

“DRAFT”



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of Transportation**
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Advisory Circular

Subject: Exception for Limited Recreational
Operations of Unmanned Aircraft

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Change:

This advisory circular (AC) provides guidance to (1) persons flying unmanned aircraft (UA) without specific certification or operating authority from the Federal Aviation Administration (FAA) under the exception for limited recreational operations of UA established in Section 349 of Public Law (P.L.) [115-254](#), FAA Reauthorization Act of 2018, and codified in Title 49 of the United States Code (49 U.S.C.) § [44809](#); (2) persons using Unmanned Aircraft Systems (UAS) for educational purposes pursuant to Section 350 of the FAA Reauthorization Act of 2018; (3) persons requesting recognition as community-based organizations (CBO); (4) persons seeking the establishment of fixed recreational flying sites; and (5) persons organizing UA-only sanctioned events (such as UAS-only airshows). This AC does not change, create, or permit deviations from existing statutory or regulatory requirements.

The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law.

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CHAPTER 1. GENERAL

1.1 Purpose of This Advisory Circular (AC). The guidance provided in this AC supports the operation of limited recreational unmanned aircraft (UA) by explaining how a recreational flyer of UA may comply with the statutory requirements of Title 49 of the United States Code (49 U.S.C.) § [44809](#).

UA (commonly referred to as “drones”) are aircraft operated without the possibility of direct human intervention from within or on the aircraft. They include a variety of aircraft, such as remote controlled (RC) airplanes, RC helicopters, and quadcopters.

1.2 Audience. This AC provides information to:

1. Persons flying UA without specific certification or operating authority from the Federal Aviation Administration (FAA) under the exception for limited recreational operations of UA (the Exception) established in Section 349 of Public Law (P.L.) [115-254](#), FAA Reauthorization Act of 2018, and codified in 49 U.S.C. § 44809.
2. Persons flying UAS for educational purposes pursuant to Section 350 of the FAA Reauthorization Act of 2018, as amended by Section 10002 of the National Defense Authorization Act for Fiscal Year 2021.
3. Persons requesting recognition as community-based organizations (CBO).
4. Persons seeking the establishment of fixed recreational flying sites.
5. Persons organizing UA-only sanctioned events.

1.3 Where You Can Find This AC. You can find this AC on the FAA’s website at https://www.faa.gov/regulations_policies/advisory_circulars.

1.4 What This AC Cancels. AC 91-57B, Exception for Limited Recreational Operations of Unmanned Aircraft, dated May 31, 2019, is canceled.

1.5 Related References (current editions).

1. Title 49 U.S.C., Subtitle VII, Aviation Programs.
2. Title 49 U.S.C. § [44809](#), Exception for Limited Recreational Operations of Unmanned Aircraft.
3. P.L. [115-254](#), FAA Reauthorization Act of 2018.
4. Title 14 of the Code of Federal Regulations (14 CFR) Part [48](#), Registration and Marking Requirements for Small Unmanned Aircraft.
5. Title 14 CFR Part [107](#), Small Unmanned Aircraft Systems.
6. AC [107-2](#), Small Unmanned Aircraft Systems (Small UAS).
7. FAADroneZone: <https://faadronezone.faa.gov/>.
8. Unmanned Aircraft Systems (UAS) Facility Map: <https://udds-faa.opendata.arcgis.com/>.

9. Temporary Flight Restriction (TFR) Listing: <http://tfr.faa.gov/tfr2/list.html>.
10. Aeronautical Navigation Products (Charts):
https://www.faa.gov/air_traffic/flight_info/aeronav/.
11. Notices to Airmen (NOTAM): https://www.faa.gov/air_traffic/publications/notices/.
12. National Aviation Events Program: <https://www.faa.gov/about/initiatives/airshow/>.
13. UA Registration Guidance:
https://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/UA/.

1.6 Background. On October 5, 2018, the President signed into law the FAA Reauthorization Act of 2018. Section 349 of the FAA Reauthorization Act of 2018 repealed the special rule for model aircraft of Section 336 of P.L. [112-95](#), FAA Modernization and Reform Act of 2012. Section 349 was codified at 49 U.S.C. § 44809 and establishes an “exception for limited recreational operations of unmanned aircraft” (the “Exception”). It allows a person to fly a UA without specific certification or operating authority if the operation fulfills certain criteria. Title 49 U.S.C. § 44809(i) requires the FAA to publish an AC that identifies the criteria and process required for recognition of CBOs. Title 49 U.S.C. § 44809(h) defines a CBO as a membership-based nonprofit organization that is demonstrably dedicated to the furtherance of model aviation, along with fulfilling other criteria described below in Chapter [3](#), FAA-Recognized Community-Based Organizations.

