



Drones and unmanned aircraft systems

A PRIMER OF RULES, FLIGHT RESTRICTIONS AND POLICIES

Introduction

This primer is a compendium of rules and policies in the United States that are designed to enable the use of unmanned aircraft systems (UAS) in the National Airspace System in a safe manner. It limits its review to federal laws that, for the most part, only apply to flights conducted by non-federal government users. It should be noted that state and local laws may also have some applicability and should be considered prior to flying.

The UAS landscape promises to continually evolve as technology and flight protocols expand on the types of flights that can be performed in a safe manner. Should you have any questions on how these and future rules and policies may affect your unique flight requirements, the following DLA Piper professionals are available to discuss your needs.



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Overview

Drones, also known as “unmanned aircraft systems” (UAS), are primarily regulated by the Federal Aviation Administration (FAA), the federal agency mandated to regulate aviation safety, efficiency of navigable airspace, and air traffic control for aircraft. UAS are considered “aircrafts” under FAA regulations.¹ Since 2005, the FAA has taken substantial steps to integrate UAS operations into the mainstream US National Airspace System (NAS), a network of controlled and uncontrolled airspace.

The FAA’s drone regulations may be divided into three categories: commercial, recreational, and governmental and public safety. The categories differ on the authorized locations of the operations (within National Airspace System, indoors, and outside National Airspace System).²

The operation of UAS for commercial use of drones under 55 pounds is regulated under Part 107 of the FAA’s rules. Other operations, including for recreational and public safety use, as well as operation of larger drones used for package delivery and other commercial activities, including commercial operations of UAS over 55 pounds, are regulated as waivers to Part 107 rules or through Part 47 of the FAA’s rules.

The FAA provides a comprehensive overview of drone regulations, including guidance on registering UAS systems as well as information for recreational flyers, certificated remote pilots and commercial operators, public safety and government, and advanced operations.

¹ Unmanned Aircraft Operations in the National Airspace System, 72 Fed. Reg. 6689 (Feb. 13, 2007) Fed. Aviation Admin., Unmanned Aircraft Systems Operations in the U.S. National Airspace System-Interim Operational Approval Guidance, Afs-400 UAS Policy 05-01 (2005); FAA, Timeline of Drone Integration, available at <https://www.faa.gov/uas/resources/timeline>.

² See also Processing of Unmanned Aircraft Systems Requests, Order JO 7200.23C, Fed. Aviation Admin., (Sep. 6, 2021), available at https://www.faa.gov/documentLibrary/media/Order/2021-08-03_FAA_Order_JO_7200.23C_Processing_of_UAS_Requests_FINAL_AJV-P_Signed_NAD.pdf. This Order canceled and replaced a prior order, JO 7210.889, which categorized UAS into Public, Civil, and Model Aircraft (hobbyist).



Commercial UAS regulations

Definition

Commercial UAS is defined as flying for business, a commercial enterprise, or non-profit work including for package delivery, dispensing chemicals, or agricultural products.

Drones under 55 lbs

Commercial drone operators must obtain FAA permission to fly in controlled airspace. Commercial operations of UAS under 55 pounds (small UAS or sUAS) are regulated under [14 CFR Part 107](#) (Part 107) of the FAA's rules. Under Part 107's operating rules, the FAA requires all operators of commercial UAS under 55 pounds to be certified as a remote pilot with a small UAS rating, which includes passing a knowledge test and meeting certain standards.³

Registration is required for all unmanned aircraft.⁴ The FAA allows streamlined registration of small unmanned commercial aircraft under 55 pounds through the [FAA DroneZone](#). Registration cost is \$5 and is valid for five years. Failure to register may result in regulatory and criminal penalties, civil penalties up to \$27,500 and criminal penalties include fines up to \$250,000 and/or imprisonment for up to three years.

To register, drone operators must be a US citizen or permanent resident, governmental unit, or corporation, and be at least 13 years old. Registration requires an address, email, phone number, make and model

of drone, remote ID serial number (provided by manufacturer, if applicable), and credit or debit card for payment. The FAA considers registration of foreign operators as a recognition of ownership rather than a certificate of US aircraft registration. To operate commercial UAS under 55 pounds for advanced purposes, such as [package delivery](#), additional certifications or approval are necessary.⁵

Drones over 55 pounds

Commercial operations of UAS over 55 pounds are not regulated under the Part 107 rules. Instead, such systems must be certified or approved as an [advanced operation](#). Additionally, drones over 55 pounds, as well as drones owned by a trustee under trust agreement or when the drone owner uses a voting trust to meet the US citizenship requirement, must be registered through traditional registration under [14 CFR Part 47](#) (Part 47) of the FAA's rules rather than streamlined registration for those commercial aircraft under 55 pounds. Thus, such commercial UAS over 55 pounds may be registered under Part 47 through the following steps:

- 1. Complete the registration application** using Aircraft Registration Application, AC Form 8050-1.⁶ If the applicant is an LLC, information regarding organization, how management authority is held, and how it meets the definition of a US citizen for aircraft registration must be provided.⁷

³ See FAA, Certificated Remote Pilots including Commercial Operators, available at https://www.faa.gov/uas/commercial_operators.

