FAA--was singularly unimpressed. Even though no one was injured and no property damaged, the agency straightaway notified Lakemaid that its drone activities were illegal and ordered the brewer to cease any further beer flights. The company complied.

Lakemaid was but one of 13 different entities that received cease and desist orders from the FAA over the past three years for what might have seemed to be innocuous commercial uses of small

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drones. The government also grounded Texas EquuSearch, a nonprofit which had been employing UAV's to locate missing people.[17] The communiques, issued by various FAA officials, all followed the same general script, citing an FAA policy prohibiting commercial drone use unless expressly permitted and threatening a $10,000 fine for violation.[18]

Not all recipients of the FAA orders took the matter lying down. In 2013, the FAA issued a Proposed Order of Assessment against a Swiss national named Raphael Pirker and his company, Team Blacksheep. The University of Virginia Medical Center had retained a marketing firm which in turn hired Pirker, a well-known drone videographer, to fly a UAV over the university's pastoral Charlottesville campus and obtain promotional footage. He accomplished the task using a Ritewing Zephyr powered glider with a 54-inch wingspan, was paid for his efforts and posted the footage on YouTube. No damage had occurred; regardless, the flight resulted in the FAA assessing Pirker a civil penalty of $10,000.

Although the agency's Order of Assessment specifically alleged that Pirker had been compensated for his UAV flight (presumably making his flight a "commercial" drone activity), the FAA did not rely upon the fact of compensation for its proposed civil penalty. In fact, they pointed to no federal regulation specifically prohibiting commercial operation of a drone. Rather, the Order was premised completely on the claim that Pirker had flown the UAV "recklessly" by flying "at extremely low altitudes, under personnel bridges, directly over automobiles, and within feet of pedestrians."[19]

> By reason of the foregoing, you violated the following section(s) of the Federal Aviation Regulations:
> a. Section 91.13(a) which states that no person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.[20]

Pirker succeeded in having the matter dismissed. In March 2014, Administrative Law Judge (ALJ) Patrick Geraghty held that small drones (which he referred to as "model aircraft") are *not* aircraft under the federal definitions; thus the FAA had no jurisdiction over Pirker's flight. He questioned the FAA's expansive assertion of power to regulate UAV's, saying the agency could have employed the same logic to block "a flight in the air of a paper aircraft, or a toy balsa wood glider."[21]

The FAA rapidly appealed the ALJ's decision to the full National Transportation Safety Board (NTSB).

Late in 2014, the NTSB issued its decision, reversing the ALJ. The NTSB held that drones *are* aircraft as the word is defined under federal law and accordingly are subject to the recklessness regulation. It therefore remanded the matter to the ALJ to decide whether Pirker's flight had been reckless.

As one commentator notes, the NTSB's decision raised as many questions as it answered:

> The NTSB's decision was very *narrow* in one respect: it held that because drones are aircraft, FAR 91.13, the only FAR at issue in the matter, applies to drones. It did not address "commercial use" since that was not addressed by the Judge, and it did not hold that any other FAR applies to drones.
> The Board's decision was very *broad* in another respect: it did not qualify which size drones are aircraft. So both a 1-ounce child's "toy" drone and a 55-pound industrial-sized drone are aircraft, and both are equally subject to FAR 91.13. In fact, given the extremely broad federal definition of aircraft, even paper airplanes are now subject to FAR 91.13. Yes, there is a manufacturer of paper airplane drones.[22]

(As for Mr. Pirker, there was ultimately no decision on remand. Judge Geraghty questioned why the FAA had brought these particular charges against a foreign national, given a prior FAA Order which clearly provides that when that a "foreign person" violates the Federal Aviation Regulations (FAA Order 2150.3B (Chapter 6, paragraph 34(a)), the matter should be handled by the "appropriate foreign aviation authority" through the Department of State.)

Pirker settled the matter by paying $1,100. He did not admit to any violation. The FAA obtained an NTSB decision that drones are "aircraft" as that term is defined under federal statute, and are subject to a single FAR– 91.13 (the recklessness provision.)