1.7 Limited Recreational UA Operations.

- 1.7.1** Recreational fliers must ensure the operation of their UAS complies with all applicable statutory and regulatory requirements and is conducted in a safe and secure manner.
 - 1.7.2** The guidance provided in this AC supports the Exception by explaining how a recreational flyer complies with the statutory requirements of 49 U.S.C. § 44809. The operation of a UAS that fails to meet any or all of the statutory requirements of 49 U.S.C. § 44809, as further explained below in Chapter [2](#), Provisions and Limitations: Recreational Flyer, cannot be conducted under the Exception. Such operations would be operated in accordance with applicable FAA regulations (e.g., 14 CFR part 107 or [91](#)).
 - 1.7.3** The operation of a UAS can endanger other aircraft, people, or property when the flight is conducted in a careless or reckless manner or in a manner that creates an undue hazard to persons or property.
 - 1.7.4** Pursuant to 49 U.S.C. § 44809(e), the Administrator may pursue an enforcement action against a person operating a UAS under the Exception who endangers the safety of the National Airspace System (NAS) (e.g., careless or reckless operations; operations endangering persons or property; or operations that interfere with or fail to give the right-of-way to any manned aircraft, airborne vehicle, or launch and reentry vehicles).
- 1.8 AC Feedback Form.** For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form. The form includes instructions for submitting it to the FAA.

CHAPTER 2. PROVISIONS AND LIMITATIONS: RECREATIONAL FLYER

- 2.1 Recreational Flyer.** For the purposes of this AC, a recreational flyer is a person who flies a UA strictly for recreational purposes.
- 2.2 Statutory Criteria.** Recreational flyers must adhere to all of the statutory limitations included in 49 U.S.C. § [44809](#) to fly UA without specific certification or operating authority from the FAA. The statutory criteria include the following:
- 2.2.1 Section 44809(a)(1).** “The aircraft is flown strictly for recreational purposes.”
- 2.2.1.1** A person using a UAS for any purpose other than a recreational purpose must operate the UAS under applicable FAA regulations (e.g., 14 CFR part [107](#) or [91](#)).
- 2.2.1.2** According to Section 350(a) of the FAA Reauthorization Act of 2018, as amended by Section 10002 of the National Defense Authorization Act for the Fiscal Year 2021, a “recreational purpose” includes:
- 2.2.1.2.1** UAS operated by an institution of higher education for educational or research purposes;
- Note 1.** For purposes of Section 350, “institution of higher education” is defined at Section 101(a) of the Higher Education Act of 1965 (20 U.S.C. § [1001\(a\)](#)).
- Note 2.** According to Section 350(d)(2), the term “educational or research purposes,” with respect to the operation of a UAS by an institution of higher education, includes:
1. Instruction of students at the institution;
 2. Academic or research-related uses of UAS that have been approved by the institution, including Federal research;
 3. Activities undertaken by the institution as part of research projects, including research projects sponsored by the Federal Government; and
 4. Other academic activities approved by the institution.
- 2.2.1.2.2** UAS flown as part of an established Junior Reserve Officers’ Training Corps (JROTC) program for educational or research purposes; or
- 2.2.1.2.3** UAS flown as part of an educational program that is chartered by a recognized CBO, as defined in 49 U.S.C. § 44809(h).
- 2.2.2 Section 44809(a)(2).** “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 Federal Aviation Administration.” Recreational flyers should be able to explain to an FAA inspector or law enforcement officer which CBO’s

safety guidelines they are following during any given flight. However, an operator does not need to be a member of a CBO to fly under its safety guidelines. The FAA maintains a website of officially recognized CBOs at https://www.faa.gov/uas/recreational_fliers/.