⁴ See FAA Aircraft Registration Branch, INFORMATION TO AID IN THE REGISTRATION OF U.S. CIVIL AIRCRAFT, available at https://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/media/REG-AR-94.pdf.

⁵ For further information approval of UAS operations for package delivery, see below under "Air Carrier Certification or Operating Certification (Part 135 Package Delivery)."

⁶ See FAA, Form AC 8050-1 - AIRCRAFT REGISTRATION APPLICATION, available at <https://www.faa.gov/forms/index.cfm/go/document.information/documentID/185220>

⁷ See FAA, Limited Liability Companies, available at https://www.faa.gov/sites/faa.gov/files/licenses_certificates/aircraft_certification/aircraft_registry/ua/LLCINFO.PDF

2. Obtain a notarized affidavit that:

- establishes the required description of the unmanned aircraft
- establishes the ownership of the unmanned aircraft by the applicant
- establishes that the unmanned aircraft is not registered in another country, or, for “used” drones,⁸ establishes the ownership of the unmanned aircraft by the applicant (may be established with an [Aircraft Bill of Sale](#) or an equal transfer of sale document, or if such documents are unobtainable, applicant must provide the details of the sale) and
- includes a statement affirming the information and statements provided are correct, the aircraft is not registered under the laws of any foreign country, and that the signatory is the owner.

3. Obtain an N-number. An applicant can reserve a [special N-number](#) for a \$10 fee, or, if the applicant leaves the section blank on the registration forms, a random number will be assigned at no cost.⁹

4. Pay the \$5 registration fee. The fee is waived if the applicant is a federal, state or local government office, agency or institution.

While traditional Part 47 registration is by mail, the FAA is currently offering limited [online](#) aircraft registration services.

In addition to registration of drones under Part 47, operation of drones over 55 pounds must be certified or approved as an advanced operation under another rule part or waiver. The approval or certification required depends on the use of the drone.¹⁰ There are numerous regulatory paths to either obtain certification or approval for advance operation. For example, 14 CFR Part 21 (Part 21) defines three separate certifications of commercial drones over 55 pounds: type, production, and airworthiness.¹¹

• **Type certification**

- The approval of the design of the aircraft and all component parts (including propellers, engines, control stations, etc.). It signifies the design is in compliance with applicable airworthiness, noise, fuel venting, and exhaust emissions standards. The Los Angeles Aircraft Certification Office (ACO) is the main ACO for unmanned aircraft systems (UAS) type certification.
- Type certification is a prerequisite for a standard airworthiness certificate.

• **Production certification**

- The approval to manufacture duplicate products under an FAA-approved type design. It signifies that an organization and its personnel, facilities, and quality system can produce a product or article that conforms to its approved design.

• **Airworthiness certification**

- Necessary for operation of civil aircraft outside of 14 CFR Part 107 or without an exemption under the Special Authority for Certain Unmanned Systems ([U.S.C. 44807](#)).
- An airworthiness certificate signifies that an aircraft meets its approved type design (if applicable) and is in a condition for safe operation.
- The certification can be either in the Standard or Special class:

STANDARD CLASS

- A standard airworthiness certificate allows the aircraft to be operated and used for compensation and hire with the most minimal restrictions.
- Because [type certification](#) is a prerequisite for a standard airworthiness certificate, most UAS do not currently meet the requirements for a standard airworthiness certificate.

⁸ A drone is considered “used” if it has been registered or operated as a civil, public, or military aircraft under the laws of the U.S. or another country.

⁹ A used UA should already have a N-number which should be available on the bill of sale forms. More information on requesting a special N-number or changing the N-number is available [here](#).

¹⁰ See FAA, Advanced Operations, available at https://www.faa.gov/uas/advanced_operations.

¹¹ See FAA, Certification, available at https://www.faa.gov/uas/advanced_operations/certification (stating that certification is how the FAA manages risk through safety assurance. It provides the FAA confidence that a proposed product or operation will meet FAA safety expectations to protect the public. Certification affirms that FAA requirements have been met).

SPECIAL CLASS

- A [special airworthiness certificate](#) (FAA Form 8130-7) covers a wide variety of aircraft in seven different categories. Special airworthiness certificates limit operation and use of the aircraft, often severely. The most common category of special airworthiness certificates for UAS are those in the experimental category. [FAA Order 8130.34D](#) establishes procedures for special airworthiness certification of UAS and optionally piloted aircraft. Special airworthiness certificates in the experimental category may be issued for the following purposes under Part 21 of the FAA's rules:
 - Research and development
 - Showing compliance with regulations
 - Crew trainings
 - Exhibitions
 - Market surveys
- The FAA is publishing proposed airworthiness criteria that will be used to issue type certificates for UAS as special classes of aircraft. The type certification of UAS is a key enabler for more complex operations, including package delivery.
- Each notice identifies the individual applicant's proposed UAS design and contains the airworthiness criteria for type certification proposed by the FAA. The airworthiness criteria are developed to provide a level of safety equivalent to that provided by existing airworthiness standards applicable to other categories of aircraft but that are not appropriate for this special class of UAS.
- The FAA recently published a policy clarification to use the "special class" category under §21.17(b) to issue type certificates for certain UAS. The FAA has developed a "durability and reliability" (D&R) process to establish criteria as an element of the proposed certification basis for these aircraft. This special class process establishes a defined path to type certification of UAS, and is the first of its kind developed worldwide. Through the D&R process, applicants demonstrate that their UAS are reliable, controllable, and safe, and provide the FAA basic assurance that the aircraft will operate as intended.

