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Electric urban air taxis: science fiction or legal matter of fact?

By Sasha Rao

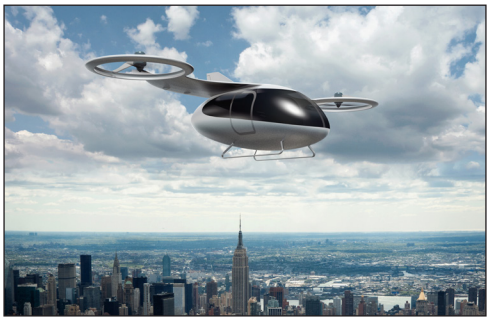
Many ideas that seemed far-fetched just 10 years ago are ubiquitous today. Ride-sharing applications are widely used. Self-driving cars have appeared on our roadways. Will electric air taxis be next?

The emerging field of urban air mobility has risen up seemingly overnight with myriad well-funded companies around the world moving ahead with the development of electric air taxis and the necessary supporting infrastructure to take urban commutes vertical. Instead of driving cars to work every day, commuters will be able to take electric air taxis to work using a ride sharing app on their smart phones. This "Jetsons" world is closer than we think.

Dozens of companies — from established aviation stalwarts to Silicon Valley start-ups — are developing electric Vertical Take-Off and Landing aircraft (eVTOL) aircraft that are aimed at improving urban transportation systems. eVTOL, as the name connotes, are electric aircraft that can take off and land vertically like a helicopter. They are designed for carrying a small number of passengers (e.g., 1-4) and are designed for short distances (e.g., Los Angeles to Malibu). A number of these eVTOL designs are self-piloted, meaning that the aircraft flies itself on a predetermined flight path. Although sometimes colloquially referred to as "flying cars," they are not cars at all, because most of them cannot be driven on roads. For the sake of simplicity, I refer to eVTOL aircraft as urban air taxis.

Not surprisingly, technology is not the main barrier to the introduction of urban air taxis. Rather, regulation and public policy are the main obstacles. Specifically, there are three main challenges that need to be overcome before urban air taxis become a commercial reality.

First, the Federal Aviation Administration's vehicle certification requirements must be met. Every commercial aircraft in the U.S. must be certified as airworthy by the FAA before it can take to the skies. Similar regulatory approvals need to be obtained in Europe and elsewhere. It is worth noting here that this is a key difference between the aviation and automotive industries. Cars, including self-driving cars, are self-certified by the manufacturer, whereas aircraft have to be certified as airworthy by the FAA. Using the existing framework of FAA regulations, eVTOL aircraft manufacturers must prove to the FAA that their vehicle design meets the safety and performance criteria for an airworthy aircraft. This is usually a time consuming and rigorous process, and more so in the case of eVTOL aircraft, because the FAA has not yet certified any eVTOL aircraft as airworthy. Importantly, the FAA's current regulations include performance requirements for aircraft with electric propulsion systems, and therefore, the FAA's approval of eVTOL aircraft is foreseeable under the current regulations.



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Second, national airspace regulations need to be implemented to include operational requirements for urban air taxis. For example, an air traffic control system for the safe inclusion of air taxis in the airspace needs to be developed. The current air traffic control system is set up for human air traffic controllers who communicate with pilots in conventional aircraft and manage landings and takeoffs. The current system is already stretched thin managing just the air traffic needs of conventional aviation. But urban air taxis will exponentially increase the number of flights happening per day in the U.S., and these flights will be localized in metropolitan areas. In order for urban air taxis to be commercially viable, there must be an automated system for the traffic control of air taxis. This is especially important given that the airspace is increasing being used by small drones (weighing 55 pounds or less) operating commercially and cargo drone delivery is also going to occupy our airspace. NASA has already started working on a new framework for traffic control called UTM, which stands for Unmanned Traffic Management. This program was started years ago with the advent of small commercial drones in the U.S. NASA's UTM system contemplates the inclusion of larger drones, which include self-piloted eVTOL, in the air traffic control system.

Finally, the physical infrastructure for necessary urban air taxis needs to be developed. Just like airports were developed for commercial flight, a system of vertiports that include take-off and landing spots for urban air taxis must be developed. Other infrastructure such as battery charging stations and passenger ingress and egress facilities also needs to be developed. Private operators are already taking the lead on developing these facilities. But state and local governments will also have a big role to play, especially given local noise regulations that may impose noise restrictions on urban air taxis. Here, it is worth mentioning that one of the main reasons that electric propulsion systems are being used in many of the eVTOL aircraft under development is that electric propulsion systems are thought to be less noisy than conventional propulsion systems.

Skeptics say that urban air taxis will never take off (pun intended) because lay people will not get into these vehicles. Others question how the pilot requirements that permeate the FAA's current regulations will be satisfied by self-piloted aircraft. Yet others question whether the current framework of products liability laws in the U.S. is ready for air taxis.

These naysayers raise valid concerns that need to be addressed and solved. Many regulators, private companies, and think tanks are already working on these and other problems in urban air mobility. Few thought that taking rides with strangers would be a viable business model, yet two of the biggest ride sharing companies in the U.S have already gone public. Today, it seems antiquated to question the fact that lay people will get into cars with strangers and pay for the ride. Nobody thought that drivers would like losing control of important features in their cars. Yet, lots of ordinary consumers are buying cars that are increasingly equipped with automatic features such as adaptive cruise control, lane assist, blind spot monitoring, automatic braking, self-parking, and even an autopilot.

Urban air taxis are here now. It is time we as lawyers make their wide adoption possible.

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