- 2.2.3** Section 44809(a)(3). “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.” This means either the recreational flyer or a visual observer must be able to see the UA (with vision unaided by any device other than corrective lenses) throughout the entire flight to ensure it does not present a collision hazard to other manned or unmanned aircraft. The use of a visual observer is optional but it enables the recreational flyer to check instruments for extended periods.
- 2.2.3.1** Using a visual observer is necessary if the recreational flyer wants to fly the UA using a first person view (FPV) device. FPV devices are goggle-like viewing devices that the flyer wears allowing the flyer to see the flight from the perspective of a camera mounted on the UA. These FPV devices often provide a restricted view of the surrounding area.
- 2.2.3.2** If the recreational flyer uses the assistance of a visual observer for the operation, the visual observer must be co-located with the recreational flyer, which means that the visual observer must be standing close enough to the recreational flyer to be able to communicate directly with him or her without the use of technological assistance and without creating a distraction to the recreational flyer.
- 2.2.4** Section 44809(a)(4). “The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft.” The recreational flyer of a UA is responsible for knowing, at all times, the position of the aircraft in relation to other aircraft; for maintaining a safe distance from other aircraft; and for giving the right-of-way to all manned aircraft, airborne vehicles, and launch and reentry vehicles in all circumstances.
- 2.2.5** Section 44809(a)(5). “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.”
- 2.2.5.1** The NAS includes both controlled and uncontrolled airspace. Recreational flyers must obtain specific authorization from air traffic control (ATC) prior to flying UA in Class B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport. Recreational flyers do not need to obtain authorization prior to flying in uncontrolled (Class G) airspace; however, they are subject to the restrictions in 49 U.S.C. § 44809(a)(6) when flying in Class G.
- 2.2.5.2** Recreational flyers should use the FAA’s Low Altitude Authorization and Notification Capability (LAANC) system to obtain authorization to fly in controlled airspace. LAANC provides automated, near real-time authorization

for flight requests in most controlled airspace. Recreational flyers can use LAANC through third-party UAS Service Suppliers (USS). Additional information on LAANC is available on the FAA website at https://www.faa.gov/uas/programs_partnerships/data_exchange/.

Note: Recreational flyers should not contact ATC facilities to obtain airspace authorizations to fly in controlled airspace.

- 2.2.5.3** If a recreational flyer wants to fly near airports in Class B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport that are not serviced by LAANC, the recreational flyer should use the FAADroneZone website (<https://faadronezone.faa.gov/>) to request an airspace authorization. The recreational flyer should submit the request at least 90 days prior to the proposed flight to allow the FAA time to review the airspace and the justification provided for the flight.
- 2.2.5.4** Recreational flyers may choose to fly at fixed recreational flying sites, which are locations with standing airspace authorizations for recreational flying. Fixed recreational flying sites are posted on the FAA’s UAS Data Delivery System at <https://udds-faa.opendata.arcgis.com/>.
- 2.2.5.5** Recreational flyers should refer to the FAA’s interactive map on the UAS Data Delivery System to access all notifications regarding airspace restrictions and prohibitions. On the map, semi-transparent polygons depict airspace information. UAS flight restrictions are shown as red polygons. The FAA publishes a TFR listing at <http://tfr.faa.gov/tfr2/list.html>, and Aeronautical Navigation Products (Charts) at https://www.faa.gov/air_traffic/flight_info/aeronav/.
- 2.2.5.6** The B4UFLY app is a useful resource for recreational flyers to use prior to flying their UA (in both controlled and uncontrolled airspace). It provides critical airspace information to the user including the locations of airports, national parks, stadiums, special use airspace, restricted airspace, TFRs, and more. More information on B4UFLY is provided at https://www.faa.gov/uas/recreational_fliers/where_can_i_fly/b4ufly/.
- 2.2.6** Section 44809(a)(6). “In Class G 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.” “Ground level” begins at the Earth’s surface and does not include man-made structures. For example, a UAS engaged in recreational operations under 49 U.S.C. § 44809 may not be launched from a 10-story rooftop and fly up an additional 400 feet.
- 2.2.7** Section 44809(a)(7). “The operator has passed an aeronautical knowledge and safety test ... and maintains proof of test passage to be made available to the Administrator or law enforcement upon request.” The Recreational UAS Safety Test (TRUST) list of providers with links to their respective websites is provided at

https://www.faa.gov/uas/recreational_fliers/knowledge_test_updates/. Recreational flyers are expected to keep proof of test completion on their person for presentation to FAA personnel or law enforcement upon request. The proof of test completion may be in any format (e.g., paper or electronic) so long as it is readily accessible, legible, and can be presented to the Administrator or law enforcement upon request.