Additionally, other regulatory paths include:

- [Special Authority for Certain Unmanned Systems](#) (U.S.C. 44807) ([Section 44807 Exemptions](#))
 - Approval for operation of drones over 55 pounds is possible through a Section 44807 exemption until September 30, 2023.
- [Air Carrier Certification](#) or Operating Certification (Part 135 [Package Delivery](#))
 - For drones (above or below 55 pounds) to carry the property of another for compensation beyond visual line of sight, operators must follow the [Part 135](#) air carrier certification regulatory path.
 - Part 135 UAS or drone certificate holders must develop dangerous goods training programs and manuals as part of the [14 CFR Part 135 Air Carrier and Operator Certification Process](#).
 - The FAA issues air carrier certificates to US applicants based on the type of services they plan to provide and where they want to conduct their operations. Operators must obtain airspace authorizations and [air carrier or operating certificates](#) before they can begin operations. Air carrier certificates are required for interstate, foreign, or overseas transportation, or for carrying mail, and operating certificates applicant are required for intrastate (wholly within the same US state) transportation.
- Certificates are available for the [four types](#) of Part 135 operations:
 - **Part 135 Single Pilot.** A single-pilot operator is a certificate holder that is limited to using only one pilot for all part 135 operations.
 - **A Single Pilot in Command** certificate is a limited part 135 certificate. It includes one pilot in command certificate holder and three second pilots in command. There are also limitations on the size of the aircraft and the scope of the operations.
 - **A Basic Operator** certificate is limited in the size and scope of their operations. Maximum of five pilots, including second in command. Maximum of five aircraft can be used in their operation.
 - **A Standard** operator holds a certificate with no limits on the size or scope of operations. However, the operator must be granted authorization for each type of operation they want to conduct.



- All Part 135 applicants must go through the [full five phase certification process](#). Each phase must be successfully completed prior to continuing to the next phase. The five phases are:
 - Pre-application
 - Formal Application
 - Design Assessment
 - Performance Assessment
 - Administrative Functions
- For a step-by-step tutorial of the certification process, [watch the FAA's YouTube videos](#).
- [Dispensing Chemicals and Agricultural Products \(Part 137\) with UAS](#)
 - UAS used for chemical and agricultural operations are regulated by [14 CFR Part 137](#).
 - Authorization to operate under this Part 137 can be obtained by contacting the local [Flight Standards District Office \(FSDO\)](#), who will work with the Office of Hazardous Materials Safety (AXH) as needed.
- [Operational Approvals for Emergency Situations](#)
 - First responders and other organizations responding to natural disasters or other emergency situations may be eligible for expedited approval through our [Special Governmental Interest \(SGI\)](#) process. Operations that may be considered include:
 - Firefighting
 - Search and Rescue
 - Law Enforcement
 - Utility or Other Critical Infrastructure Restoration
 - Damage Assessments Supporting Disaster Recovery Related Insurance Claims
 - Media Coverage Providing Crucial Information to the Public
 - To apply for a waiver through the SGI process the drone operator must be an existing Part 107 remote Pilot with a current certificate OR must have an existing Certificate of Waiver or Authorization (COA) and must submit a [waiver](#) request and send to the FAA's System Operations Support Center (SOSC) at 9-ator-hq-sosc@faa.gov. If approved, the FAA will add an amendment to the existing COA or Remote Pilot Certificate that authorizes the pilot to fly under certain conditions for the specified operation. If denied, operators should NOT fly outside the provisions of their existing COA or part 107. Operators have the option to amend their requests.
 - A tactical guide for First Responders, using UASs beyond visual line of sight is available [here](#).
 - A drone public safety guide is available [here](#).



Aircraft markings and remote ID

The FAA requires all drones to be marked with a registration number before flying them. The label must be maintained in condition that is legible and may be affixed to the drone by “any means necessary” to ensure the label remains attached during each operation. A visual on how to label your drone can be found [here](#).

Starting in September 2023, small UAS must also have remote ID capability, which provides information about drones in flight, such as the identity, location, and altitude of the drone and its control station or take-off location.¹²

There are three ways drone pilots can satisfy the new Remote ID rule:

Operate a standard remote ID drone made with built-in ID broadcast capabilities and broadcasts ID and location information of the drone and control station. The drone must broadcast the following information:

- A unique identifier (drone’s serial number or session ID)
- Latitude, longitude, geometric altitude, and velocity
- Control station’s latitude, longitude, geometric altitude

- Time stamp and
- Emergency status indication

Operate a drone with a remote ID broadcast module: a device that is attached to the drone or a feature integrated with the drone. The module broadcasts the drones ID, location and take-off information. With this option, drone operators must be able to see their drone at all times during flight.