Federal Preemption: When/where can drones be operated? Given that drones are "aircraft," they fall within the matrix of three FAA usage categories which govern all aircraft operations. "Public Aircraft Operations" encompass governmental usage; "Civil Operations" are all non-governmental (including commercial) uses; and "Model Aircraft Operations" cover purely recreational drone activities.

Public Operations: "Public Aircraft Operations" are defined under Title 49 U.S.C. § 40102(a)(41) and related provisions. Whether an activity qualifies as public (governmental) aircraft operation is determined on a flight-by-flight basis; the considerations include aircraft ownership, the operator, the purpose of the flight, and the persons on board the aircraft.

In order to qualify for "public aircraft operation" status, the UAV must be owned by, operated by and used for legitimate purposes of a public entity. Qualification is not by right; the qualifying public entity must apply for and receive an FAA Certificate of Waiver or Authorization (COA). The COA is not a blanket authorization. As the FAA website explains, the COA allows qualifying entities "to operate a particular aircraft, for a particular purpose, in a particular area. The COA allows an operator to use a defined block of airspace and includes special safety provisions unique to the proposed operation."[23]

The Public Use COA is obtained via the FAA's "COA Online" system. Before the applicant will even be given access to COA Online, it (or its proponent) will be required to provide the FAA with a "declaration letter" from the city, county, or state attorney's office assuring the FAA that the proponent is recognized as a political subdivision of the government of the State under 49 USC § 40102(a)(41)(c) or (d) and that the proponent will operate its unmanned aircraft in accordance with 49 USC § 40125(b) (in other words, not for commercial purposes).[24]

Once granted, COAs usually have a specific term – up to two years in many cases.

The FAA explains that its goal is to "develop conditions and limitations for

UAS operations to ensure they do not jeopardize the safety of other aviation operations" and to establish a level of safety equivalent to that for manned aircraft: "Usually, this entails making sure that the UAS does not operate in a populated area and that the aircraft is observed, either by someone in a manned aircraft or someone on the ground to ensure separation from other aircraft in accordance with right-of-way rules."[25]

The FAA first issued COA's for public use in 2009; since then hundreds have been granted, to states, municipalities, universities and other public entities.[26] Common public operation uses for which the FAA has issued COA's include law enforcement, firefighting, border patrol, disaster relief, search and rescue, military training and academic research.[27]

Civil Operations: All drone activities that are not governmental or purely recreational are categorized as civil aircraft operations. Under this category, encompassing all commercial usage, the FAA affords non-governmental organizations the opportunity to go airborne provided that their drones engender minimal risk while performing compensated activities.

As the FAA website explains, there are two methods of gaining FAA authorization to fly civil (non-governmental) drones. First, the civil operation permit may be obtained via a COA coupled with a "Section 333 Exemption" (Section 333 of the FAA Modernization and Reform Act of 2012 requires pilots and aircraft to be certified; the Exemption can be obtained with the help of numerous law firms and commercial institutions such as "Drone Universities" mentioned at the outset of this article, which charges between $3,500 and $6,500 for the service).[28] (The FAA notes that "this process may be used to perform commercial operations in low-risk, controlled environments.")[29]

Second, applicants may be able to procure a "Special Airworthiness Certificate" (SAC) by describing "how their system is designed, constructed, and manufactured, including engineering processes, software development and control, configuration management, and quality assurance procedures used, along with how and where they intend to fly."[30] If the FAA determines the project does not present an unreasonable safety risk, it will issue a SAC with operating limitations applicable to the particular UAV in question.

Businesses chafe at the lethargic pace with which the FAA has allowed commercial UAV's to operate. However, the agency has gradually increased grants of civil operation exemptions and SAC's to an expanding range of applicants including movie production groups,[31] utility companies,[32] and surveyors, construction firms and oil industry applicants.[33] The FAA claims to have issued over 850 exemptions to date; analysts find that more than 40 percent of these are for aerial photography, with a strong link to real estate uses.[34] Typical is DividedSky Aerial Solutions, one of the newest recipients of a commercial use exemption. An eight person Richmond, Virginia start-up with 10 UAV's, DividedSky provides aerial footage, often to the real estate industry, at rates from $500 to $5,000 per hour.[35]

Exemption applications still take an inordinate amount of time to process. A law firm specializing in obtaining civil exemptions recently highlighted its success in receiving an exemption less than four months after the Section 333 application was submitted.[36] On Capitol Hill, lobbyists, industry spokespersons and politicians alike continue to militate for a much less restrictive stance on commercial drone use.