2.2.8 Section 44809(a)(8). “The aircraft is registered and marked [with its FAA-assigned registration number] and proof of registration is made available to the Administrator ... or law enforcement upon request.” Recreational flyers may register electronically through the FAADroneZone website at <https://faadronezone.faa.gov/> or through a paper mail-in system described at https://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/UA. In accordance with 14 CFR part 48, a recreational flyer may choose to register multiple UA used exclusively for limited recreational operations under a single registration number.

2.2.8.1 Recreational flyers must label their UA with the registration number for the aircraft in accordance with the requirements of 14 CFR part 48. Refer to part 48, § [48.205](#). The labeling must be legibly displayed on an external surface of the UA and must be affixed in a manner that ensures it will remain affixed for the duration of each flight.

2.2.8.2 To register a UA electronically, a recreational flyer will need an email address, credit or debit card, and a physical address and mailing address (if different from the registrant’s physical address). Registration applicants must be at least 13 years of age or older. If the applicant is less than 13 years of age, a person 13 years of age or older must register the UA.

CHAPTER 3. FAA-RECOGNIZED COMMUNITY-BASED ORGANIZATIONS

3.1 Community-Based Organization (CBO).

3.1.1 A CBO is defined in 49 U.S.C. § [44809\(h\)](#) as a membership-based association entity that meets all of the following criteria:

- “(1) is described in section 501(c)(3) of the Internal Revenue Code of 1986;
- (2) is exempt from tax under section 501(a) of the Internal Revenue Code of 1986;
- (3) the mission of which is demonstrably the furtherance of model aviation;
- (4) provides a comprehensive set of safety guidelines for all aspects of model aviation addressing the assembly and operation of model aircraft and that emphasize safe aeromodelling operations within the national airspace system and the protection and safety of individuals and property on the ground, and may provide a comprehensive set of safety rules and programming for the operation of unmanned aircraft that have the advanced flight capabilities enabling active, sustained, and controlled navigation of the aircraft beyond visual line of sight of the operator;
- (5) provides programming and support for any local charter organizations, affiliates, or clubs; and
- (6) provides assistance and support in the development and operation of locally designated model aircraft flying sites.”

3.2 Applying for CBO Recognition. An organization requesting CBO recognition must provide all the documentation and information necessary to demonstrate compliance with the statutory requirements of 49 U.S.C. § 44809(h). See paragraph 3.1.1 above for a listing of those requirements. See paragraph [3.4](#) for further guidance on the development of safety guidelines for CBO recognition. When submitting a CBO recognition application, the applicant should provide a point of contact for the CBO whom the FAA may contact to request additional information. The FAA estimates that it may take up to 90 days to process requests for recognition. All documentation and information should be submitted via the FAADroneZone website at <https://faadronezone.faa.gov/>.

3.2.1 The FAA will recognize as a CBO an applicant that submits documentation establishing compliance with 49 U.S.C. § 44809(h). The FAA will issue a letter of recognition to the CBO evidencing the organization’s status as a recognized CBO and maintain a list of recognized CBOs at https://www.faa.gov/uas/recreational_fliers/. If the FAA discovers that a recognized CBO no longer meets the requirements of 49 U.S.C. § 44809(h), the FAA will notify the CBO of the deficiency. If the CBO is unable to meet the requirements of § 44809(h) after such notification, the FAA has the authority to issue a letter of rescission and remove the CBO’s name from the website. Letters of CBO denial or rescission will include a notification of appeal rights available to the CBO.

3.3 Use of UAS for Educational Purposes.

3.3.1 Pursuant to Section 350 of the FAA Reauthorization Act of 2018, as amended by Section 10002 of the National Defense Authorization Act for the Fiscal Year 2021, a “recreational purpose” as defined in 49 U.S.C. § 44809(a)(1) includes:

3.3.1.1 UAS operated by an institution of higher education for educational or research purposes;

Note 1. Institutions of higher education are defined in Section 101(a) of the Higher Education Act of 1965 (20 U.S.C. § [1001\(a\)](#)).

Note 2. According to Section 350(d)(2), the term “educational or research purposes,” with respect to the operation of a UAS by an institution of higher education, includes:

1. Instruction of students at the institution;
2. Academic or research-related uses of UAS that have been approved by the institution, including Federal research;
3. Activities undertaken by the institution as part of research projects, including research projects sponsored by the Federal Government; and
4. Other academic activities approved by the institution.

3.3.1.2 UAS flown as part of an established JROTC program for educational or research purposes; or

3.3.1.3 UAS flown as part of an educational program that is chartered by a recognized CBO, as defined in 49 U.S.C. § 44809(h).

