Insight

Primer: Drone Regulation

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Executive Summary

- Unmanned Aircraft Systems, referred to broadly as "drones," are entering our airspace at rapid rates as companies look to drone delivery to promote cost savings, greater efficiency, and worker safety.
- While drones can provide significant economic benefits, critical regulatory gaps prevent widescale adoption, limiting their commercial viability.
- For commercial drone operations to flourish, the Federal Aviation Administration and federal authorities should finalize and implement Beyond Visual Line of Sight rules, address agency shortcomings that delay progress on commercial operations, clarify its authority on technology and operational requirements, and defer to state and local governments for local management, integration, and enforcement of drone infrastructure and operations.

Introduction

Unmanned Aircraft Systems (UAS), colloquially referred to as "drones," are increasingly operating in our airspace, and the United States has become the largest drone market in the world. A 2019 report projected that by 2024, there would be four times as many drones sold as in 2018. Whether they are delivering packages, surveying critical infrastructure, or giving photographers a novel vantage point, drones can change the way people work, learn, and live.

Excitement is warranted, but regulatory uncertainty threatens widespread commercial adoption. Specifically, the Federal Aviation Administration (FAA) regulations limiting beyond visual line of sight (BVLOS) flight without a waiver limit commercial viability. Questions also remain about airspace and private property rights, how high above the

ground private property extends, and what role state, local, and tribal governments play in managing drone infrastructure and commerce.

Legislators and regulators have taken notice and are trying to keep up. Since 2012, Congress has repeatedly directed the FAA to develop plans for the integration of UAS and to study how federal, state, local, and tribal governments would share the regulatory burden. While it has made progress, the FAA has failed to reach many of its goals. Overly restrictive rules for BVLOS flights and unanswered questions about overlapping authority among federal, state, local, and tribal governments remain major barriers to commercial drone integration.

The regulatory issues surrounding drones, especially their commercial use, present complex challenges for regulators. Cooperation and compromise among federal authorities, private firms, and state, local, and tribal governments will be critical for safe and efficient drone deployment. Finalizing rules for BVLOS flights and clarifying areas where government at all levels is best positioned to enforce new and existing laws promotes regulatory clarity, driving sustained investment and opportunities for commercial drone operations to flourish.

This primer discusses how the FAA has traditionally regulated airspace, the current state of federal drone regulation, and some recent scholarship on how to promote commercial drone adoption while protecting private property rights and valuable airspace.

Who Owns the Skies? Airspace and Aviation Regulation in the 20th Century

A major impediment to commercial drone operations is the uncertainty around air rights and UAS. Air rights dictate who owns the airspace above the ground. For private property owners, does their property extend infinitely upward? If not, what is the limit? Courts and regulators have answered these questions for manned aircraft, such as airplanes, but drones present new challenges that require regulators to balance safety and privacy with integration and innovation.

Prior to the twentieth century, airspace ownership was considered to extend infinitely above an individual's property, stemming from the "*ad coelum* doctrine." Congress recognized the impediment this created to commercial aviation. In response, it passed the Air Commerce Act of 1926 and Civil Aeronautics Act of 1938 legalizing interstate flights within "navigable airspace," defined as 500 feet or more above the ground. Questions remained, however, about what rights individuals had to the airspace above their property.

The Supreme Court ruled on this issue in *United States v. Causby* and clarified private property owners have the right to exclude flights and aerial trespassing that interfered with

their use of the land. The court clarified that these rights were limited to the "immediate reaches" of a person's property but did not specify how high "immediate reaches" extended.

In the second half of the twentieth century, Congress passed the Federal Aviation Act in 1958, and the Airline Deregulation Act in 1978. The former established the FAA and centralized aviation regulation within the agency. The latter built upon the Federal Aviation Act and prevented states from adding additional regulations or re-instituting regulations abandoned by the FAA impacting the "price, route, or service" of a provider. These laws concentrated authority over flight altitude, safety and technical regulations, and management of airspace with the FAA. For drones, the FAA is responsible for enacting and enforcing regulations in these contexts.

Turbulence at the FAA

Congress began to actively engage in drone policy when it passed the FAA Modernization and Reform Act, which in part directed the FAA to "develop a plan for the safe integration of civil UAS into the national airspace system (NAS)." After two years, the agency missed its first deadline for rules enabling the integration of drones into the national airspace. In response to a 2017 presidential memorandum on the future of UAS, the FAA launched the UAS Integration Pilot Program (IPP).