Model Aircraft Operations: Purely recreational use is covered under "model aircraft operations." The FAA does not rigorously regulate such UAV use, instead stating that "Individuals flying for hobby or recreation are strongly encouraged to follow safety guidelines" which include the following:

- Fly below 400 feet and remain clear of surrounding obstacles.
- Keep the aircraft within visual line of sight at all times.
- Remain well clear of and do not interfere with manned aircraft operations.
- Don't fly within 5 miles of an airport unless you contact the airport and control tower before flying.
- Don't fly near people or stadiums.
- Don't fly an aircraft that weighs more than 55 lbs.
- Don't be careless or reckless with your unmanned aircraft – you could be fined for endangering people or other aircraft.[37]

Individuals who fly within these parameters do not need federal permission to operate their drones, but any flight outside these parameters (including any non-hobby, non-recreational operation) requires FAA authorization. The agency provides the following example: "[U]sing a UAS to take photos for your personal use is recreational; using the same device to take photographs or videos for compensation or sale to another individual would be considered a non-recreational operation."[38]

The FAA has partnered with several industry associations to promote "Know Before You Fly," a campaign to educate the public about using unmanned aircraft safely and responsibly; it also provides links to a number of informational pdf's and video's for the hobbyist user.[39]

Notwithstanding these educational efforts, it seems obvious that, in the absence of mandatory federal regulations, states and localities will have much work to do as hobbyists take to the skies.

The FAA's Public Relations Campaign: Since at least 2007, Congress has been pressuring the FAA to show leadership on the drone issue, with modest results until recently. Understandably, the common (mis)perception has been that very few "consumer drone" regulations exist. Faced with an uninformed constituency, the agency fired back with a manifesto on its website in February 2014, debunking a number of drone misnomers. As the agency put it:

> There are a lot of misconceptions and misinformation about unmanned aircraft system (UAS) regulations. Here are some common myths and the corresponding facts.
>
> **Myth #1: The FAA doesn't control airspace below 400 feet.**
> Fact—The FAA is responsible for the safety of U.S. airspace from the ground up. This misperception may originate with the idea that manned aircraft generally must stay at least 500 feet above the ground.
>
> **Myth #2: Commercial UAS flights are OK if I'm over private property and stay below 400 feet.**
> Fact—The FAA published a Federal Register notice (PDF) in 2007 that

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clarified the agency's policy: You 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.

Myth #3: Commercial UAS operations are a "gray area" in FAA regulations.
Fact—There are no shades of gray in FAA regulations. Anyone who wants to fly an aircraft—manned or unmanned—in U.S. airspace needs some level of FAA approval. Private sector (civil) users can obtain an experimental airworthiness certificate to conduct research and development, training and flight demonstrations. Commercial UAS operations are limited and require the operator to have certified aircraft and pilots, as well as operating approval.

Flying model aircraft solely for hobby or recreational reasons does not require FAA approval. However, hobbyists are advised to operate their aircraft in accordance with the agency's model aircraft guidelines (see Advisory Circular 91-57). In the FAA Modernization and Reform Act of 2012 (Public Law 112-95, Sec 336), Congress exempted model aircraft from new rules or regulations provided the aircraft are operated "in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization."

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Myth #4: There are too many commercial UAS operations for the FAA to stop.
Fact—The FAA has to prioritize its safety responsibilities, but the agency is monitoring UAS operations closely. Many times, the FAA learns about suspected commercial UAS operations via a complaint from the public or other businesses. The agency occasionally discovers such operations through the news media or postings on internet sites. When the FAA discovers apparent unauthorized UAS operations, the agency has a number of enforcement tools available to address these operations, including a verbal warning, a warning letter, and an order to stop the operation.