- Serial number of the broadcast module
- Latitude, longitude, geometric altitude, and velocity
- Take-off location’s latitude, longitude, geometric altitude
- Time stamp

Operate without remote ID equipment is possible only within FAA-recognized identification areas (FRIAs) sponsored by community-based organizations or schools. FRIAs are the only locations drones and radio-controlled airplanes may operate without broadcasting remote ID messaging.

¹² See FAA, Executive Summary Final Rule on Remote Identification of Unmanned Aircraft (Part 89) (Dec. 20, 2020), available at https://www.faa.gov/sites/faa.gov/files/uas/getting_started/remote_id/RemoteID_Executive_Summary.pdf; see also FAA, DOT, Remote Identification of Unmanned Aircraft, Final Rule, 86 FR 4390 (Jan. 15, 2021), available at <https://www.federalregister.gov/documents/2021/01/15/2020-28948/remote-identification-of-unmanned-aircraft>.

Recreational UAS regulations

Definition

A recreational use of a UAS is “flying for enjoyment and not for work, business purposes, or for compensation or hire.” As discussed above, Part 107 regulates the operations of a UAS under 55 pounds in the NAS. However, there is a limited statutory exception, Exception for Limited Operation of Unmanned Aircraft (49 U.S.C. § 44809) (Section 44809), that provides a basic set of requirements for operating a UAS for recreational purposes. The FAA refers to individuals operating under the Exception for Limited Operation of Unmanned Aircraft as “recreational flyers.” To that end, a recreation flyer can operate a UAS without specific certification or operating authority from the FAA.

Section 44809(a) provides eight conditions that must be satisfied to use the exception for recreational UAS (those weighing less than 55 pounds). Recreational flyers are subject to all of the statutory conditions to operate under Section 44809. Otherwise, the recreational operations must be conducted under Part 107.



Rules for recreational flyers

A person may operate a small unmanned aircraft without specific certification or operating authority from the FAA through the Section 44809 exemption if the operation adheres to all of the following limitations:

- The aircraft is flown strictly for recreational purposes.
- The aircraft is operated in accordance with or within the programming of a community-based organization's set of safety guidelines that are developed in coordination with the FAA. The aircraft is flown within the visual line of sight of the person operating the aircraft or a visual observer co-located and in direct communication with the operator.
- The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft.
- In Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport, the operator obtains prior authorization from the Administrator or designee before operating and complies with all airspace restrictions and prohibitions.¹³
- In Class G (uncontrolled) airspace, the aircraft is flown from the surface to not more than 400 feet above ground level and complies with all airspace restrictions and prohibitions.¹⁴
- The operator has passed an aeronautical knowledge and safety test described in subsection (g) and maintains proof of test passage to be made available to the Administrator or law enforcement upon request.
- The aircraft is registered and marked, and proof of registration is made available to the Administrator or a designee of the Administrator or law enforcement upon request.

¹³ See FAA Airspace 101 – Rules of the Sky, https://www.faa.gov/uas/getting_started/where_can_i_fly/airspace_101. Prior authorization may be obtained via LAANC or DroneZone.

¹⁴ Flying drones in certain airspace is prohibited. Classes of airspace and flying restrictions can be found on our B4UFLY app or the UAS Facility Maps webpage.

Government use



Definitions

This [Advisory Circular](#) provides guidance when determining whether government-owned or government-contracted manned and unmanned aircraft operations conducted within the territory of the United States are public or civil aircraft operations under the statutory definition of “public aircraft” in Title 49 of the United States Code (49 U.S.C.) §§ 40102(a)(41) and 40125 (the statute).

A “public aircraft” can mean any of the following:

- An aircraft used only for the United States government, except as provided in section 40125(b).
- An aircraft owned by the government and operated by any person for purposes related to crew training, equipment development, or demonstration, except as provided in section 40125(b).
- An aircraft owned and operated by the government of a state, the District of Columbia, or a territory or possession of the United States or a political subdivision of one of these governments, except as provided in section 40125(b).
- An aircraft exclusively leased for at least 90 continuous days by the government of a state, the District of Columbia, or a territory or possession of the United States or a political subdivision of one of these governments, except as provided in section 40125(b).

States or a political subdivision of one of these governments, except as provided in section 40125(b).

- An aircraft owned or operated by the armed forces or chartered to provide transportation or other commercial air service to the armed forces under the conditions specified by section 40125(c).

The FAA does not require government aircrafts to receive an airworthiness certificate for drones under 55 pounds.

All Aircraft owned by [agencies, offices or subdivisions](#) of the United States (other than aircraft of the US Armed Forces), the states, the District of Columbia, or a territory or possession of the United States must be registered through the traditional registration process.

