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Same Hour Delivery: The Future of Drone Use in the Transportation and Logistics Industry

Grant J. Guillot*

I. Drone Use in Transportation and Logistics Operations

Amazon Prime forever changed consumers' expectations regarding the concept of timely delivery. In 2005, the e-commerce giant initiated its Prime program, through which buyers pay an annual fee to purchase unlimited free two-day delivery and discounted one-day delivery on millions of different items. In 2017 alone, Amazon shipped more than five billion items worldwide via its Prime Program, and more new members subscribed to Prime than in any previous year–both in the U.S. and worldwide.[1] In his 2018 annual letter to shareholders, Amazon CEO Jeff Bezos indicated that Amazon's Prime service now boasts over 100 million subscribers worldwide.[2] In 2013, Amazon announced its development of a drone-based delivery service, Amazon Prime Air, and on December 7, 2016, Amazon successfully completed its first drone delivery in Cambridge, England.[3] Remarkably, Amazon represents that its Prime Air program is designed to get packages to customers safely in 30 minutes or less.[4] Thus, the notion of a consumer being willing to wait one day, or even one hour, for the delivery of a purchased good may soon become a thing of the past.

As consumers come to expect nearly instantaneous deliveries, transportation and logistics companies across the world will be driven to follow Amazon's lead and utilize unmanned aerial vehicles ("UAV"), also known as unmanned aerial systems ("UAS") or drones, to deliver goods and to perform other operations, lest these companies risk losing market share to their competitors. For example, recognizing the vast potential of drones in warehouse management operations, Walmart began testing UAVs in its warehouses a couple of years ago.[5] Given the significant cost and time savings drone use generates, it is not surprising that the drone logistics and transportation market is estimated to be 11.20 billion U.S. dollars in 2022 and is projected to reach 29.06 billion U.S. dollars by 2027, at a compound annual growth rate ("CAGR") of 21.01% from 2022 to 2027.[6] In fact, the drone logistics and transportation market is anticipated to grow at the highest CAGR during the forecast period in the North America region.[7]

A. Store to Consumer

Drones can be used by transportation and logistics companies for several purposes. One area that is expected to see a significant increase in drone use is the delivery of goods from the store or warehouse to the end consumer.[8] For example, a consumer would place an order via a store's e-commerce portal and a drone would be utilized to achieve delivery within the same day (or, ideally, within the same hour).[9] Alternatively, the customer could place the order at an in-store location, and a drone would deliver it later that day.[10] Continuing technological advances and improvements to logistics measures will undoubtedly contribute to the eventual surge in drone delivery.[11]

B. Inventory Management

In addition, indoor drones are being used increasingly by companies to facilitate inventory management within their warehouses.[12] For example, Walmart in 2016 partnered with PINC to implement a pilot program through which drones carrying sensors, scanners and cameras have been utilized to monitor and track inventory at a greater rate than humans can, and the results have been promising.[13] Drones allow distributors to quickly identify and retrieve inventory, thereby cutting the companies' inventory-carrying costs.[14] Also, heavy duty drones can be used to transport packages between warehouses, thus allowing companies to meet local or regional demand without needing to rely on trucking.[15]

C. Claims and Returns

It is no secret that consumers and, at times, retailers, have traditionally experienced significant frustration in regard to claims and returns processes. Drones could potentially allow a customer to return a product without having to travel to a post office as a drone could be dispatched to the customer's home to retrieve the product.[16] In addition, a retailer could utilize a heavier duty drone to retrieve and return a damaged portion of a pallet of freight.[17] A streamlined claims and returns process would allow a company to achieve not only cost and time savings, but also increased customer satisfaction.

II. A Complicated Regulatory Environment

Although companies are eager to take advantage of the cost savings and time efficiency drone utilization promises to provide, several obstacles threaten to hinder the integration of drones into various

*Adams and Reese LLP (Baton Rouge, Louisiana)

sectors, including the transportation and logistics industry. Perhaps the greatest hurdle obstructing commercial drone use is the ever-evolving system of federal, state, and local regulations governing UAV operations. While 49 U.S.C. § 40103(a)(1) (2016) affords the U.S. government exclusive sovereignty over national space, courts have consistently held that this law is not an express preemption clause, and thus, it does not expressly preclude the sovereign powers of states.[18] Therefore, drone users must comply with not only federal laws when operating UAVs but also a patchwork of state and local regulations applicable to the operator's specific case.

