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Sky-High Promise (and Potential Pitfalls) of Drones

Joshua S. Turner, Katy M. Ross, and John T. Lin

Few technologies today raise as many interesting legal issues as the use of unmanned aircraft systems, known as UASs or (less formally) “drones.”

Members of the natural gas and electric utilities industries likely have conflicting reactions to this new technology. On one hand, drones offer a tremendous set of possibilities for the industry. They have the potential to be used for aerial imaging, mapping, and surveying, allowing these functions to be performed more quickly and at a far lower cost than before—and permitting some types of imaging and inspection that simply have not been possible to date.

Drones also present a compelling safety case, reducing the hazards associated with human inspection of facilities and equipment. While these applications are exciting, industry professionals may also be concerned about unauthorized users flying drones above their facilities and creating a security risk. Both of these reactions are valid, and regulators today are grappling with the same issues.

As drone use explodes around the country, regulators are trying to balance two objectives: enabling the myriad positive opportunities for drone use while also ensuring that drones are flown responsibly and safely. The Federal Aviation Administration (FAA), Congress, and state and local governments have all voiced opinions on how drones can be used safely and responsibly. As with any new technology, the key ques-

Joshua S. Turner (jturner@wileyrein.com) is a partner at Wiley Rein LLP. **Katy M. Ross** (kmross@wileyrein.com) is an associate with Wiley Rein LLP. **John T. Lin** (jlin@wileyrein.com) is an associate with Wiley Rein LLP.

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tions are how much regulation we need and who should impose those regulations.

This article provides an overview of the current legal landscape for drone use and discusses a number of currently pending and upcoming regulatory initiatives that will impact the use of drones going forward. We also explain how a commercial operator such as a natural gas or electric utility can get up and flying—legally and safely—as soon as possible.

OVERVIEW OF THE LEGAL LANDSCAPE

Federal Regulation of Drones

Early Steps Toward Regulation and Authorization

The FAA historically has had exclusive jurisdiction over regulating the national airspace and the flight of aircraft in that airspace. It is perhaps a common misperception that drones initially were unregulated—in fact, because they were “aircraft,” UASs by law had to comply with the FAA’s existing rules that pertained to civil aviation, even though these rules were not designed with small unmanned aircraft in mind. As a result, there were initially many questions about how a drone operator could ever comply with FAA regulations, let alone do so in a cost-effective manner.

In 2012, in the FAA Modernization and Reform Act of 2012 (FMRA, Pub. L. 112-95), Congress directed the FAA to begin work on developing a comprehensive plan to safely accelerate the integration of drones into the National Airspace System (NAS). Specifically, Congress directed the FAA to adopt a final rule that would allow for civil operation of small drones in the national airspace. In Section 333 of the FMRA, Congress further directed the secretary of transportation to determine, in the short term, whether certain drones could fly before completion of the plan and rulemaking—in effect, whether there was a way to exempt drones from existing rules and give the industry a short-term jump-start.

The FAA responded by beginning work on the final rules for small UASs while also developing a careful but streamlined approach for allowing commercial users to fly drones in the short term. This process, known as the Section 333 Exemption process, permitted commercial users to petition the FAA for authorization to fly a specific UAS for a specified purpose. Enthusiasm for this process was immediate.

As of September 2016, the FAA had granted 5,551 Section 333 petitions. But the Section 333 process was still relatively cumbersome. Applicants were required to comply with strict operational restrictions such as using a licensed pilot to fly the drone, and flights over nonparticipating people were largely prohibited. The FAA reviewed these petitions on a case-by-case basis and individually granted qualified operators permission to fly.

Final Rule for Small UASs

It wasn’t until the FAA finalized the regulations for the operation and certification of small unmanned aircraft systems on June 21, 2016, that the floodgates truly opened. Known as the “Part 107 rules,” these regulations apply to drones that weigh less than 55 pounds and are flown for commercial purposes, research and development, education, and other nonhobbyist uses. These rules make it far easier to fly drones than the Section 333 exemption process, by streamlining approval requirements even further. In the first three months of the rule’s existence, the number of certified drone operators under Part 107 jumped to nearly 23,000.