3.3.2 Institutions of higher education, the JROTC, or any other entity may choose to request recognition as CBO, as described in paragraph [3.2](#). As with any other FAA-recognized CBO, the entity would be expected to fly in accordance with its set of safety guidelines; to provide programming and support for any local charter organization, affiliates, or clubs; and to provide assistance and support in the development and operation of fixed flying sites.

3.4 Safety Guidelines.

3.4.1 An organization seeking recognition as a CBO is required under 49 U.S.C. § 44809(h)(4) to provide a set of safety guidelines for all aspects of model aviation addressing the assembly and operation of model aircraft, emphasizing safe aeromodelling operations within the NAS and the protection and safety of individuals and property on the ground. Thus, these organizations must prepare and keep current safety guidelines setting forth the organization’s procedures and policies for safe recreational operations of UAS. The guidelines should be readily available to all CBO members and FAA personnel upon request.

3.4.2 As a baseline for developing safety guidelines, a CBO’s guidelines should cover the basic requirements addressed in 49 U.S.C. § 44809(a). Those requirements are also listed in paragraph [2.2](#) and can be satisfied by meeting the guidelines detailed in paragraph 3.4.3 below.

3.4.3 A comprehensive set of safety guidelines may include topics that span beyond the limitations listed at 49 U.S.C. § 44809(a). The FAA encourages, but does not require, CBOs to develop comprehensive sets of safety guidelines to enhance the safety and security of all operations in the NAS and people and property on the ground. For example, a comprehensive set of safety guidelines should cover the measures and practices set forth in paragraph 3.4.3.1 below.

3.4.3.1 General Safety Measures and Practices.

3.4.3.1.1 Recommended Safety Procedures. The FAA recommends that comprehensive safety guidelines should include at least the following topics:

1. *Adequate protections and mitigations to prevent the UAS from causing harm to any person.* CBOs should consider addressing how they will mitigate hazards to avoid creating a risk to people who are not flying the aircraft. Safe practices should include: restrictions on flying over people, establishing buffer areas between an aircraft’s planned flightpath and any people in the area, and using restricted access areas for activities such as racing.
2. *Prohibition on modifying UAS and the carriage of hazardous materials or weapons.* CBOs should restrict their members from customizing or modifying the aircraft in such a way that creates a danger to the public or the NAS. CBOs should include a statement prohibiting the carriage of hazardous materials or requiring compliance with applicable laws and rules for the carriage of hazardous materials. Refer to 49 CFR parts [171](#) through [180](#). CBOs should also remind operators that Federal law prohibits equipping or arming any UAS with a dangerous weapon. See Section 363 of the FAA Reauthorization Act of 2018.
3. *Prohibition on engaging in careless or reckless behavior.* Guidelines should include information on avoiding careless or reckless behavior. The FAA recommends including information on the five hazardous attitudes in aeronautical decision making (refer to the [Pilot’s Handbook of Aeronautical Knowledge](#), Figure 2-4) and the “Dirty Dozen” human behaviors in aircraft maintenance (refer to <https://www.faasafety.gov/files/gslac/library/documents/2012/Nov/71574/DirtyDozenWeb3.pdf>).
4. *Preflight safety.* Information on preflight safety includes ensuring that the aircraft, recreational flyer, environment, and location are all appropriate for flight. To mitigate hazards, guidelines should include, as appropriate to the needs of the CBO, preflight assessments, flight planning and hazard identification techniques, and scanning techniques for aircraft and other people entering an area of operation. AC [107-2](#), Appendix E, Sample

Preflight Assessment and Inspection Checklist, provides a detailed example of a preflight checklist that CBOs may be able to adapt for their particular needs.

5. *In-flight safety.* Guidelines for in-flight safety should remind recreational flyers to assess the UA’s performance continually; monitor the strength of command and control links; watch for changing weather conditions; and watch for unexpected people or aircraft in the area of operation. Additionally, guidelines should instruct recreational flyers to be familiar with the automated features a UAS may have, and how the UAS would behave when those features are activated. For instance, a return-to-home protocol on a UAS could initiate a straight-line path toward the person flying it that could cross over people or possibly strike an obstacle such as a tree or power lines.
6. *Post-flight safety.* Guidelines for post-flight inspection should include encouraging recreational flyers to review the flight to determine whether any unplanned events occurred that presented a risk to the operation. Guidelines should also consider including recommendations for safely securing UA between flights to include removing batteries and protecting fragile parts from wear and tear per the manufacturer’s recommendations.

