

Congress Evaluates Regulatory Path Forward for Integrating Drones

Recent hearings on Capitol Hill highlight issues requiring attention before the drone industry can fully realize its economic value.

The value of the commercial unmanned aerial systems (UAS or drone) industry has grown to about US\$1 billion, but within a decade the annual value of drone activity could be tens of billions domestically, and well over US\$100 billion globally.¹ However, in order to assist this evolving industry's efforts to truly get off the ground, federal regulators continue to face tough questions regarding how to balance safety and security while fully integrating drones into the national airspace system (NAS).

The federal appellate court in Washington, D.C. recently denied a challenge to the Small Drone Rule, the Federal Aviation Administration's (FAA's) most significant effort to date to create a regulatory regime governing drones and guiding UAS integration in the NAS. Despite this victory for the FAA, recent hearings on Capitol Hill highlighted areas in which more progress will be necessary before the economic value of the drone industry can be fully realized. In particular, industry experts, regulators, and legislators focused on issues impacting security, identification, and complex operations, including operations over people and beyond visual line of sight (or BVLOS).

Current Regulatory Environment

Until very recently, commercial drone activity in the United States had considerably lagged behind development in other countries. Congress mandated in the FAA Modernization and Reform Act of 2012 (the Modernization Act) that the FAA develop a comprehensive plan for integrating UAS into the NAS. Until then, the FAA had effectively precluded commercial drone activity, while largely declining to regulate hobby drones.

In 2016, the FAA finalized a comprehensive response: the Small Drone Rule.² The rule, codified for the most part at 14 C.F.R. § 107 and often referred to as "section 107," applies to drones under 55 lbs. The rule requires that drones be registered and that operators hold a Remote Pilot Certification. The rule also establishes operational limitations, including:

- Operators must be able to see their drone unaided by any device (other than corrective lenses) and BVLOS operations are prohibited.
- Operations are limited to daylight, or civil twilight with appropriate safety lights.

- Altitude is limited to 400 feet, or, if flown higher, must be within a 400 foot radius of a structure and not more than 400 feet above the structure.
- Drones cannot be operated over people who are not either participating in the operation or protected by a structure or vehicle from possible falling drones.

The Small Drone Rule also provides for waivers to some requirements. Through the Focus Area Pathfinder Program, the FAA has granted waivers to three companies:

- A media company conducting operations over people, which the company uses for drone-enabled newsgathering in populated areas
- A drone imaging company
- A rail transportation company for BVLOS operations to conduct precision agriculture and rail system infrastructure monitoring operations, respectively

Through the Pathfinder Program, the FAA receives valuable data about these operations from the three partner companies, which may help shape the next wave of UAS regulation.

In section 336 of the Modernization Act, Congress prohibited the FAA from creating rules regulating model aircraft (certain non-commercial UAS). However, the Small Drone Rule defines what constitutes a model aircraft about as narrowly as the law allows. The Small Drone Rule applies broadly to both commercial drone operations *and* recreational operations that fall outside the narrow section 336 safe harbor rule for model aircraft.

The Small Drone Rule (Ultimately) Survives Judicial Challenges

The recent challenge in the D.C. Circuit focused on aspects of the Small Drone Rule arguably related to section 336 and non-section 336 hobbyist drones.³ The plaintiff also argued that it is arbitrary and capricious for the FAA to impose rules borrowed from the field of manned aviation to the field of unmanned aviation, regardless of whether section 336 is applicable to the aircraft involved.

The pro se plaintiff, a tax lawyer, and model aircraft enthusiast had successfully challenged the FAA's earlier UAS registration rule in prior litigation in 2017, arguing that the section 336 prohibition on "any rule or regulation regarding a model aircraft" included any rule requiring hobbyists to register their model aircraft with the FAA.⁴ Writing for the D.C. Circuit, Judge Kavanaugh commented that "statutory interpretation does not get much simpler," and the court concluded that the rule was unlawful.⁵ Unfortunately for the plaintiff, his victory was short-lived. Congress responded by restoring the registration rule via the National Defense Authorization Act for Fiscal Year 2018.⁶

In the recent (second) case, the same plaintiff launched a broad assault against the Small Drone Rule. The plaintiff challenged:

- The narrow definition of model aircraft
- The regulation of recreational drones that fall outside the section 336 definition
- The application to drones of rules that had previously applied to manned aircraft

- A provision requiring recreational UAS operators, before operating within five miles of an airport, to provide notice to the airport

The D.C. Circuit, in an opinion crafted by Chief Judge Garland, denied the application for review, explaining that the challenged provisions of the Small Drone Rule were all within the boundaries that Congress had established in the Modernization Act.