Public Safety entities can receive an FAA Certificate of Authorization to function as a “public aircraft” (49 U.S.C. §40102(a) and § 40125) for flights performing governmental functions by sending a Public Declaration Letter certifying the agency as a governmental entity to the FAA. The FAA then sends the applicant login information to apply online for. This process can take up to 60 days. More information about the COA process is available [click here](#).

The National Airspace System

Drone Operation Within the National Airspace System (NAS):

FAA rules apply to the entire National Airspace System: there is no such thing as “unregulated” airspace. Rather, the FAA defines airspace as either “controlled” or “uncontrolled.” Controlled airspace is found around some airports and at certain altitudes where air traffic controllers are actively communicating with, directing, and separating all air traffic. Airspace is considered “uncontrolled” where air traffic controllers do not

direct air traffic within its limits. The FAA does not have jurisdiction to regulate indoor space. Accordingly, the operation of drones indoors is unregulated.

In general, FAA regulations allow drone pilots to operate only in uncontrolled airspace below 400 feet above ground level without a waiver. Special authorization is required from the FAA to fly a drone higher than 400 feet above ground level.

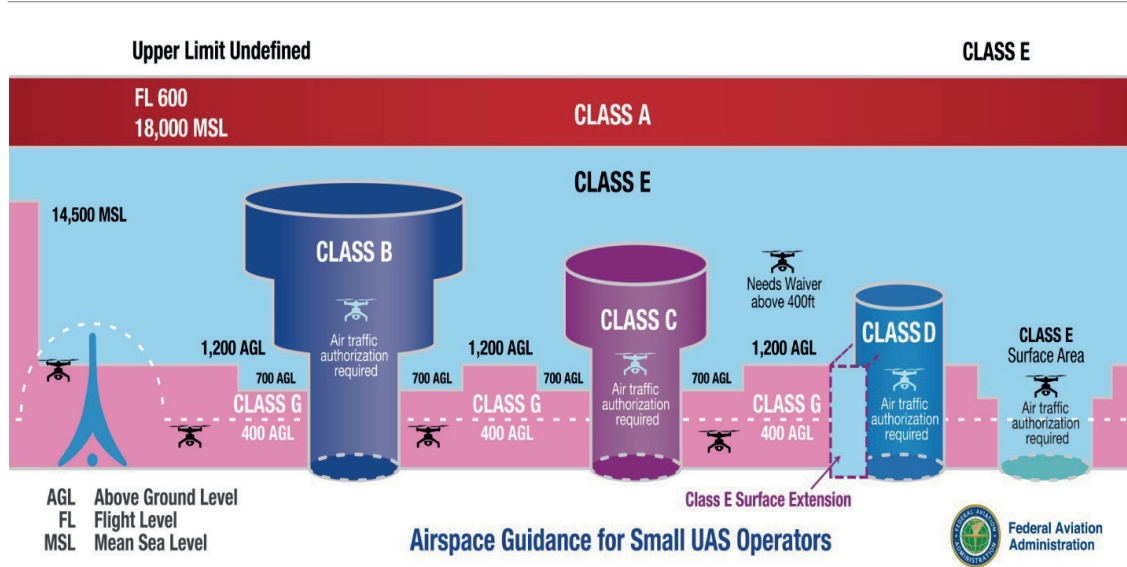


Figure 1. FAA Airspace Guidance for Small UAS Operators

Airspace restrictions include the following:

Stadiums and sporting events: Prohibited starting one hour before and after the scheduled time of the following events: MLB, NFL, NCAA D1 Football, NASCAR Sprint Cup, Indy Car, and Champ Series races.

Flying near airports: Flying near airports located in controlled and uncontrolled airspace is restricted.

Security sensitive airspace restrictions: Prohibited from flying (up to 400 feet from the ground) over designated national security sensitive facilities. Applies to all types and purposes of UAS. Locations include DoD designated military bases, national landmarks (Statute of Liberty, Hoover Dam, Mount Rushmore), and certain critical infrastructure (nuclear power plants).¹⁵

¹⁵ See FAA, UAS Data Delivery System, available at <https://udds-faa.opendata.arcgis.com/>. (providing a map or restricted security-sensitive airspace).

Restricted or special use airspace: Restricted or “special use” airspace is for certain areas where drones and other aircraft are not permitted to fly without special permission, or where limitations must be imposed for any number of reasons.¹⁶ Restricted areas are those where operations are hazardous, including those where hazards may not be visible such as areas with artillery firing or guided missiles.

Washington, DC: The Capital region is governed by Special Flight Rules Area (SFRA). All flights are restricted within a 30-mile radius of Ronald Reagan Washington National Airport.

Emergency and rescue operations: The FAA prohibits operating a drone near a [wildfire](#) or hurricane due to the need for emergency response operations.

The FAA provides resources to determine where drone operators can fly and whether authorization is needed first.¹⁷ In any case, drone operators must avoid manned aircrafts and are responsible for any safety hazards they create by flying near manned aircrafts.

