

## Drone On: Unmanned Aircraft Uses and Regulation

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### Background

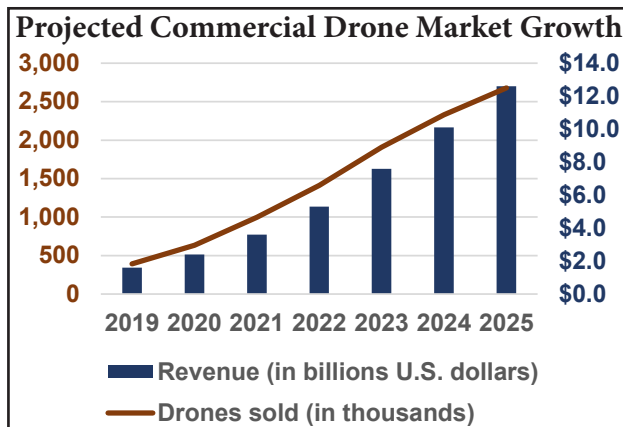
For decades, unmanned aircraft systems (UAS), commonly known as drones, have been flown by remote control hobbyists and the military. Today, more than 860,000 drones are registered with the U.S. Federal Aviation Administration (FAA) for commercial and recreational purposes – part of more than 1.1 million total UAS registrations. This may be only a fraction of total drones flying in the U.S., as hobbyists are not required to register their drones.<sup>1</sup>

The projected commercial drone market is expected to grow from 392,000 drones sold in 2019 to an estimated sale of 2.6 million UAS by 2025. Accordingly, the revenue from the sale of commercial drones is expected to increase from \$3.6 billion in 2021 to \$12.6 billion in 2025.<sup>2</sup>

### Multiple Uses

The multitude of drone applications includes agriculture, commercial delivery, disaster management, firefighting, inspecting construction, monitoring wildlife, geographic mapping, journalism, storm tracking, search and rescue, racing, and transportation, among many other uses. The military continues to deploy drones, and local law enforcement agencies have increasingly used drones to protect the public.

The Nebraska State Patrol employs 19 trained crash investigators that are certified UAS pilots. First deployed in August 2021, drones equipped with sophisticated mapping and imaging capabilities have decreased the time to analyze a crash from 2.5 hours to 45 minutes. The use of drones has increased the efficiency of crash analysis and has removed the need for a trooper to physically map evidence points on the highway.<sup>3</sup>



Source: Tractica via Statista

Farmers have used satellite imagery and manned aircraft for decades, but drone use is expanding in the agricultural industry. Drones can help farmers make more efficient management decisions like how much water or nitrogen a crop needs, and drones collect data much faster than other methods. UAS can also be

used to spray chemicals at a more precise altitude or efficiently spread seed. Currently, drones can apply 1.6 gallons of product in a 23 feet width per pass and can cover approximately 20 acres per hour.<sup>4</sup>

Geospatial information collected by drones can help maximize profits and lessen environmental impacts such as nitrogen fertilizer runoff and water usage. A current area of research concerns the sensors on drones that can measure light reflectance generated from the crop. This reflectance data helps to assess whether crops are stressed and need nitrogen fertilizer or water, or whether they contain pests.<sup>5</sup>

1. Federal Aviation Administration. (2021, Sep. 20). Unmanned Aircraft Systems (UAS). FAA. <https://www.faa.gov/uas/>

2. Buchholz, K. (2019, Feb. 28). Commercial Drones are Taking Off. Statista Infographics. <https://www.statista.com/chart/17201/commercial-drones-projected-growth/>

3. Rosales, M. (2021, Aug. 9). Nebraska State Patrol Flies Drones to Investigate Car Crashes Now. Nebraska Public Media. <https://nebraskapublicmedia.org/en/news/news-articles/nebraska-state-patrol-drives-drones-to-investigate-car-crashes-now/>