Pilot Certification. In what may be the biggest change from Section 333, drone operators under Part 107 no longer need to have a full civil pilot’s license. Instead, small UASs operating under Part 107 must be piloted by an operator holding a “Remote Pilot Certificate.” To obtain this certificate, a person must (1) be at least 16 years of age; (2) be able to read, speak, write, and understand English; (3) not know or have reason to know that he or she has a physical or mental condition that would interfere with safe UAS operations; and (4) demonstrate aeronautical knowledge by either passing a test or, if the person already holds a pilot certificate, completing an initial training course.

Knowledge tests are administered at designated testing centers. An initial aeronautical knowledge test will cover the following: (1) applicable regulations relating to small UAS rating privileges, limitations, and flight operation; (2) airspace classification, operating requirements, and flight restrictions affecting small UAS operation; (3) aviation weather sources and effects of weather on small UAS performance; (4) small UAS loading; (5) emergency procedures; (6) crew resource management; (7) radio communication procedures; (8) determining the performance of

small UASs; (9) physiological effects of drugs and alcohol; (10) aeronautical decision-making and judgment; (11) airport operations; and (12) maintenance and preflight inspection procedures.

Pilot Responsibilities. The certified Part 107 pilot, known as the “remote pilot in command” (RPIC), is responsible for the safe operation of the small UAS. Prior to operation, the RPIC must (1) assess the operating environment, considering risks to persons or property in the immediate vicinity as well as local weather conditions, local airspace restrictions, the location of persons and property on the surface, and other ground hazards; (2) ensure that all participating persons are informed about the operating conditions, emergency procedures, roles and responsibilities, and potential hazards; (3) ensure that all control links between the ground control station and the UAS are working; (4) ensure there is enough power for the small UAS to operate for the intended operational time; and (5) ensure that any object attached to or carried by the UAS is secure and does not adversely affect the aircraft. No person may operate a small UAS in a careless or reckless manner so as to endanger the life or property of another or allow an object to be dropped from a UAS in a manner that creates an undue hazard to persons or property. A person may not serve as an RPIC while under the influence of alcohol or impairing drugs.

Finally, an RPIC may not operate more than one UAS at a time.

Flight Operations. While Part 107 makes it much easier to fly than it used to be, the regulations currently include a number of significant restrictions on where and how a commercial operator may fly the drone. These limitations are part of the FAA’s phased approach to integration. As the agency and the drone community develop more expertise in flying these aircraft, the FAA plans to address incrementally each of these restrictions in additional rulemakings. For now, the major restrictions are as follows:

- **Line of Sight Only:** Operations must be conducted during the daytime, and the RPIC must be able to see the UAS throughout the entire flight with vision unaided by any device.
- **No Operations over People:** Operation over human beings is prohibited unless such a person is (1) directly participating in the operation of the small UAS or (2) located under a covered structure or inside a stationary ve-

hicle that can provide reasonable protection from a falling small unmanned aircraft.

- **Class G Only:** Flight operations may only occur in Class G airspace unless the operator has obtained prior authorization from Air Traffic Control to fly in other classes of airspace.
- **Right-of-Way:** The UAS must yield the right-of-way to all other aircraft.
- **Speed:** The groundspeed of the UAS may not exceed 87 knots (100 miles per hour).
- **Altitude:** The UAS must operate no higher than 400 feet above ground level, unless the UAS is flown within a 400-foot radius of a structure and does not fly higher than 400 feet above the structure’s uppermost limit.
- **Carrying Loads:** External load operations are permitted if the object being carried by the UAS is securely attached and does not adversely affect the flight characteristics or controllability of the aircraft. The combined weight of the aircraft and the external load must remain less than 55 pounds.
- **Hazardous Materials:** The UAS may not carry hazardous materials.
- **Accident Reporting:** If the UAS is involved in an accident involving either serious injury to any person or any loss of consciousness, or damage to any property other than the UAS exceeding \$500, the remote pilot in command must report the accident to the FAA.