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Myth #5: Commercial UAS operations will be OK after September 30, 2015.
Fact—In the 2012 FAA reauthorization legislation, Congress told the FAA to come up with a plan for "safe integration" of UAS by September 30, 2015. Safe integration will be incremental. The agency is still developing regulations, policies and standards that will cover a wide variety of UAS users, and expects to publish a proposed rule for small UAS – under about 55 pounds – later this year. That proposed rule will likely include provisions for commercial operations.

Myth #6: The FAA is lagging behind other countries in approving commercial drones.
Fact – This comparison is flawed. The United States has the busiest, most complex airspace in the world, including many general aviation aircraft that we must consider when planning UAS integration, because those same airplanes and small UAS may occupy the same airspace.

Myth #7: The FAA predicts as many as 30,000 drones by 2030.
Fact—That figure is outdated. It was an estimate in the FAA's 2011 Aerospace Forecast. Since then, the agency has refined its prediction to focus on the area of greatest expected growth. The FAA currently estimates as many as 7,500 small commercial UAS may be in use by 2018, assuming the necessary regulations are in place. The number may be updated when the agency publishes the proposed rule on small UAS later this year.[40]

The FAA's proposed rulemaking: In February of this year, the FAA finally issued its "Small UAS Notice of Proposed Rulemaking." The agency proposes a number of parameters and limitations regarding drones, many of which had been advanced in prior FAA publications. These proposals include:

- The drone must weigh less than 55 pounds (25 kg).
- The drone may be operated only within visual line-of-sight (VLOS) of the operator (no camera or photographic device--other than corrective lenses--can be used to enhance visibility).
- The drone can operate only during daylight hours and only when there is three miles of visibility from the control station.
- The drone may not be flown directly above any person not involved the drone operation.
- The drone may not fly higher than 500 feet or faster than 100 miles per hour.
- The drone operator must be at least 17 years old, must have passed an FAA knowledge examination and be vetted by the Transportation Security Administration (TSA).
- The drone must be maintained and checked for airworthiness prior to each operation.
- The drone must be registered (but an airworthiness certificate is not required).[41]

The 60-day public comment period for the Small UAS Notice of Proposed Rulemaking closed on April 15, 2015.

State drone laws: The FAA's sluggish pace and preemptive ambit have not prevented states from acting. Many states have passed UAV laws, even as they operate in a dynamic legal environment while FAA regulations evolve. According to the National Conference of State Legislatures (NCSL), 26 states have developed their own regulatory schemes and in 2015, 45 states have already considered a total of 153 bills related to drones, with 17 states–Arkansas, Florida, Hawaii, Louisiana, Maine, Maryland, Michigan, Mississippi, Nevada, New Hampshire, North Dakota, Oregon, Tennessee, Texas, Utah, Virginia and West Virginia having thus far added new drone provisions.[42]

These new laws cover a range of subjects:

Law enforcement: States are increasingly focused on limiting, or at least regulating, drone use by law enforcement:

- **Maine LD 25** requires that law enforcement agencies receive approval before acquiring drones and sets forth standards for law enforcement's operation of drones, including requiring a warrant before using a drone in criminal investigations except under certain circumstances.[43]
- **Nevada AB 239** restricts the use of drones by law enforcement and public agencies and requires all such drones to be listed in a registry.[44]
- **North Dakota HB 1328** limits the use of drones for surveillance purposes.[45]
- **Utah HB 296** permits law enforcement to use drones to locate a lost or missing person in an area in which a person has no reasonable expectation of privacy.[46]
- **Virginia HB 2125 and SB 1301** require that a law enforcement agency obtain a warrant before using a drone for any purpose, except in limited circumstances.[47]

Hunting: Several new state regulatory schemes prohibit the use of drones to assist in hunting; clearly, UAV's can serve as above-ground "fish-finders," scanning miles of terrain to take the inconvenience and guesswork out of tracking elusive prey–or unauthorized hunters. Legislatures in New Hampshire, Michigan, Oregon and West Virginia added anti-hunting provisions in 2015:

- **New Hampshire SB 222** prohibits UAV use by anglers, trappers and hunters.[48]
- **Michigan SB 55** prohibits using drones to hunt game and **Michigan SB 54** forbids drone use to interfere with an individual who is hunting.[49]
- **Oregon HB 2534** likewise requires development of rules to prohibit using a UAV for fishing or hunting or impeding an individual who is lawfully fishing or hunting.[50]
- **West Virginia HB 2515** prohibits hunting via a drone.[51]

