

REFINE THE FAA'S REMOTE ID RULES TO ENSURE AVIATION SAFETY AND PUBLIC CONFIDENCE

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Remote Identification of Unmanned Aircraft Systems

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The Fourth Branch project of the Mercatus Center at George Mason University is dedicated to advancing knowledge about the effects of technology regulation on society and innovation. As part of its mission, the project conducts independent legal and economic analyses to assess agency rulemakings and proposals from the perspective of consumers and the public.

This comment is written in response to the FAA's request for comment on its proposed rules regarding the remote identification of unmanned aircraft systems (UASs). We agree with the FAA that the remote identification of UASs is critical to aviation safety and public confidence in drone integration. However, we believe that the remote identification rules as proposed impose costs and burdens on manufacturers and operators that are not necessary to meet the FAA's desired ends of safe UAS operations.

We make two points:

- The FAA should resist ubiquitous connectivity requirements for drones in uncontrolled airspace.
- The FAA should allow for decentralized and federated UAS traffic management (UTM).

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THE FAA SHOULD RESIST UBIQUITOUS CONNECTIVITY REQUIREMENTS FOR DRONES IN UNCONTROLLED AIRSPACE

This remote identification rule stands to impose significant burdens on manufacturers and operators. Remote ID UAS Service Supplier (USS) subscription fees are expected to cost drone operators \$241.7 million over 10 years, while drone manufacturers are projected to face \$134.6 million in compliance costs over the same period.¹

While the FAA projects that the USS subscription fees will approximately equal those of current Low Altitude Authorization and Notification Capability (LAANC) providers, the proposed rule massively expands the class of drone operators obligated to subscribe to these services. Currently, operators need a LAANC provider subscription if and only if they intend to pilot UASs in controlled airspace and require authorization to fly, but under these proposed remote ID rules, almost every UAS operator in the United States would need to have a remote-ID-compliant drone and a subscription to one or multiple USS providers in order to fly outside an FAA-recognized identification area.

We're skeptical that the high costs are justified for drones flying in uncontrolled airspace, when this flying takes place far from airports and thus poses a de minimis risk to manned aircraft. The FAA hasn't established what risk is posed to other aircraft (manned and unmanned) when drones fly in uncontrolled airspace far from an airport or heliport. If there is de minimis possibility of a drone flying into controlled airspace, the FAA's role is tenuous. There would be almost no possibility of interference with manned aircraft. The risks would be borne by those on the ground, and state tort and criminal law will apply.

Consider the use of UASs to deliver medical supplies on the WakeMed hospital campus in Raleigh, North Carolina. Operating under a Part 135 certificate, UPS Flight Forward introduced beyond-visual-line-of-sight deliveries at WakeMed in September 2019. Under the FAA's proposed remote ID rules, all UASs would be required to be standard or limited remote ID compliant. Assuming a UAS is standard remote ID compliant, it would have to connect via the internet to a remote ID USS before takeoff. If internet connectivity is available but the UAS cannot connect to the USS, "The UAS would be designed such that it could not take off."² This leaves the delivery service at the mercy of the USS provider's network reliability.

UPS Flight Forward could establish its own remote ID USS capability and apply for approval with the FAA, but taking on such an investment to comply with FAA rules seems excessive for fairly short, low-altitude deliveries that operate in uncontrolled airspace within the perimeter of the WakeMed campus. Requiring networking equipment and near-real-time information sharing capability with the FAA seems unnecessary for ensuring safety to manned aircraft. Yet in real-world use cases, operators would face the same costs and burdens as those operating in controlled airspace.

THE FAA SHOULD ALLOW FOR DECENTRALIZED AND FEDERATED UTM

The FAA says its proposed remote ID system is a milestone on the path toward implementation of UTM. The remote ID requirements proposed might be necessary for an interoperable, complex

1. This figure is produced when calculated with an annual 3 percent discount rate. 84 Fed. Reg. 72438, 72502, 72503 (December 31, 2019).

2. 84 Fed. Reg. 72438, 72465 (December 31, 2019).

UTM,³ but the FAA should allow for decentralized and federated UTM capabilities to develop. In particular, low-altitude airspace could be designed so that UTM is largely decentralized and federated, which reduces the need for interoperability, much like how radio frequency design reduces the need for interoperability between cellular providers.

In a recent law review article titled “Auctioning Airspace,”⁴ one of us (Skorup) identifies a few problems with the FAA’s preferred interoperable UTM strategy for urban air mobility:

- Interoperability requirements have well-known “lock-in” effects that make new services or upgrades to UTM difficult to achieve, as exemplified by the difficulty of integrating GPS into the air traffic control system.⁵
- A complex, interoperable UTM system may not have sufficient capacity to satisfy all demand for the airspace, resulting in underutilization and requiring the FAA to ration airspace by winnowing the UAS claimants with regulatory requirements.⁶
- A complex, interoperable UTM system with lock-in effects gives undue benefits to first-mover UTM providers and operators, to the detriment of future technologies and market entrants.

The Government Accountability Office and the FAA Drone Advisory Committee have discussed the demarcation and auction of low-altitude aerial corridors as one way for the FAA to integrate drones into national airspace and to recover costs.⁷ Under this type of airspace design, a fully networked remote ID system is often unnecessary to ensure safety or monitor flight paths. Current UAS technologies, such as geofencing and altitude limitations, allow for such operations to be completed safely within defined aerial corridors.⁸ As for remote ID, using radio spectrum to broadcast information regarding the identification and location of a UAS may be sufficient for air traffic control, emergency personnel, or law enforcement to identify a drone that may be operating illegally and query the drone registration database for identifying information of the operator.

For both drones and urban air mobility broadly, questions remain regarding how best to develop a low-altitude air traffic management system that is capable of handling potentially thousands of routes each day and allowing authorities to identify any given aircraft and its operator in near real time. Remote ID is of vital importance to the latter end and to the safe integration of drones in the American airspace generally. However, when crafting rules to govern remote ID and to define the obligations of manufacturers and operators, the FAA should be mindful of how compliance costs may deter adoption or foreclose potential use cases of emerging technologies.

3. In the FAA and NASA’s UAS UTM concept of operations, beyond-visual-line-of-sight operations in uncontrolled airspace below 400 feet must submit any and all flight plans to a USS for authorization. Federal Aviation Administration and National Aeronautics and Space Administration, *Unmanned Aircraft Systems (UAS) Traffic Management (UTM) Concept of Operations*, May 18, 2018, 26–7.

4. Brent Skorup, “Auctioning Airspace,” *North Carolina Journal of Law & Technology* 21, no. 1 (2019): 79–114.

5. John Palfrey and Urs Gasser, *Interop: The Promise and Perils of Highly Interconnected Systems* (New York: Basic Books, 2012).

6. Federal Aviation Administration and National Aeronautics and Space Administration, *Concept of Operations*, 25. “In the event that demand for UTM airspace makes safety or equity no longer achievable through Operator coordination and USS-assisted operation orchestration, the FAA may issue directives/protocols limiting access to UTM airspace to resolve capacity/demand issues.”

7. “Unmanned Aircraft Systems: FAA Should Improve Drone-Related Cost Information and Consider Options to Recover Costs” (GAO-20-136, Government Accountability Office, Washington, DC, December 2019), 38; “Drone Integration Funding” (RTCA Paper No. 047-18/DAC-011, RTCA, Washington, DC, March 2018).

8. DJI, “DJI Refines Geofencing To Enhance Airport Safety, Clarify Restrictions,” news release, October 24, 2018, <https://www.dji.com/newsroom/news/dji-refines-geofencing-to-enhance-airport-safety-clarify-restrictions>.