Waivers. With the release of the Part 107 rules, the FAA also established a mechanism for waiving certain Part 107 provisions in order to allow for greater operational flexibility. The FAA has an online portal for submission of waiver applications. The waiver request form requires the applicant to designate a person responsible for the safety of operations conducted under the waiver, and requests information about the pilot, aircraft, waiver duration, and location, if the request is site-specific.

While the form provides a box for a narrative description of the purpose of the operation and the method by which the proposed operation can be conducted safely, in practice those seeking waivers have provided a great deal of information to the agency in an effort to show that they have considered and mitigated any risks that might come from their proposed operations. The FAA has issued waivers to allow night flights, operation beyond visual line of sight, operation over human beings, operation from a moving vehicle or aircraft, and

operation of multiple small UASs at once, among others. In addition, while the Section 333 exemption process has largely been superseded by Part 107, entities that want to conduct UAS operations that would not be permitted even under a Part 107 waiver still have the option of seeking FAA authorization pursuant to Section 333.

Registration

Both hobbyists and commercial users are required to register their UAS weighing between 0.55 and 55 pounds with the FAA. Operators can register online by providing their name, address, and email address as well as the make, model, and serial number of the UAS they wish to fly. Registration costs \$5.00. Once registration is complete, the registrant will receive a unique registration number, which must be legibly marked on the aircraft.

State and Local Regulation of Drones

The FAA has exclusive authority to regulate the national airspace, which gives it authority over aircraft flying through that airspace, including UASs. But the proliferation of UASs has not gone unnoticed by state and local governments. In 2015, approximately 45 states considered restrictions on UASs. Even more local governments have considered regulations of their own.

State and local governments argue that gaps in federal law require state and local action. Many state and local governments are motivated by concerns raised by their constituents, who are worried that drone flights could pose a threat to their privacy or safety. The FAA's incremental approach to integrating drones into the NAS is designed to ensure that its regulations are safe and effective, but the explosion in interest in drone flight has left some state and local governments wondering whether they need to act in order to fill the regulatory vacuum.

The result has been a great deal of uncertainty. Many of the laws enacted by state and local governments go beyond and conflict with federal law. These laws include outright bans on UAS flights within city limits or over specific types of property, extra requirements for operators, and laws that attempt to foreclose drone use in certain circumstances. For example, in 2013 Texas enacted a law that broadly restricts capturing images using drones and then creates more than a dozen exceptions designed to permit specific uses.

Uses that are not covered by one of these specific exceptions may well be barred under Texas

law. A number of states have sought to create lists of "critical infrastructure" that drones may not fly over; the types of infrastructure designated as "critical" can vary from state to state. Other governments have proposed banning drone flights over *all* private property without first getting the permission of the landowner.

While these laws may be well-intentioned, their restrictions have the potential to complicate or even prohibit responsible use of UASs for legitimate purposes. These local ordinances result in a patchwork of inconsistent and conflicting laws that make it difficult to create a safe, manageable airspace that is open to UASs. In addition, some of these state and local laws are likely preempted by the FAA's small UAS regulations. This issue is currently working its way through the courts.

PENDING AND UPCOMING EFFORTS

While the release of Part 107 established a safe and cautious set of operating rules for small UASs, questions remain about future, expanded uses of this innovative technology.

FAA Extension Bill

On July 14, 2016, Congress passed a bill extending the FAA's authorization through September 30, 2017. The bill had several provisions relating to the use of UASs. The following provisions may be of special interest to members of the oil and natural gas industries.