Infrastructure: Protection of critical infrastructure is also a focus of the new legislation:

- **Arkansas HB 1770** prohibits using drones to photograph or collect information about critical infrastructure without consent.[52]
- **Nevada AB 239** restricts drone use within a certain proximity of airports or critical facilities without permission.[53]
- **Tennessee HB 153** prohibits using a drone to capture an image over certain open-air events and fireworks displays. It also prohibits the use of UAS over the grounds of a correctional facility.[54]
- **Texas HB 1481** makes it a Class B misdemeanor to operate drones over critical infrastructure (including refineries, power plants, chemical-manufacturing plants, ports, trucking terminals, and water-treatment facilities) at less than 400 feet off the ground.[55] **Texas HB 3628** directs the Department of Public Safety Director to adopt rules to prohibit or limit drone usage in the state capitol complex.[56]

Privacy: Several of the new measures deal with the dangers of drone-enabled intrusion into private spaces:

- **Arkansas HB 1349** forbids using a drone for voyeurism.
- **Florida SB 766** prohibits drone use to obtain images of private property or the owner, tenant, or occupant of such property without consent where a reasonable expectation of privacy exists.[57]
- **Mississippi SB 2022** specifies that use of a UAV for "peeping tom" purposes constitutes a felony.[58]

A Comprehensive Approach: Some of the new provisions above are being grafted into existing state UAV regulatory schemes; others are the first step in a state's nascent drone legislation.

Connecticut is among the states that have devoted significant time and energy to assessing the requirements of new drone laws in light of existing state regulations. Among the findings in the 41-page study by the Connecticut General Assembly entitled "Drone Use Regulation"[59] are:

"Drone," defined: Merely characterizing drones as a subset of "aircraft" may leave open gaps in the law. For example, Connecticut law requires that all "aircraft accidents" be reported to authorities, which makes little sense for a 2-pound quadcopter. Similarly, some provisions regarding use of airports and helipads are inapplicable to drones.[60]

Criminal Use: As is evident from FAA regulations, use of the drone may itself violate federal law, but using a drone to commit crimes implicates state laws. These should be scrutinized to confirm, for example, that a drone could be considered a "dangerous instrument" where appropriate.[61]

Weapons: Where laws regulate the presence of weapons in a "vehicle" they may not effectively proscribe weapons on a drone.[62]

Remote firing: Although current Connecticut law prohibits using "remote devices" to operate firearms, it is not absolutely clear that, except for hunting (which is expressly proscribed) firing from a drone would be covered in all circumstances.[63] (In fact, the Connecticut teenager's pistol-toting drone recently shown on YouTube firing over deserted private property would likely be legal under current Connecticut law).

Trespass: Generally, criminal trespass involves physical intrusion. Although Supreme Court precedent has held that flying aircraft at 83 feet could have a material negative impact on the property owner,[64] the Connecticut study indicates that more specific guidelines are needed: "Without a definition of the upper elevation limits of private property, it would be difficult to argue that a drone had entered the property criminally by flying over it."[65] The same might be said for civil trespass.

Municipal drone laws: Municipal drone laws are just beginning to emerge. A search for "unmanned aircraft" in the MuniCode database returns a handful of examples.

In Seattle, rules for police use of drones and the data derived therefrom are covered under "Acquisition and Use of Surveillance Equipment."[66] Prairie du Chien, Wisconsin signed into law a new ordinance on August 4 adding "Use of a Drone" to a range of "Offenses Against State Laws Subject to Forfeiture."[67] In Bonita Springs, Florida "Parks and Recreation" includes a provision allowing the aerial filming of one's own "special event" in municipal parks, subject to several safety standards, and provides for com-

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mercial and delivery uses, subject to city approval.[68]

Charlottesville, Virginia made news (beyond the *Pirker* matter) when its city council passed the country's first drone resolution in February 2013 in which it "calls on the United States Congress and the General Assembly of the Commonwealth of Virginia to adopt legislation prohibiting information obtained from the domestic use of drones from being introduced into a Federal or State court," and "pledges to abstain from similar uses with city-owned, leased, or borrowed drones."[69]

State Preemption: Obviously any municipal laws regarding governmental or commercial drone use would be largely preempted by federal regulations--and in some case by state law. For example, newly-enacted **Maryland SB 370** specifies that only the state can prohibit, restrict, or regulate UAV's, preempting counties and municipalities.[70] Unless so foreclosed, however, municipalities should have the prerogative to address paramount issues such as voyeurism, First Amendment rights and law enforcement surveillance, each of which is discussed below.