3.4.3.2 Regulatory Compliance Statement/Section.

- 3.4.3.2.1 Recommended Safety Statement.** To ensure CBO members are aware that they must comply with applicable laws and rules, in addition to the CBO’s safety guidelines, a CBO should include a statement similar to the following in any published guideline:

“Unmanned aircraft operations conducted in accordance with these safety guidelines must also comply, at all times, with all applicable Federal, State, and local laws.”

- 3.4.3.2.2 Airspace Restrictions and Prohibitions.** Safety guidelines should instruct members on how to become aware of all restricted and prohibited areas. The guidelines should also emphasize that Federal law requires each member to comply with all airspace restrictions and prohibitions applicable to the airspace in which the operation will occur.

3.4.3.3 First Person View (FPV) Procedures.

- 3.4.3.3.1 Recommended Safety Guidelines.** If a CBO supports FPV flying, comprehensive safety guidelines should include, at least, the following minimum guidance for operating UAS under FPV. These suggested guidelines are provided as examples to assist CBOs. CBOs should tailor the guidelines to fit their particular needs.

1. FPV flyers should be proficient in flying their UA without an FPV device prior to starting FPV flights.

2. FPV flyers should perform preflight inspections of the FPV device’s video, control, power source, and mechanical systems before each flight.
3. FPV operations require someone to be watching the UA at all times to ensure safe operations. This requires the use of a visual observer. Refer to 49 U.S.C. § 44809(a)(3).
4. Visual observers must be co-located with the FPV flyer and maintain visual line of sight (VLOS) with the aircraft at all times. Visual observation of the aircraft must be made with unaided vision, except in the case of vision that is corrected by the use of eyeglasses or contact lenses. Vision aids, such as binoculars, may be used only momentarily to enhance situational awareness. Visual observers must be in direct communication with the FPV flyer.
5. FPV flyers must have the capacity to see the aircraft at all times. Although a visual observer may be watching the UA, the FPV flyer must ensure that, throughout the operation of the UA, he or she would have the ability to immediately see the UA if the FPV device was removed.
6. The FPV flyer and visual observers should have preplanned communications and procedures to ensure the UA remains under control and within VLOS during any event when the safe operation of the aircraft is in question.
7. An FPV system should not be used when the weight of the UA exceeds 55 pounds.

3.4.3.4 Procedures for Small UAS Maintenance, Inspections, and Minimum Conditions for Safe Operation.

3.4.3.4.1 Recommended Safety Guidelines. The FAA suggests CBOs consider the following guidance and include it in their safety guidelines to ensure members are taking proper care of their UAS between flights:

1. Maintenance of the UAS and its components should be conducted in accordance with the manufacturer’s instructions.
2. Recreational flyers should routinely check for software updates and, if available, consider updating to the latest manufacturer upgrades prior to flight.
3. Flight-critical systems (e.g., rotors, battery, controls) should be checked for damage prior to flight and repaired or replaced if any damage is found.
4. Control links should be tested prior to flight and no flight should be attempted if command and control signal strength is anticipated to be inadequate for completion of the flight.
5. Servos, rotors, and other moving parts should move freely or respond to controls as expected.

6. All systems should have adequate energy supply to complete the planned flight safely.
7. Guidance systems and instruments (e.g., Global Positioning System (GPS), compass, altimeter) should be accurate and performing as expected.
8. Automated features (e.g., return to home, autoland) should function correctly and as expected.
9. All external loads (e.g., cameras, guidance system) should be attached securely to the UA without negatively affecting the weight and balance of the aircraft.
10. The expected flight path should be free of other people, aircraft, and obstacles.

Note: When addressing maintenance and inspections in comprehensive safety guidelines, CBOs should build on rather than replace the recommendations of the manufacturer. The FAA strongly discourages CBOs from establishing any guidelines that would relieve members from having to comply with any manufacturer-recommended maintenance or inspection. For further assistance, a sample inspection chart can be found in AC 107-2, Appendix C, Small UAS Maintenance and Inspection Best Practices.