A. Federal Law

In 2012, Congress enacted the Federal Aviation Administration Modernization and Reform Act ("FAAMRA") in which it directed the Federal Aviation Administration ("FAA") to regulate the commercial operation of drones within the United States.[19] Prior to August 29, 2016, businesses were required to obtain a special waiver called a Section 333 Exemption in order to use drones for commercial purposes.[20] However, the regulations have since been relaxed and businesses may now obtain a Part 107 Waiver in order to operate a drone for commercial purposes.[21] Among other regulations included in 14 C.F.R. § 107, in the absence of a Part 107 Waiver, a drone in operation must (1) remain within the line of sight of the pilot in command;[22] (2) be operated by a live pilot;[23] (3) not be operated by a pilot who is simultaneously operating another drone;[24] (4) not be operated from a moving vehicle;[25] (5) not be operated during night;[26] and (6) not be operated over human beings, unless authorized by Part 107.[27] In addition, drones must be operated within certain airspace and generally must not be flown within five miles of an airport.[28]

Although securing a Part 107 Waiver is not as onerous as obtaining a Section 333 Exemption, companies often still find it time consuming and costly to be required to apply for these waivers in order to utilize drones for commercial operations.[29] However, as discussed below, recently proposed rules and programs implemented by the FAA seek to encourage commercial drone utilization by scaling back several of these restrictions. Should these efforts prove successful, drone use in the transportation and logistics industry will be given a significant nudge forward.

In addition, on October 5, 2018, President Trump signed into law the FAA Reauthorization Act, which, among other things, requires the FAA to (1) adhere to deadlines for developing and implementing an unmanned traffic system ("UTM"); (2) implement a remote identification system; (3) improve the process for obtaining a Part 107 Waiver; and (4) enhance the pathway by which ubiquitous drone delivery operations may be safely enabled.[30] Although it is uncertain when the FAA will actually be in a position to implement these changes and projects, nearly all of the parties involved unanimously agree that these initiatives must be accomplished in order for the commercial drone industry to flourish.[31]

B. State and Local Law

Despite the authority invested in the FAA to regulate commercial drone use, the federal government is surprisingly limited in its ability to govern many aspects of drone utilization.[32] On the other hand, states are governments of general jurisdiction and possess broad powers to regulate the issues raised by the commercial use of drones, especially insofar as they pertain to privacy, crime, and public safety.[33] As stated above, the FAA declined to exercise express preemption over all state and local drone laws, noting in a publication that it was "not persuaded that including a preemption provision in the final rule [was] warranted at [that time]" because the "preemption issues involving small [drones] necessitate a case-specific analysis that is not appropriate in a rule of general applicability."[34] Even in matters that are not traditionally reserved for state and local regulation, such as restrictions on flight altitude, flight paths, operational bans, and regulation of the navigable airspace, the FAA has not called for express preemption but instead has recommended the state and local authorities consult with the FAA prior to enacting such restrictions.[35] Nevertheless, most state and local laws governing drone use relate to areas of law that have traditionally never been regulated by the federal government, such as land use, zoning, privacy, trespass, and law enforcement operations.[36]

State and local drone regulations are large in number and vary from jurisdiction to jurisdiction. In 2017 alone, 38 states considered proposed legislation purporting to regulate drone utilization.[37] In a recent press release, the FAA reiterated that "[c]ities and municipalities are not permitted to have their own rules or regulations governing the operation of aircraft," but noted, however, that state and local authorities "may generally determine the location of aircraft landing sites through their land use powers."[38] Nevertheless, preventing a drone from landing or launching within a jurisdiction effectively prohibits UAV utilization within that jurisdiction.[39] Perhaps no other industry would be as affected by such a regulation as would the transportation and logistics industry where commercial drone use would, above all else, depend on the ability of a drone to launch from one location and land in another. In any event, as discussed in the next section, while state regulations may complicate drone use in the transportation and logistics sector, any such complications pale in comparison to certain federal regulatory impediments that must be overcome in order for commercial drone use to prosper in all industries.

III. Recent Developments That May Accelerate the Integration of UAS Technology into the Transportation and Logistics Industry

Among the FAA's regulations contained in Part 107 that present the greatest obstacles for commercial drone users are the requirements that a drone (1) not fly beyond the visual line of sight ("BVLOS") of the pilot in command;[40] (2) not be operated during night;[41] (3) not be operated over human beings;[42] and (4) not be flown within five miles of an airport.[43] For example, only 1% of the applications for a waiver to operate over people are granted.[44] Furthermore, most customers live in or near cities. Given that most cities are located near an airport,

the restriction generally prohibiting a drone from flying within five miles an airport severely inhibits the prospects for drone delivery.[45] However, the FAA recently set forth the following programs and proposed rules with the aim of stimulating commercial drone utilization through the easing of these regulations.