Spectrum licensing

- On January 4, 2023, the FCC released a [Notice of Proposed Rulemaking](#) (NPRM) seeking comment on service rules for the 5030-5091 MHz band that would provide UAS operators with access to licensed spectrum with the reliability necessary to support safety-critical UAS communications links. The NPRM also sought comment on whether the Commission's rules for various flexible-use spectrum bands are sufficient to ensure co-existence of terrestrial mobile operations and UAS use or whether changes to Commission rules are necessary to prevent or mitigate

interference and performance concerns. Also, to further promote the safe integration of unmanned aircraft operations in controlled airspace and facilitate flight coordination, the NPRM proposes a process for UAS operators to obtain a license in the aeronautical VHF band to communicate with air traffic control and other aircraft while maintaining the integrity of the band. This NPRM was developed as part of ongoing collaboration with the FAA and NTIA, including within the formal Interdepartment Radio Advisory Committee process.¹⁸

- Comments will be due 30 days after date of publication in the Federal Register, which is expected in February 2023.
- The NPRM comes following the FCC's affirmation in August 2020 that the 5030-5091 MHz spectrum band is suitable for drone operations and recommendation that the Commission begin a rulemaking process to establish service and licensing rules applicable to UAS use of the band.¹⁹ The report examined whether UAS should be permitted on the 960-1164 MHz -portion of the L-band and 5030-5091 MHz portion of the C-band, and determined that 5030-5091 MHz frequencies can support UAS operations, but technical, regulatory and operational issues may affect the extent of such use, and that there is no record to definitively assess the potential barriers to using the spectrum. The report noted significant concern about the impacts of potential UAS operations on incumbent aeronautical navigation operations in the 960-1164 MHz band. FCC does not recommend moving forward with a proceeding to make the 960-1164 MHz band available for UAS operations.

¹⁶ See FAA, Restricted or Special Use Airspace, available at https://www.faa.gov/uas/getting_started/where_can_i_fly/airspace_restrictions/tfr.

¹⁷ See, e.g., the [B4UFLY Mobile App](#) for real-time information on airspace restrictions, [Low Altitude Authorization and Notification Capability app](#) for real-time information about airspace restrictions and near-real time airspace authorizations, and [Airspace 101 – Rules of the Sky](#) provides a comprehensive overview of flight rules.

¹⁸ See FCC, FCC STARTS RULEMAKING TO MAKE AVAILABLE LICENSED SPECTRUM FOR UNMANNED AIRCRAFT USE (Jan. 4, 2023), available at <https://docs.fcc.gov/public/attachments/DOC-390536A1.pdf>.

¹⁹ See FCC Report Supports Use of 5030-5091 MHz Band for UAS Operations (Aug. 27, 2020), available at <https://www.fcc.gov/document/fcc-report-supports-use-5030-5091-mhz-band-uas-operations>.

Policy implications

Flights over people

Part 107 regulates UAS' operations over people.

The rule provides several requirements to fly over people, based on the risk level the drone poses to the people on the ground:

CATEGORY 1

- Must be 55 pounds or less (including everything attached at the time of takeoff and the duration of the flight)
- Must not contain any rotating parts that would lacerate human skin
- Must be compliant with Remote ID requirements to operate in sustained flight over open-air assemblies
- No FAA-accepted Means of Compliance (MOC) or Declaration of Compliance (DOC) required

CATEGORY 2

Provides performance-based eligibility for aircrafts that are over 55 pounds but do not have an airworthiness certificate under Part 21.

- Must not cause injury to a human being that is equivalent to or greater than the severity of injury caused by a transfer of 11 foot-pounds of kinetic energy upon impact from a rigid object
- Must not contain any exposed rotating parts that could lacerate human skin upon impact with a human being and does not contain any safety defects. Requires FAA-accepted means of compliance and FAA-accepted declaration of compliance
- Must be compliant with Remote ID requirements to operate in sustained flight over open-air assemblies

CATEGORY 3

Provides performance-based eligibility for aircrafts that are over 55 pounds but do not have an airworthiness certificate Part 21, with further operating restrictions.

- Must not cause injury to a human being that is equivalent to or greater than the severity of injury caused by a transfer of 25 foot-pounds of kinetic energy upon impact from a rigid object
- Must not contain any exposed rotating parts that could lacerate human skin upon impact with a human being

- Must not contain any safety defects
- Requires FAA-accepted means of compliance and FAA-accepted declaration of compliance
- Remote pilot cannot fly over open-air assemblies of people
- May only operate a UAS over people if:
 - Operation is within or over a closed/restricted access site and all the people on the ground are on notice that UAS is flying over them or
 - The people on the ground are participating directly with the operation or are located under a covered structure on inside a stationary vehicle that can provide reasonable protection from a falling drone.