3.4.3.5 Procedures for Night Flight. Flyers must maintain VLOS throughout the flight when flying at night. To achieve this, the FAA recommends the CBO develop comprehensive safety guidelines that include a requirement for CBO members to equip UA with lights that can be seen from 3 statute miles away and to arrange the UA lights in such a way that allows recreational flyers to determine the orientation of the aircraft. In addition to UA-lighting guidelines for flying at night in unlit or low-light areas, the safety guidelines should also permit members to conduct recreational flights at night without requiring UA lighting in areas that are sufficiently illuminated so that members can maintain VLOS of the aircraft throughout the flight and identify any potential ground or airborne hazards.

3.4.3.6 Procedures for Determining a Recreational Flyer’s Medical Condition.

3.4.3.6.1 Recommended Safety Standards. Comprehensive safety guidelines should include certain minimum standards for CBO members to be fit for flight prior to conducting any limited recreational aircraft operation. For example, CBOs should prohibit any person from flying a UA, serving as a visual observer, or participating in the operation of a UAS if the person knows, or has reason to know, that they have a physical or mental condition that would interfere with the safe operation of the UAS.

3.4.3.6.2 Alcohol or Prescription Drug Use. Comprehensive safety guidelines should prohibit the recreational flyer from using alcohol or prescription drugs in a manner that would interfere with the recreational flyer’s ability to operate the UAS safely.

3.4.3.6.3 IMSAFE. The FAA also recommends the inclusion of the IMSAFE checklist for recreational flyers:

- **Illness**—Is the recreational flyer suffering from any illness or symptoms that might affect the operation of the UAS?
- **Medication**—Is the recreational flyer taking any drugs (prescription or otherwise) that might affect the operation of the UAS?
- **Stress**—Is the recreational flyer experiencing any psychological or emotional factors which might affect his or her performance?
- **Alcohol**—Has the recreational flyer been drinking within the last 8 hours? Depending on the amount of alcohol consumed, full metabolization can take up to 24 hours. Flyers should be aware that as little as one ounce of liquor, one bottle of beer, or four ounces of wine can impair flying skills.
- **Fatigue**—Has the recreational flyer received sufficient sleep and adequate rest in the recent past?
- **Emotion**—Is the recreational flyer emotionally upset?

3.4.3.7 Emergency Procedures.

3.4.3.7.1 Recommended Safety Standards. An emergency is the actual or impending loss of control of a UAS or operational constraint. The FAA recommends that comprehensive safety guidelines address potential in-flight emergencies involving recreational flying, including, at a minimum:

1. Sustained loss, weak, or intermittent radio signals or control signals experiencing interference.
2. Flight instruments losing performance or displaying incorrect information.
3. Unanticipated people or aircraft (manned or unmanned) entering the area of operation.
4. A UA not responding predictably to control inputs.
5. Parts or attachments on the UA becoming loose or breaking off.
6. Electrical arcing or battery/component fires.
7. Unexpected weather (e.g., high winds, sudden storms, fog).

3.4.3.7.2 Responsibility for Safety. Procedures included in comprehensive safety guidelines should emphasize that the recreational flyer is responsible for the safety of the flight during emergencies. While CBOs may encourage use and

familiarization with common automated recovery features (e.g., return to home, autoland), such features may not be sufficient to address an emergency. While conducting a hazard identification assessment or risk assessment is not necessary for developing acceptable safety guidelines, some CBOs may find it helpful to consult the recommended methods for assessing potential hazards and planning appropriate emergency procedures found in AC 107-2, Appendix A, Risk Assessment Tools.

3.4.3.8 Safety Event Reporting Procedures. To support and promote a safety culture among all CBOs and recreational flyers, the FAA recommends, but does not require, that comprehensive safety guidelines address safety events. CBOs should consider including a safety event reporting requirement for recreational flyers. Depending on the size and mission of the CBO, gathering such data may provide substantial benefits to CBOs, as they would better understand the trends and risks posed by a UAS and could use the information to devise appropriate mitigations. Suggested criteria for triggering safety event reporting includes:

1. Injuries to human beings.
2. Property damage in excess of \$500.
3. Loss of control of a UAS due to:
 - Sustained or unexpected loss of command and control link resulting in an emergent situation.
 - Loss of navigation function.
 - Ground Control Station (GCS) malfunctions.
 - Functional failures of the UA.
 - Structural failures of the UA.
 - Recreational flyer errors.
 - Power failures or loss of propulsion.

