UNMANNED AERIAL SYSTEM USE

Unmanned Aircraft Systems (UASs) come in a variety of shapes and sizes and serve diverse purposes. Also known as drones, unmanned vehicle systems (UVSs) and unmanned aerial vehicles (UAVs), these devices have become increasingly popular, but have also raised privacy, security and safety concerns. To address these concerns and ensure compliance with Federal Aviation Administration (FAA) regulations, appropriate guidelines must be implemented and followed. The information provided below explains the requirements for UAS operations at Yale University. All UAS activity requires prior review and authorization by Environmental Health and Safety (EHS) and the Office of Risk Management (ORM). All UAS use on the Yale University campus must be in furtherance of University activities. Purely personal use of any UAS is prohibited.

I. Definitions

- **Pilot in Command:** The person who has final authority and responsibility for the operation and safety of the UAS flight.
- **Operator:** The person manipulating the flight controls of the UAS. In many, but not all instances, the operator will be the Pilot in Command.
- **Unmanned Aircraft:** Any contrivance invented, used or designed to navigate or fly in the air that is operated without the possibility of direct human intervention from within or on the aircraft.
- **Unmanned Aircraft System (UAS):** An Unmanned Aircraft and associated elements (including communication links and the components that control the Unmanned Aircraft) that are required for the Pilot in Command to operate safely and efficiently.
- **University Property:** Buildings or grounds owned, leased, operated, controlled or managed by Yale University.
- **Safety Plan:** A location- and UAS-specific document created by the requestor, in cooperation with EHS, which includes details of and requirements for the flight.
- **Hobby/Recreational Flights:** Hobby is "a pursuit outside of one's regular occupation engaged in especially for relaxation." Recreation is "refreshment of strength and spirits after work; a means of refreshment or diversion." See Section IV below for more information on Hobby/Recreational Flights.
- **Educational/Research Flights:** Educational or research flights involve instruction of Yale students and/or are connected to academic or research activities approved by Yale.
- **Commercial Flights:** Flights performed for business, work or compensation. This includes flights in connection with or in support of University business, including, but not limited to, flights to gather images and/or visual footage for use on Yale websites and/or in Yale publications, and any flights for which compensation is given or received, such as arrangements with third-party contractors or vendors.
- **Outdoor Flights:** Any flights that take place beyond the confines of a structure with four walls and a roof.

II. Scope

This procedure sets forth design, approval and operational requirements for the use of an Unmanned Aircraft System at Yale University. This procedure applies to:

- The operation by any person of a UAS on University property.

- All Yale staff, faculty and students operating UASs at any location (including international) as part of University activities or within the scope of their employment.
- The purchase of a UAS (or parts to assemble an Unmanned Aircraft System) with Yale funds, including Yale-administered grant funds.
- The hiring of, or contracting for, UAS services by any Yale department or unit.

III. Acquisition and Fabrication of UASs

Unmanned Aircraft Systems are restricted items under Yale's Policy on the Purchase of Restricted Items. In accordance with that Policy, the purchase of a UAS or parts to assemble a UAS requires pre-approval from EHS. The following design requirements apply to all acquisitions and fabrications of UASs:

- The weight of the aircraft (including fuel and payload) may not exceed 10lbs at the time of takeoff. Upon request, EHS may grant permission for an aircraft to exceed the 10lb limit, but in no instance may the aircraft (including fuel and payload) weigh more than 55lbs at the time of takeoff.
- Any object attached to or carried by the UAS must be secure and must not adversely affect the flight characteristics or controllability of the aircraft.
- Only radio-controlled frequencies permitted by the Federal Communications Commission (FCC) may be used.
- Unless EHS has given written approval, the aircraft should not have metal-blade propellers.
- Any aircraft that weighs in excess of 0.55lbs must register with the FAA if it will be flown outdoors. The FAA registration number must be readily and easily visible on the exterior of the drone.
- The make, model and FAA registration number of a Yale-purchased or Yale-owned drone must be provided to EHS.

IV. Classification of UAS Operations

UAS operations generally fall into one of three categories: (1) Hobby/Recreational Flights; (2) Commercial Flights; or (3) Educational/Research Flights. Hobby/Recreational Flights, as defined above, are prohibited at Yale University. Commercial Flights must fly under 14 C.F.R. Part 107 rules. Educational/Research Flights may fly under the Exception for Limited Recreational Operations of Unmanned Aircraft, which requires TRUST certification. Alternatively, they may fly under Part 107, which applies to Commercial Flights.

V. Pilot in Command Responsibilities and Qualifications

For Educational/Research Flights, the operator must possess or be directly supervised by someone who holds a valid Part 107 Remote Pilot in Command certificate or has passed The Recreational UAS Safety Test (TRUST) and possesses documented evidence of completion. All operators must be at least 16 years of age.

The Pilot in Command is responsible for the following:

- Performing a pre-flight inspection before each flight to determine whether the UAS is in a safe condition for operation. The pre-flight inspection should be conducted in accordance with the FAA's *sUAS Maintenance and Inspection Best Practices* and with the manufacturer's inspection procedures when available.
- Verifying that all necessary approvals and certificates are obtained prior to flight.