- Section 2202 directed the FAA to convene industry stakeholders to facilitate the development of consensus standards for remotely identifying operators and owners of UASs.
- Section 2208 directed the FAA to work with NASA to continue development of a research plan for UAS traffic management development and deployment.
- Section 2209 directed the secretary of transportation to establish a process to allow applicants to petition the FAA administrator to prohibit or restrict the operation of UASs in close proximity to a fixed-site facility. The provision gave examples of such fixed-site facilities, listing "critical infrastructure, such as energy production, transmission, and distribution facilities and equipment," oil refineries, and chemical facilities. The provision directed the Department of Transportation to establish the procedure by January 11, 2017. Although this deadline has passed, the FAA is

actively working on this initiative, and an announcement of the process is expected soon.

Rulemakings

The FAA is developing additional regulations on the use of UASs. These rules deal with the operation of UASs over people, operations beyond the visual line-of-sight, and nighttime operations—all uses relevant to the natural gas and utilities sector.

Operations of UASs Over People

It was widely expected that the FAA would release its proposed operations-of-UASs-over-people rule at the beginning of the year. Security concerns have delayed this release.

The most recent draft of this rule was largely based on the recommendations of the Micro Unmanned Aircraft Systems Aviation Rulemaking Committee (ARC), a multistakeholder committee chartered by the FAA to provide recommendations on a regulatory framework for the classification and operation of micro UASs—i.e., UASs weighing 4.4 pounds or less. These recommendations divided small UASs into four categories based on the intent of the UAS to fly over crowds, the weight of the UAS, and the risk of serious injury if the UAS crashed into a person. Each category imposed different standards and restrictions on those UAS flights over people.

The proposal also recommended that industry develop consensus performance standards for Category 2, 3, and 4 operations over people. Once developed, manufacturers may self-certify that they comply with these standards and include labels on their products' retail packaging or submit a written declaration to the FAA. The ARC also recommended that the FAA consider less burdensome requirements for operators of Category 1 UASs, specifically, changing airman certification requirements to allow online testing to satisfy knowledge requirements, and eliminating in-person visits and background checks.

This proposed rule is likely to change based on input from the security community. At this point, it is difficult to predict when it may be released, though the FAA has said that it still hopes to get the rulemaking started soon.

Beyond Visual Line-of-Sight and Nighttime Operations

Rulemakings for operations beyond visual line-of-sight and nighttime operations are in their infancy, thus, little is known about these proposals.

The FAA's original timeline suggested that these rulemakings would be initiated following the operations-of-UASs-over-people rule, though the delay in issuing that proposed rule is likely to affect this timing. Much like the operations-of-UASs-over-people rule, these rules are expected to make beyond visual line-of-sight and nighttime flights routine, ending the need to obtain a waiver for these flights.

Remote Identification

In light of the security concerns surrounding UASs, the FAA recently announced it will form a new ARC on remote identification of UASs.

The goal of the ARC is to bring together operators and stakeholders from the law enforcement, safety, and technology communities to establish standards for remote identification and tracking of UASs. Remote identification will help the public, particularly law enforcement, identify UASs flying overhead. A key concern is balancing the public's need to identify who is operating a UAS with the operator's privacy.

This ARC should address that concern.

Other Security Concerns

Remote identification will address some security concerns related to UAS use, but others remain.

These include flights over sensitive areas, attachment of weapons to UASs, and bad actors who might use UASs for nefarious purposes. The FAA has begun to restrict areas where UASs may fly. It recently enacted restrictions on unauthorized drone operations over 133 military facilities, marking the first time the FAA has promulgated a drone-specific airspace regulation.

It is possible that the agency will enact similar restrictions over other sensitive areas, and also enact other security-related regulations to deal with threats.

CONCLUSION

This exciting new technology has endless potential for making aerial imaging and data collection more efficient and safe, particularly for the natural gas and electricity industry. Flying is relatively easy now, although it is still subject to significant limitations on the scope of operations. Federal, state, and local regulators are carefully considering how to best continue balancing the innovative potential of drones against the need for safety restrictions and the protection of privacy. 