3.4.3.8.1 A CBO that chooses to incorporate a safety event reporting requirement in its comprehensive safety guidelines should consider carefully which information should be included in a report of a safety event. For example, the report should consider including the following information:

1. Make and model of the UAS.
2. Location of the accident.
3. Date of the accident.
4. Time of the accident.
5. Number of person(s) injured and extent of injury, if any or known.

6. Property damaged and extent of damage, if any or known.
7. Description of what happened.

3.4.3.8.2 While it is not required, a CBO that elects to gather safety event reports is strongly encouraged to submit the data voluntarily to the UAS Safety Team at <https://unmannedaircraftsafetyteam.org/report/>. CBOs should also inform members that additional reporting requirements may apply (e.g., National Transportation Safety Board (NTSB)). Refer to 49 CFR part [830](#).

3.4.3.9 Procedures or Specific Safety Measures for Certain UAS Operations. In addition to general provisions addressed throughout this AC, comprehensive safety guidelines should include safety procedures, standards, limitations, and guidelines for specific types of operations conducted by recreational flyers, such as, but not limited to:

1. Large (>55 pounds) aircraft operations.
2. Turbine engine operations.
3. Combat simulations.
4. Racing operations.
5. Aerobatics.
6. Training.
7. Research conducted by institutions of higher education.

3.5 Requests and Supporting Documentation for Fixed Flying Sites.

3.5.1 As stated in paragraph [3.1](#), a CBO “provides assistance and support in the development and operation of locally designated model aircraft flying sites.” For ease of reference, this AC uses the term “fixed flying site” or “fixed site” to describe such flying sites.

3.5.2 A CBO does not have to request the establishment of a fixed flying site as part of the CBO recognition process. However, a CBO may submit a request to the FAA for the authorization of a fixed flying site. At a fixed flying site, CBO members have the opportunity to conduct recreational flights in controlled airspace without additional airspace authorizations or operate UA weighing more than 55 pounds.

Note: FAA-authorized fixed sites are the only means by which recreational flyers can fly UA that weigh more than 55 pounds, conduct recreational flying in uncontrolled airspace higher than 400 feet above ground level (AGL), or conduct recreational flying in controlled airspace higher than UAS Facility Map altitude limits.

3.5.3 Interested parties may request authorization for a fixed flying site by submitting their request through the FAADroneZone website at <https://faadronezone.faa.gov/>. Once the

FAA issues a fixed flying site authorization, the fixed flying site will be charted on the UAS Data Delivery System.

3.5.4 Any request submitted to the FAA for the authorization of a fixed flying site should include the following information:

1. Latitudes and longitudes that define the boundaries of the proposed site. Geographic Information System (GIS) shapefiles of the site are preferred if the requester has the ability to create them.
2. Maximum altitudes requested for operations at the site.
3. Hours of operation at the site.
4. Description of any unique operations, if applicable, including:
 - Large (>55 pounds) model aircraft operations.
 - Turbine engine operations.
 - Combat simulations.
 - Racing operations.
 - Aerobatics.

Note: A request submitted to the FAA to allow unique operations at a fixed flying site should indicate clearly which unique operations the requester believes the FAA should consider as part of the authorization and be accompanied by information such as additional safety procedures. These safety procedures should address the unique operations and how they will be enforced at the fixed flying site. The FAA will review the submitted documents and determine whether it is appropriate to issue an authorization for the fixed flying site. If the FAA needs additional information, the FAA will contact the requester.

CHAPTER 4. SANCTIONED EVENTS

4.1 Airspace Authorization(s) for Sanctioned Event(s).

- 4.1.1** If a planned, UAS-only event will occur in Class B, C, D, or E2 airspace or in uncontrolled airspace above 400 feet AGL, the organizer of the event must request an authorization for the time and place of the event. Refer to 49 U.S.C. §§ [44809\(a\)\(5\)](#) and (6). Requesters should submit all of the site-specific information in paragraph [3.5](#) and the dates and duration of the event via the FAADroneZone website (<https://faadronezone.faa.gov/>) at least 90 days in advance of the event for authorization.
- 4.1.2** UAS-only aviation events conducted under the Exception, such as drone races or aerobatic displays, must adhere to CBO safety guidelines developed in coordination with the FAA or approved by the FAA (in the case of operations involving UA weighing more than 55 pounds). Refer to 49 U.S.C. § 44809(a)(2). Guidelines for any public display of UA flying should include procedures to protect non-participants from all UA participating in the event and should identify persons responsible (e.g., safety officer, contest director) for ensuring the safety of the operations conducted onsite.