Airborne Voyeurism: An obvious and recurring topic in the drone law discussion is the potential for invasion of privacy. As evidenced in the above list of new state laws, Arkansas, Florida and Mississippi now specifically prohibit using UAV's to peek into private property. In many other jurisdictions, voyeurism, whether at eye level, facilitated by climbing a tree, floating in a balloon or operating a state of the art camera-hauling octocopter, is covered by current "peeping tom" laws. Here, the challenge is not so much in amending laws to add drones to the list of improper voyeuristic vehicles, but in making the existing laws stick.

For example, California's existing privacy laws would seem to cover drone-enabled snooping into a private residence:

> Except as provided in subdivision (l), every person who commits any of the following acts is guilty of disorderly conduct, a misdemeanor:
> (j) (1) Any person who looks through a hole or opening, into, or otherwise views, by means of any instrumentality, including, but not limited to, a periscope, telescope, binoculars, camera, motion picture camera, camcorder, or mobile phone, the interior of a bedroom, bathroom, changing room, fitting room, dressing room, or tanning booth, or the interior of any other area in which the occupant has a reasonable expectation of privacy, with the intent to invade the privacy of a person or persons inside.[71]

But the devil is in the details. Penalizing drone-enabled voyeurism–if in fact it is detected at all, given the noise of traffic, air conditioners, sirens and such–is likely to face the same challenges that confront the prosecution of terrestrial peeping. As one enterprising voyeur-defense law firm's site explains:

> Like other California "disorderly conduct" crimes, peeping while loitering and invasion of privacy are quite specific and technical in their requirements. Often, the prosecution will be unable to prove one or more required elements of the crime.[72]

The site provides a litany of loopholes which may thwart prosecution of a potential voyeurism charge; presumably some of these would be just as viable in defending against airborne peeking as they are for standing outside a back yard bedroom window:

> Legal defenses to Penal Code 647(i), peeping while loitering, include (but are not limited to):
> - You weren't on private property;
> - You weren't loitering;
> - You had a lawful purpose for being on the property; and
> - The building you were peeking into wasn't inhabited.

Depending on the specific charge, legal defenses to Penal Code 647(j), invasion of privacy, include (but are not limited to):

- The alleged victim did not have a reasonable expectation of privacy;
- The alleged victim consented to being photographed or recorded;
- You didn't intend to invade anyone's privacy; and
- You didn't intend to arouse or gratify yourself sexually.[73]

The firm is helpful enough to provide some instances of questionable behavior that might avoid legal jeopardy.[74]

The victim's reasonable privacy expectations and the perpetrator's intent will no doubt continue to be argued in drone-based voyeurism cases.

First Amendment Implications: Airborne photography also implicates First Amendment issues. Questions about freedom of expression, journalistic and otherwise, abound. For example, if one has the right to video activity from the ground, why should capturing the same activity from an airborne camera be proscribed?

That question arose earlier this year in a federal court considering *Rivera v. Foley*, no. 3:14 cv00196 (D. Conn. Mar. 23, 2015). Pedro Rivera, a photographer and editor at a Hartford television station, was alerted in February 2014 by his police scanner to a serious traffic accident downtown. He went to the scene and stopped at the perimeter which law enforcement had set up. Wanting a better view, Rivera launched his personal drone. It ascended to a point 150 feet directly above the accident, affording much more compelling photography.

The police officers became aware of the drone. They confronted Rivera, demanded that he cease filming and contacted his employer—with the result that he was suspended from work for one week.