4. Kirt Manion, Nebraska City News-Press. (2021, July 2). Drones have applications in agriculture. Nebraska City News-Press. <https://eu.ncnewspress.com/story/news/2021/07/01/drones-have-applications-agriculture/7834989002/>



## Federal Law and Regulation

Federal control over the regulation of drones is wide-reaching. Over the last several years, the FAA has released proposed rules that authorize flights over people or at night and the ability to remotely identify drones. The main issues related to drone regulation are when, where, and in what ways UAS can be operated. Recreational drone flights are restricted in several instances, unless FAA approved, including at particular stadiums and sporting events like Major League Baseball and the National Football League games. Restrictions are also in place near airports, at national security facilities, and in Washington D.C. In addition, flying UAS recreationally over emergency or rescue operations involving wildfires or hurricanes is restricted. Federal law also protects bald and golden eagles and their nests from observation by drones.

## Recent Enacted State UAS Legislation

Drone legislation has been introduced in the states spurring debates around how UAS should be regulated locally. Since 2013, 44 states have enacted laws addressing the definition of drones, the allowable uses by police and other state agencies, and how the general public may interact with drones. State laws vary as some states ban specific uses of drones (such as spying), and some states require registration and training before flying a drone.

In 2020, eight states enacted UAS legislation. Florida, Idaho, Minnesota, and South Dakota passed laws allowing emergency wildfire workers to operate UAS. Idaho and Minnesota legislators also granted law enforcement agencies the ability to operate drones for certain purposes including crash investigation, search and rescue, and training exercises.

Minnesota and Missouri created UAS prohibitions regarding flying over property such as prisons, mental health facilities, and sports stadiums. Vermont created a restriction for law enforcement such that facial recognition cannot be used while operating a drone except for disaster management purposes.

Lastly, Virginia cities and towns can now regulate the takeoff and landing of UAS on property owned by that locality.<sup>6</sup>

## Drones in Nebraska

Nebraska is one of a handful of states that do not have laws regulating UAS at either the state or local level. However, bills have been introduced, and there are guidelines for flying drones at the capitol building and restrictions for flying in parks or around wildlife in Nebraska.

The Nebraska Game and Parks Commission restricts drone usage in state parks, state historical parks, and state recreation areas. A special permit to fly may be obtained for unique circumstances. Both state and federal endangered species laws prohibit the harassment of wildlife, including by UAS, especially endangered or threatened species like the whooping crane.<sup>7</sup>

LB 412 (2013) sought to create a general prohibition on the use of drone technology. In 2018, the intent of LB 693 included providing civil liability immunity for emergency responders that damage UAS in the course of their duties. LB693 also would have prohibited unlawful intrusion with a drone at particular sites like state property, the attaching of weapons to drones, and using them to interfere with farming or hunting or law enforcement. Both bills were ultimately indefinitely postponed.

## Ongoing Concerns

As the drone industry continues to grow, concerns have arisen about civil liberties, privacy, and the economic impact from their expanded commercial use. Due to data collection, legal restrictions, and certification issues, farmers may prefer to hire outside operators to provide agriculture drone services. Questions remain about how to determine airspace property rights and how to protect landowners from trespassing. Additionally, some conflicts still exist between federal and state or local laws.

5. Doeschot, B. (n.d.). Drones: Piloting a Different Way of Seeing Agriculture | Strategic Discussions for Nebraska. University of Nebraska- Lincoln - Institute of Agriculture and Natural Resources. Retrieved December 2, 2021, from <https://sdn.unl.edu/article/drones>

6. Bates, J. (2021, Aug. 3). Current Unmanned Aircraft State Law Landscape. National Conference of State Legislatures. <https://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx>

7. Kane, J. (2018, Mar. 22). Drone operators advised to know and abide by wildlife, park rules. Nebraskaland. <http://magazine.outdoornebraska.gov/2018/03/drone-operators-advised-to-know-and-abide-by-wildlife-park-rules/>