Emerging Themes in Congress and the Executive Branch: Security, Identification, and Complex Operations

While the litigation was still ongoing over the FAA's most recent steps toward integrating UAS into the NAS, Congress held hearings about what the FAA should do next. After almost two years since the Small Drone Rule went into effect, the FAA has processed more than 170,000 UAS registrations for commercial aircraft. But that number is expected to rise to as high as 450,000 over the next five years,⁷ and the value of the domestic industry is expected to rise to nearly US\$50 billion. Regulators and lawmakers are struggling to keep up.

Congressional hearings this summer⁸ revealed three tightly interrelated areas of concern that are likely to be the focus of regulatory and legislative efforts in the future:

- National security
- In-flight drone identification
- Expanded UAS roles and utilization, beyond current Small Drone Rule limitations (for example, BVLOS flights)

National Security as Both a Technical and Legal Challenge

National security concerns range from illicit intelligence gathering, to smuggling drugs and guns over the border or into prisons, to kinetic attacks like those conducted by ISIS forces in Iraq. Currently, however, counter-UAS (C-UAS) legal authority is limited.

Only the Department of Defense (DOD) and Department of Energy (DOE) have authority to enforce flight restrictions by taking direct action against drones. A recently introduced Senate bill that has garnered bipartisan support would expand this authority to the Department of Justice (DOJ) and the Department of Homeland Security (DHS).⁹ The bill would permit the FBI, Secret Service, Coast Guard, and Customs and Border Protection (among others) to implement and use C-UAS technology against malicious drones.

The FAA already works with DOD and DOE to implement and enforce airspace restrictions. The Senate bill, S. 2836, would facilitate broader interagency cooperation. However, because many C-UAS technologies involve intercepting signals between the controller and the drone (whether to identify or locate the controller, or to take control of the drone), critics question whether S. 2836 adequately protects privacy.¹⁰ Critics also question whether S. 2836's grant of authority to DOJ and DHS under certain circumstances to seize or destroy drones is adequately balanced by protections for private property.

Technical limitations also complicate C-UAS efforts. Current C-UAS technologies were mostly developed for military applications, and they rely on imprecise modes of interference, like radiofrequency jamming. They may not, therefore, be entirely safe to use at some domestic facilities, if C-UAS tools that rely on remote signals could unintentionally interfere with manned aviation or lawful drone operations. For

example, the Pentagon, which posted signs banning drones in its vicinity only as recently as 2016, lies directly beneath the flight path for aircraft going into and out of Reagan National Airport.

Next steps for securing the NAS against malicious use of UAS likely will include expanding federal authority to identify, track, and counteract criminal drones through S. 2836 or follow-on legislation. Technology like the FAA's Low Altitude Authorization and Notification Capability (LAANC) system will also play a major role. The FAA rolled out LAANC at several air traffic facilities in November 2017 to test its ability to rapidly coordinate authorization requests with drone operators, provide real-time data to air traffic controllers about drone operations in their airspace, and provide information about safe operating altitudes near airports and other facilities.¹¹ From a security perspective, LAANC is a tool for identifying compliant and friendly drones, narrowing the focus and enhancing tracking in the hunt for malicious UAS. Additionally, expanding technology and rules to permit rapid identification of drones and their owners will facilitate rapid threat evaluation and response.

Identifying Drones in Flight

Another recurring theme at the hearings was how to identify drones in real time. Although frequently related to the security question, the capacity to identify drones also has broad implications for expanding UAS integration to include more complicated operations. The FAA repeatedly emphasized the need to distinguish between "the clueless, the careless, and the criminal."¹² Because drones, for the most part, lack the onboard identifying technology that manned aircraft have, they can be difficult to track and identify.

Rapid identification can mean rapid threat analysis. For example, if law enforcement officials rapidly identify a drone flying over a large crowd as a media newsgathering drone, they need not expend resources to counter it. Otherwise, they may be able to identify the drone as a potential threat before the crowd is vulnerable and contact the operator or take direct action against the drone. Thus, rapid identification capacity would both enhance security and open up opportunities to expand commercial operations in ways that are currently prohibited or limited.

As technologies that permit UAS to be rapidly identified and tracked are developed, they may become mandatory. Commercial UAS operators, particularly those seeking to participate in complex operations, are the most likely to encounter such requirements.

Complex Operations: BVLOS and Flights Over People

As the law and technology catch up to concerns about safety, tracking, and identifying drones, new opportunities for more complex operations will become available. Most of the restrictions in the Small Drone Rule are based on safety concerns, including the security concerns discussed above and safety considerations based on the importance of the "see and avoid" doctrine in manned aviation.

As in the media drone example, identification requirements may open up opportunities to fly in currently-restricted areas, including over people. Other technological advancements currently in development will permit the FAA to loosen regulations further.