As part of the IPP, the FAA worked with selected state and local governments and industry members to conduct test flights and study how to better integrate drones into the NAS. This included the launch of the Low Altitude Authorization and Notification of Capability (LAANC), a collaboration between the FAA and the drone industry that collects data on private sector drone flights and facilitates the sharing of airspace. Upon the completion of the IPP, the FAA launched the BEYOND program to continue working on rules related to BVLOS flights and other unanswered questions.

A 2022 report from the Office of the Inspector General on BEYOND's progress compared to that of the IPP illustrates the agency's failure to meet participants' expectations in several areas. The FAA did not clearly define data requirements for participants, lacked specific benchmarks to measure program success, and failed to establish clear public reporting requirements. There were also issues with agency organization and continuity of staff working with the program. This led to confusion around program administration and wasted participants' time and resources.

Of greater concern is the agency's "Overly risk-averse tendencies when considering new and innovative concepts of operations which delays innovation." Complex waiver requests

and a turbulent organizational structure contributed to delays and wasted participants' resources. One comment insinuated that some of the FAA's actions amounted to actively preventing integration of UAS into the NAS. Seven of nine lead participants indicated the FAA's inability to accept certain risk mitigations or new technologies hindered its ability to reach program goals. Yet the news is not all bad. The report makes note of the FAA's progress on guidelines related to "air carrier certificates," which allow participants to offer commercial package delivery, as well as updating guidance for durability and safety standards for UAS flights. Safety is a primary concern for the FAA, and with reports of drones disrupting flights at airports, along with research showing private drones frequently violate height maximums, its hesitancy is to be expected. Nevertheless, it is critical that industry members, program participants, and legislators keep pushing for the inclusion of new innovations and hold the agency accountable.

Ready for Takeoff? Finalizing Rules and Unleashing Commercial Drones

Commercial drone operations cannot take off until the FAA does the job Congress outlined for the agency. The BEYOND program's goal is achieving a framework for BVLOS flights. Nonetheless, participants in BEYOND are encountering similar risk aversion problems seen in the IPP. The FAA's BVLOS Aviation Rulemaking Committee (ARC) submitted its final report to the agency in March 2022. The report includes recommendations for a BVLOS rule and a framework for evaluating risk to help the agency provide consistent regulations and guidance for UAS operations. Recommendations in the report may help expedite agency actions before BEYOND's completion in 2024.

Congress also envisioned a role for state, local, and tribal governments in facilitating drone commerce. UAS flights are going to be largely local, and a one-size-fits-all approach to regulation would treat drone operations in rural Wyoming the same as in Manhattan, for example. The FAA should give state, local, and tribal governments discretion in areas where they have jurisdiction, such as criminal activity, trespassing, individual privacy, and time-place-manner restrictions. Focusing on regulatory areas where states and localities have experience enforcing laws avoids preemption issues and gives them a clearly defined role in the emerging drone ecosystem. One way states can effectively collaborate with the FAA and industry members is by creating a drone task force within their Department of Transportation or as a standalone body to coordinate regulatory efforts if they have not already. These steps would create regulatory clarity, which would drive sustained investment and innovation.

An Akron Law Review article suggests the management and regulation of telecommunications services and equipment as a model of effective cooperation. In practice, the FCC regulates the technology and licensing requirements for spectrum allocation and

distribution, whereas state and local governments regulate where infrastructure is zoned and balance the interests of private property owners and commercial providers. In the context of drones, the FAA is responsible for setting rules around BVLOS flight, drone size, weight, manufacturing certification, pilot certification, and registration. States are positioned to take responsibility for rules around areas for takeoff and landing, time-place-manner restrictions, and enforcement of private property rights and privacy laws. Regulatory collaboration is critical to the expansion of commercial drone activities because it sets boundaries for the respective layers of government and brings stakeholders together to solve problems.

Conclusion

Drones can provide significant economic benefits, but critical regulatory gaps are preventing widescale commercial adoption. Expanding drone use will require the FAA and other federal authorities to finalize and implement BVLOS rules. The FAA also needs to be conscious of the job Congress has delegated it to do, and work to ensure regulatory clarity and cooperation across all levels of government. Commercial drones are a disruptive technology that raises many questions for regulators, firms, and consumers. By finalizing BVLOS rules, the FAA would take an important step in the right direction.