A. The Low Altitude Authorization and Notification Capability Program

In November 2017, the FAA implemented its Low Altitude Authorization and Notification Capability ("LAANC") program, which "provides access to controlled airspace near airports through near real-time processing of airspace authorizations below approved altitudes in controlled airspace."[46] LAANC, which is offered at nearly 300 air traffic facilities covering approximately 500 airports, automates the application and approval process for drone users seeking to operate near airports.[47] Because most consumers reside in cities, and thus, near an airport, the LAANC program especially holds great potential for retailers seeking to implement drone delivery as these companies will no longer be categorically prohibited from delivering goods within five miles of an airport.

B. The Unmanned Aircraft Systems Integration Pilot Program

On October 25, 2017, President Trump signed a directive to commence the Unmanned Aircraft Systems (UAS) Integration Pilot Program, the goal of which is to "safely test and validate advanced operations for drones in partnership with state and local governments in select jurisdictions."[48] The program evaluates a variety of operation concepts, including night operations, flights over human beings, flights BVLOS of the pilot in command, package delivery, and detect-and-avoid technologies.[49] On May 10, 2018, the United States Department of Transportation announced ten state, local, and tribal governments that had been selected to participate in the program.[50] Given that drone users must obtain relief from the restrictions set forth in Part 107 in order for commercial drone utilization to thrive, the implementation of the UAS Integration Pilot Program is a significant step in the direction of ubiquitous drone use among transportation and logistics companies.

C. Proposed Rules Favoring Commercial Drone Use

On January 14, 2019, U.S. Department of Transportation Secretary Elaine L. Chao, noting that "[d]rones…are well on their way to mainstream deployment," announced proposed regulations that would allow drone operators under certain conditions to fly over people and at night without the operator having to first obtain a waiver or exemption.[51] In the draft rules, the FAA proposes to categorize drone operations by weight, the potential for injuries in the event the drone crashes, and other factors.[52] The goal of these proposed changes is to encourage technological innovation while mitigating safety risks.[53] While one cannot be certain if and when these proposed rules will be enacted, the implementation of these regulations would significantly boost the ability of companies to achieve profit maximization and cost efficiency through drone utilization as the companies would no longer need to expend resources obtaining waivers or exemptions.

D. Unmanned Aircraft Systems Traffic Management System Pilot Project

At the same time it unveiled its proposed rules discussed above, the FAA also announced that it was partnering with NASA and the drone industry to develop the Unmanned Aircraft Systems Traffic Management System Pilot Project, the goal of which is to "develop and demonstrate a traffic management system to safely integrate drone flights within the nation's airspace system."[54] The FAA noted that this system would be separate from, but complementary to, the traditional FAA air traffic management system, and it would create a shared information network and gather data for use in future rulemakings.[55] The FAA awarded three contracts to commercial service entities that have been tasked with developing technology that would provide flight planning, communications, and separation and weather services for drones.[56] The establishment of this program, which would facilitate the development of a streamlined and safe unmanned traffic system, is just one more step in favor of commercial drone use across various industries.

IV. Conclusion

Commercial utilization of drones is positioned to increase exponentially over the next few years as numerous industries discover innovative ways to cut costs, reduce risks, and increase efficiency using UAS technology. In the transportation and logistics sector, purchasers and buyers alike will benefit from the faster and cheaper delivery options drones have the potential to provide. In addition, retailers may experience significantly increased efficiency in warehouse operations and claims and returns processes through the use of drones. While the industry will be eager to take advantage of the operational efficiency and cost-effectiveness drones are poised to provide, a complicated mosaic of federal, state, and local laws threatens to stall the ubiquitous integration of UAS technology into commercial operations. Nevertheless, although state and local regulatory issues are relatively just beginning to surface, the FAA has implemented several measures to facilitate the realization of the benefits drones offer to prospective commercial operators. As drones are increasingly utilized in the transportation and logistics industry, a company performing in this sector would be wise, if it has not done so already, to examine how drones could help it achieve reduced risks, increased efficiency, and cost savings in its operations.

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