- Ensuring that the flight is conducted in accordance with any applicable flight restrictions described in Sections VI and VII of this policy.
- Informing all persons directly participating in the flight about emergency procedures, potential hazards and operating conditions.
- Reporting all incidents and near misses to EHS at 203-785-3550 or ehs@yale.edu within 24 hours.
- Ceasing operations upon request from an appropriate official determining that privacy, security, safety or other concerns related to university operations require cessation of the flight. Appropriate officials include representatives of Yale Police, Public Safety, New Haven Police/Fire and EHS.

VI. Procedure for Flight Approval

Irrespective of flight location or purpose, all UAS operations (including indoor operations) must obtain preflight approval from EHS and ORM. To seek approval, the requestor should submit a Drone Flight Request to EHS (drones@yale.edu) at least 10 days prior to the anticipated flight date or start of UAS operations. The form should include the following information:

- The proposed flight date(s), time(s) and location(s).
- The purpose(s) of the flight(s).
- A description of the UAS.
- Proof of operator's qualifications and a copy of the Pilot in Command's certificate, if applicable.
- Source and nature of funding.
- Contact information.
- Description of any video, images, footage or other data that the operator proposes to collect.
- For flights not performed by someone who is not a Yale staff member, faculty or student, acting in that capacity, a certificate of liability insurance with at least $2M drone coverage and Yale University as additional insured.
- A completed Drone Awareness Application Form for outdoor flights in New Haven.

In reviewing a request, EHS and ORM will consider, among other factors, the safety of persons and property, federal and local laws and privacy expectations. EHS may require additional approvals from Yale Police, Yale Public Safety, West Campus Administration, Facilities, local police and/or affected property owners. A Safety Plan may also be required for flights that have an increased risk of damage to property or persons, such as indoor flights and flights in close proximity to power lines.

Staff, faculty or departments wishing to hire a vendor to conduct UAS operations and any third parties wishing to fly a UAS on Yale property must have in place prior to flight a written agreement that contains appropriate insurance and indemnification provisions approved by the Office of the General Counsel and ORM. This is often through an approved standard agreement or purchase order.

VII. Flight Restrictions

All UAS operations must comply with the following operational restrictions and conditions:

A. All Flights

- Must not fly in a reckless or careless manner or in a manner that may endanger persons or property.
- Must not fly greater than 3mph.
- Must not interfere with ground vehicles or traffic.
- Must not interfere with and must always yield the right of way to manned aircraft.
- Must not fly in adverse weather conditions such as high winds.

- Must not fly under the influence of alcohol or drugs.
- Must not fly within a three-mile radius of or directly over occupied athletic facilities and stadiums without written FAA authorization.
- Collection of data, images or footage of persons or facilities requires prior consent of the subjects, property owner or occupants.
- Must respect the privacy of the public, the Yale community and patients at clinics and hospital areas.
- International flights must comply with local law as well as (to the extent they do not conflict with local law) the restrictions above and Part 107 rules.
- Operations at the Yale Health Center, Yale-New Haven Hospital and the Yale School of Medicine campuses are prohibited unless specific permission is obtained from an appropriate representative from each facility through EHS.
- Flights in airspace other than Class G airspace, including flights within 5 miles of Tweed-New Haven Airport, require prior authorization from the FAA. Pilots operating under the Small UAS Rule Part 107 or under the Exception for Limited Recreational Operations may obtain authorization through one of the FAA-Approved Low Altitude Authorization and Notification Capability (LAANC) UAS Service Suppliers.
- Flights conducted by a Yale staff member, faculty or student, acting in that capacity, must be conducted using a Yale owned UAS (use of personally owned drones is not permitted).

B. Hobby/Recreational Flights: Hobby/Recreational Flight operations at Yale University are prohibited.

C. Educational/Research Flights: In addition to the flight restrictions listed in Part A, all outdoor Educational/ Research flights must comply with the following rules:

- Fly in accordance with Part 107 rules (Part D below) or under the Exception for Limited Recreational Operations of Unmanned Aircraft, which requires TRUST certification. Flights under the exception must adhere to the following:
  - Pilots must pass an FAA-recognized aeronautical knowledge and safety test and provide evidence of completion. This may include The Recreational UAS Safety Test (TRUST).
  - The aircraft must remain within the visual line of sight of the operator.
  - The aircraft must remain below 400 ft above ground level.
  - Must not fly directly over people.
  - Fly in accordance with a community-based set of safety guidelines, such as the Academy of Model Aeronautics National Model Aircraft Safety Code.

D. Commercial Flights: In addition to the flight restrictions listed in Part A, all outdoor flight operations performed under Part 107 must comply with all current FAA requirements, which include, but are not limited to, the following rules:

- Must hold and provide evidence of being a currently certified operator. Certificate holders must complete an online recurrent training every 24 calendar months to maintain aeronautical knowledge recency.
- Must remain below 400 ft above ground level.*
- Must not fly directly over people unless those persons are in a covered structure or stationary vehicle.*
- Fly only during daylight hours.*
- Minimum visibility of 3 miles.*
- Minimum distance of 500 ft below and 2,000 ft horizontally from clouds.*

*For flights conducted under Part 107, the FAA may issue a waiver or authorization to allow an operator to deviate from one or more of the restrictions marked with an asterisk (*). If the FAA grants the petitioner's request for a waiver, the authorization may include additional or special provisions designed to ensure an equivalent level of safety. The written authorization must be provided to EHS and included in the Drone Flight Request.