He brought a Section 1983 action against the Hartford Police Department and various officers, alleging violation of his First and Fourth Amendment rights. His Fourth Amendment count failed, given that his drone flight justified a *Terry* stop:

> Plaintiff`s operation of an unusual and likely unidentified device into a cordoned-off area at the scene of a major motor vehicle accident and ongoing police investigation provides arguable reasonable suspicion that Plaintiff was interfering with police activity.[75]

More significantly, the court's First Amendment analysis found that, although the right to photograph police activity was not clearly established in the Second Circuit (in contrast to the First, Seventh, Ninth and Eleventh), even if such right did exist, there was no precedent suggesting that drone-enabled photography was also protected:

> [I]n cases where the right to record police activity *has* been recognized by our sister circuits, it appears that the protected conduct has typically involved using a handheld device to photograph or videotape at a certain distance from, and

> without interfering with, the police activity at issue.... By contrast, here Plaintiff directed a flying object into a police-restricted area, where it proceeded to hover over the site of a major motor vehicle accident and the responding officers within it, effectively trespassing onto an active crime scene.... Even if recording police activity were a clearly established right in the Second Circuit, Plaintiff`s conduct is beyond the scope of that right as it has been articulated by other circuits.[76]

Obviously, cameras are able to film from an angle, permitting footage to be gathered from airspace that is not over a "police restricted area." And where the drone is over public airspace, the First Amendment advocates become more vociferous. As Brendan Shulman, a leading "drone-rights" lawyer who represented drone videographers Team Blacksheep and Texas EquuSearch has opined regarding laws that seek to limit airborne photography:

> The Supreme Court has affirmed that there's no expectation of privacy on a photograph taken from the air in places where planes tend to fly. There's a First Amendment right to take a photograph of someone in a public place and that right is enhanced if the picture is for a journalistic purpose. These laws don't seem to have taken that into account and that's where there are grounds to challenge them.[77]

Fourth Amendment Implications: Drones are clearly poised to shrink the sanctuary known as "privacy" beyond its already-limited boundaries. While drone-enabled voyeurism is an annoyance, implications for expanded search and seizure are even more concerning, given that a search is not likely to be considered "unreasonable" unless it violates a "constitutionally protected expectation of privacy."[78] The "expectation of privacy," at least from aerial intrusion, was downsized long ago, when the Supreme Court upheld law enforcement's using the fruits of warrantless overhead surveillance from an altitude as low as 400 feet.

In *Florida v. Riley*, 488 U.S. 445 (1989), a county sheriff was acting on a tip that a suspect was growing marijuana in a greenhouse on his five-acre rural property. Unable to see the building in question, the officer circled over the premises in a helicopter. The greenhouse was missing two roof panels, allowing the sheriff to see, with his naked eye, what appeared to be marijuana growing inside. A warrant was procured, and an arrest made.

The trial court had agreed with Riley that the flyover violated his reasonable expectation of privacy. That decision was overturned by Florida's Court of Appeals--which was in turn overturned by the state's highest court, again finding a privacy expectation.

The Supreme Court reversed yet again. "Any member of the public could legally have been flying over Riley's property at 400 feet and could have observed Riley's greenhouse. The police officer did no more."[79]

With a UAV instead of a helicopter, the potential for further overreach is obvious. Surveillance will be possible from much lower altitudes, whether looking straight down, at an angle or horizontally. It is therefore not surprising that, as noted earlier in this article and as the aforementioned Connecticut General Assembly study confirms, the single greatest subject matter of state and local drone laws is the limitation of use by law enforcement.[80]

CONCLUSION: The possibilities for beneficial use of drones are seemingly unlimited, and it is virtually certain that UAV deployment, by governments, businesses and hobbyists, will grow exponentially in the near future, transforming society. But critical questions about safety, privacy and constitutionality remain to be answered. Although the FAA has preempted much of what can be done to regulate UAV's, there is still substantial work to be done on the state and local level. Municipal lawyers have a responsibility to understand this new, intrusive technology--and a unique opportunity to play a significant role in crafting local drone laws that provide the right balance between recreational interests, commercial opportunity, law enforcement and the protection of fundamental constitutional rights.

Notes

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17. Aaron Sankin, "The dizzying state of America's drone laws" April 24, 2014, http://www.dailydot.com/politics/us-state-drone-laws-mess/ (last

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