CATEGORY 4

Allows small drones that have been issued an airworthiness certificate under Part 21 to operate over people so long as they comply with the limitations specified in the approved Flight Manual or otherwise specified by the Administrator:

- Must have an airworthiness certificate issued under Part 21 of FAA regulations
- Must be operated in accordance with the operating limitations specified in the approved Flight Manual or as otherwise specified by the Administrator
- The operating limitations must not prohibit operations over human beings
- Must have maintenance, preventive maintenance, alterations, or inspections performed in accordance with specific requirements in the final rule
- Must be compliant with Remote ID requirements or operate in sustained flight over open-air assemblies

Note: "Sustained flight over an open-air assembly" includes hovering above people in an open-air assembly, flying back and forth over an open-air assembly, or circling above the assembly in way that drone remains above some part of the assembly. Sustained flight over an open-air assembly of people in Categories 1, 2, or 4 does not include a brief, one-time transiting over a portion of the assembled group, where the flight is merely incidental and unrelated to the assembly.



FLYING AT NIGHT

Part 107 regulates operations of small UAS at night. The [Operations Over People](#) rule allows for routine operations of small UAS at night without a waiver.

This rule allows routine operations of small UAS at night under two conditions:

1. The remote pilot in command must complete an updated initial knowledge test or online recurrent training and
2. The small unmanned aircraft must have lighted anti-collision lighting visible for at least three statute miles that has a flash rate sufficient to avoid a collision.

To comply with the rule, you must:

- Be an [FAA-Certificated Remote Pilot](#), issued under Part 107, often referred to as a drone pilot.
 - Existing Part 107 certificate holders must complete the online recurrent [training](#) that was published on April 6, 2021.
 - Recurrent training taken before April 6, 2021, does not meet the requirements of the Operations Over People rule.
 - If you do not hold a Part 107 certificate, you must pass an [initial knowledge test](#) and apply for a remote pilot certificate through the FAA Integrated Airman Certificate and/or Rating Application ([IACRA](#)) system.

- [Register](#) and mark your drone.
- Equip your drone with anti-collision lighting visible for at least three statute miles that has a flash rate sufficient to avoid a collision.
- Hold a valid airspace authorization for operations in controlled airspace under 400 feet issued through the [FAA Drone Zone](#) or the [Low Altitude Authorization and Notification Capability \(LAANC\)](#).

FLYING OVER MOVING VEHICLES

Part 107 regulates operation of small UAS over vehicles. Small UAS may fly over moving vehicles if the aircraft operation meets the requirements of **Categories 1, 2, and/or 3** and either:

- The small unmanned aircraft must remain within or over a closed- or restricted-access site, and all people inside a moving vehicle within the closed- or restricted-access site must be on notice that a small unmanned aircraft may fly over them; or
- The small unmanned aircraft does not maintain sustained flight over moving vehicles.
- A pilot may operate a **Category 4** drone over moving vehicles as long as the applicable operating limitations in the approved Flight Manual or as otherwise specified by the Administrator do not prohibit such operation.

Line of sight

Visual Line of Sight (VLOS) is a regulatory term used to describe the maximum distance from which an observer can see an object without using aids, like binoculars or a telescope. In aviation, this distance is typically measured in statutory miles. For example, under VLOS regulations, an airplane cannot take off or land if it is more than three miles from the nearest airport.

VLOS may be through the use of a camera, radar, or both. Cameras are the most common form of VLOS as they can be mounted on drones relatively easily. A radar is less common, but has the advantage of being able to penetrate clouds and other obstacles that might block a camera's view.

Beyond Visual Line of Sight (BVLOS) refers to an operation in which the aircraft, its associated support equipment, and the required navigational information are all available to the pilot, but visual contact between the pilot and the aircraft is not maintained. To operate BVLOS, a remote pilot in command (RPIC) must have the ability to assess the risks associated with the operation and make decisions accordingly. The RPIC must also be able to keep track of where the plane is at all times and be aware of any hazards that might arise on the route.

The FAA is working to address the challenges associated with BVLOS through its [Beyond](#) program for operations that are repeatable, scalable and economically viable with specific emphasis on infrastructure inspection, public operations, and small package delivery. The aim of the program is to focus on operating under established rules rather than waivers, collecting data to develop performance-based standards, collecting and addressing community feedback and understanding the societal and community benefits, and to streamline the approval processes for UAS integration.

The FAA Rulemaking Committee (ARC) issued a [final report](#) earlier this year that outlines key recommendations for the FAA. The report:

- recommends that the FAA set an acceptable level of risk for UAS that is consistent across all types of operations being performed.
- recommends a series of modifications to the right of way rules in Low Altitude Shielded Areas (within 100 feet of a structure or critical infrastructure as defined in 42 U.S.C. § 5195c) and in Low Altitude Non-Shielded Areas (below 400 feet) to accommodate UA operations.
- recommends an approach to operator qualification that would extend Part 107, Remote Pilot Certificate with Small UAS Rating, to cover topics associated with Extended Visual Line of Sight (EVLOS) and shielded UAS operations.
- recommends creating a new Remote Pilot certificate rating to cover BVLOS operations beyond the scope of the extended Part 107 rating.
- recommends that the FAA establish a new BVLOS Rule which includes a process for qualification of UA and UAS, applicable to aircraft up to 800,000 ft-lb of kinetic energy (in accordance with the Operation Risk Matrix).
- recommends that the FAA adopt a non-mandatory regulatory scheme for third party services to be used in support of UAS BVLOS operations.