For example, the BVLOS rule is based in part on the see and avoid doctrine in manned aviation. Pilots are expected to be on the lookout, and to intelligently avoid other aircraft and obstacles while flying. UAS lack an on-board pilot, and, thus, lack the capacity that a pilot has to "see" surrounding airspace reliably, directly, and in real time. Some technologies being tested to identify and track drones could also assist in

traffic management, which would help keep drones physically away from other aircraft. Onboard sensors will also eventually enable drones to automatically appraise their surroundings and avoid collisions.

In the Pathfinder Program, the FAA has established airspace restrictions that permit BVLOS if other air operations can be minimized. This approach has drawn criticism as a “segregation, not integration” approach,¹³ and is more likely to be used as a source of data for a more integrative approach to BVLOS down the line, rather than as a solution in itself.

Other countries have also taken a regulatory approach to BVLOS integration. Poland, for example, has established a separate certification for unmanned aerial vehicle operators performing BVLOS flights that includes increased training and testing requirements.¹⁴ The UK, China, Canada, and others have also established regulatory routes to BVLOS.¹⁵

Conclusion

Between technologies already in development and regulatory approaches being tested at home and abroad, complex drone operations that currently require a waiver under the Small Drone Rule will play an increasing role in commercial UAS applications. As the US Senate recently heard, “[t]he next step in ... truly breaking open their commercial potential is the ability to safely operate UAS beyond visual line of sight.”¹⁶ Much of the foreseeable value of drones relates to complex operations, from flights over people to BVLOS, so the FAA likely will either continue to expand the availability of waivers or adjust the Small Drone Rule to remove barriers to complex operations. The ability to identify drones in flight reliably, combined with expanded federal oversight of drone applications, will help ensure the safety of expanded UAS operations. As technology and the law develop better means of safely integrating UAS into the NAS, the commercial UAS industry in the US may finally meet its lofty expectations.

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Endnotes

¹ PRICEWATERHOUSECOOPERS, CLARITY FROM ABOVE: PWC GLOBAL REPORT ON THE COMMERCIAL APPLICATIONS OF DRONE TECHNOLOGY 4 (2016).

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- ² Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,064 (June 28, 2016) (primarily codified at 14 C.F.R. § 107) (popularly known as the Small Drone Rule).
- ³ Taylor v. FAA, 895 F.3d 56 (D.C. Cir. 2018).
- ⁴ Taylor v. Huerta, 856 F.3d 1089 (D.C. Cir. 2017).
- ⁵ *Id.* at 1092.
- ⁶ National Defense Authorization Act for Fiscal Year 2018, Pub. L. No. 115-91, §1092(d), 131 Stat. 1283, 1611 (2017).
- ⁷ *Keeping Pace with Innovation – Update on the Safe Integration of Unmanned Aircraft Systems into the Airspace Before the S. Comm. On Com., Sci., & Transp., Subcomm. on Aviation Operations, Safety, and Security*, 115th Cong. (2018) [hereinafter “*Keeping Pace*”] (statement of Brian Wynne, President and CEO of the Association for Unmanned Vehicle Systems International (AUVSI)).
- ⁸ Recent noteworthy discussions on Capitol Hill include a May hearing before the Senate Subcommittee on Aviation Operations, Safety, and Security, *Keeping Pace*, a June hearing before the Senate Committee on Homeland Security and Governmental Affairs, S. 2836, *The Preventing Emerging Threats Act of 2018: Countering Malicious Drones*, 115th Cong. (2018), and a July roundtable held by the House Subcommittee on Aviation, *Counter UAS Issues: A Roundtable of the Aviation Subcomm.*, 115th Cong. (2018).
- ⁹ Preventing Emerging Threats Act of 2018, S. 2836, 115th Cong. (2018).
- ¹⁰ See, e.g., Jeff Cirillo, *Lawmakers Pushing Drone Legislation Hear Threat Warnings*, ROLL CALL, June 7, 2018, <https://www.rollcall.com/news/policy/lawmakers-pushing-drone-legislation-hear-threat-warnings> (noting ACLU concerns about “property, privacy and First Amendment rights”).
- ¹¹ S. 2836, *The Preventing Emerging Threats Act of 2018: Countering Malicious Drones*, 115th Cong. (2018) (statement of Angela Stubblefield, Deputy Associate Administrator for Security and Hazardous Materials Safety at the FAA).
- ¹² *Keeping Pace*, *supra* note vi (statement of Earl Lawrence, Director of the FAA’s Unmanned Aircraft Systems Integration Office). See also S. 2836, *The Preventing Emerging Threats Act of 2018: Countering Malicious Drones*, 115th Cong. (2018) (statement of Angela Stubblefield).
- ¹³ *Keeping Pace*, *supra* note vi (statement of Matt Zuccaro, President and CEO of Helicopter Association International).
- ¹⁴ PRICEWATERHOUSECOOPERS, *supra* note i at 27.
- ¹⁵ *Id.* at 21.
- ¹⁶ *Keeping Pace*, *supra* note vi (statement of Matt Zuccaro).