Flights close to structures

- The FAA uses the term "[No Drone Zone](#)" to help people identify areas where they cannot operate a drone or unmanned aircraft system. The operating restrictions for a No Drone Zone are specific to a particular location.²⁰
- No Drone Zones Areas include:
 - Restricted airspace: The FAA prohibits drone flight over certain areas of airspace.

²⁰ You can find out if there are airspace restrictions can be viewed on the [B4UFLY mobile app](#).



- Local restrictions: In some locations, drone takeoffs and landings are restricted by state, local, territorial, or Tribal government agencies. The FAA has provided [No Drone Zone sign](#) that can be used by these governments to identify areas where there are local flight restrictions. It is important to note, these No Drone Zones only restrict taking off or landing and do not restrict flight in the airspace above the identified area.
- Temporary flight restrictions (TFRs) define a certain area of airspace where air travel is limited for a period and may be in place for different reasons. The FAA may use the term “No Drone Zone” to identify an area where there is a TFR. Examples include, major sporting events, presidential movements, or in security sensitive areas designated by federal agencies.
- Restriction details of the TFR include, size, altitude, date/time, and what types of operations are restricted and permitted. All pilots are required to adhere to the restrictions of the TFR.
- Only the FAA can restrict airspace. However, the FAA recognizes that drone safety is a partnership with local, state, Tribal, and territorial government entities who have rights to regulate where drones are allowed to take off and land.
- FAA developed a [sign](#) that government entities can customize and use for their specific needs and locations. Signage should cite specific statutes or local regulations/policies that apply. The sign is not for private landowners.
- Drones are prohibited from flying over [designated national security sensitive facilities](#). Operations are prohibited from the ground up to 400 feet above ground level, and apply to all types and purposes of UAS flight operations. Examples of these locations are:
 - Military bases designated as Department of Defense facilities
 - National landmarks, such as Statue of Liberty, Hoover Dam, Mount Rushmore
 - Certain critical infrastructure, such as nuclear power plants
- The FAA is continuing to consider additional requests by eligible federal security agencies for UAS specific flight restrictions as they are received.

Counter UAS

While the use of UAS provide numerous public interest applications for both the public and private sectors, their proliferation has also introduced new risks to public safety, privacy, and homeland security. Malicious actors have increasingly used UAS domestically to commit crimes, conduct illegal surveillance and industrial espionage, and thwart law enforcement efforts at the local, state and federal level. This environment has given rise to the development of counter UAS (C-UAS) measures that are designed to intercept and mitigate rogue aircraft intent on engaging in illegal activities or causing harm to the public sector.

In August 2020, the FAA, DHS, DOJ and FCC jointly issued an advisory guidance to assist non-federal public and private entities interested in using technical tools, systems, and capabilities to detect and mitigate (UAS). The advisory is intended to provide an overview of potentially applicable federal laws and regulations, as well as some factors relevant to whether those laws may apply to particular actions or systems.

Congress has exclusively authorized the Departments of Defense, Energy, Justice, and Homeland Security to engage in limited UAS detection and mitigation activities to counter UAS presenting a credible threat to covered facilities or assets, notwithstanding certain otherwise potentially applicable federal criminal laws, including various laws relating to surveillance. See 10 U.S.C. § 130i, 50 U.S.C. § 2661, and 6 U.S.C. § 124n. Because no other entities have been granted that authority, it is important that state, local, Tribal and territorial and private sector entities without such statutory authority (including law enforcement organizations, governments, and owners and operators of critical infrastructure, stadiums, outdoor entertainment venues, airports, and other key sites) understand that federal laws may prevent, limit, or penalize the sale, possession, or use of UAS detection and mitigation capabilities. Capabilities for detecting and mitigating UAS may implicate federal criminal laws relating to surveillance, accessing or damaging computers, and damage to an aircraft.

As an example, systems that detect, monitor, or track UAS often rely on radiofrequency (RF)/radar, electro-optical (EO), infrared (IR), or acoustic capabilities, or some combination of these technologies that are able to detect the physical presence of UAS or signals sent to or from the UAS. In general, whether a detection or tracking system implicates federal criminal surveillance laws, such as the Pen/Trap Statute and the Wiretap Act, depends on whether it captures, records, decodes, or intercepts, in whole or in part, electronic communications transmitted to and from a UAS and/or controller, and the type of communications involved. Detection systems that emit electromagnetic waves or pulses of sound or light that are reflected off an object and back to the detection system – such as radar, EO/IR, and acoustic systems – are less likely to pose concerns under federal criminal surveillance statutes.

Solutions designed to mitigate or “take down” a UAS may use non-physical measures to disrupt or disable the aircraft, including RF, Wi-Fi, or Global Positioning System (GPS) jamming; spoofing; hacking techniques; and non-destructive directed energy weapons. Other mitigation solutions may employ a variety of measures capable of physically disrupting or disabling a UAS, including nets, projectiles, and lasers. The use of these types of solutions may implicate federal criminal prohibitions against, among other things, intercepting and interfering with communications, damaging a “protected computer,” and damaging an “aircraft.”

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