

FAA Unmanned Aircraft Systems (UAS)

Overview: Proposed Small UAS Rule

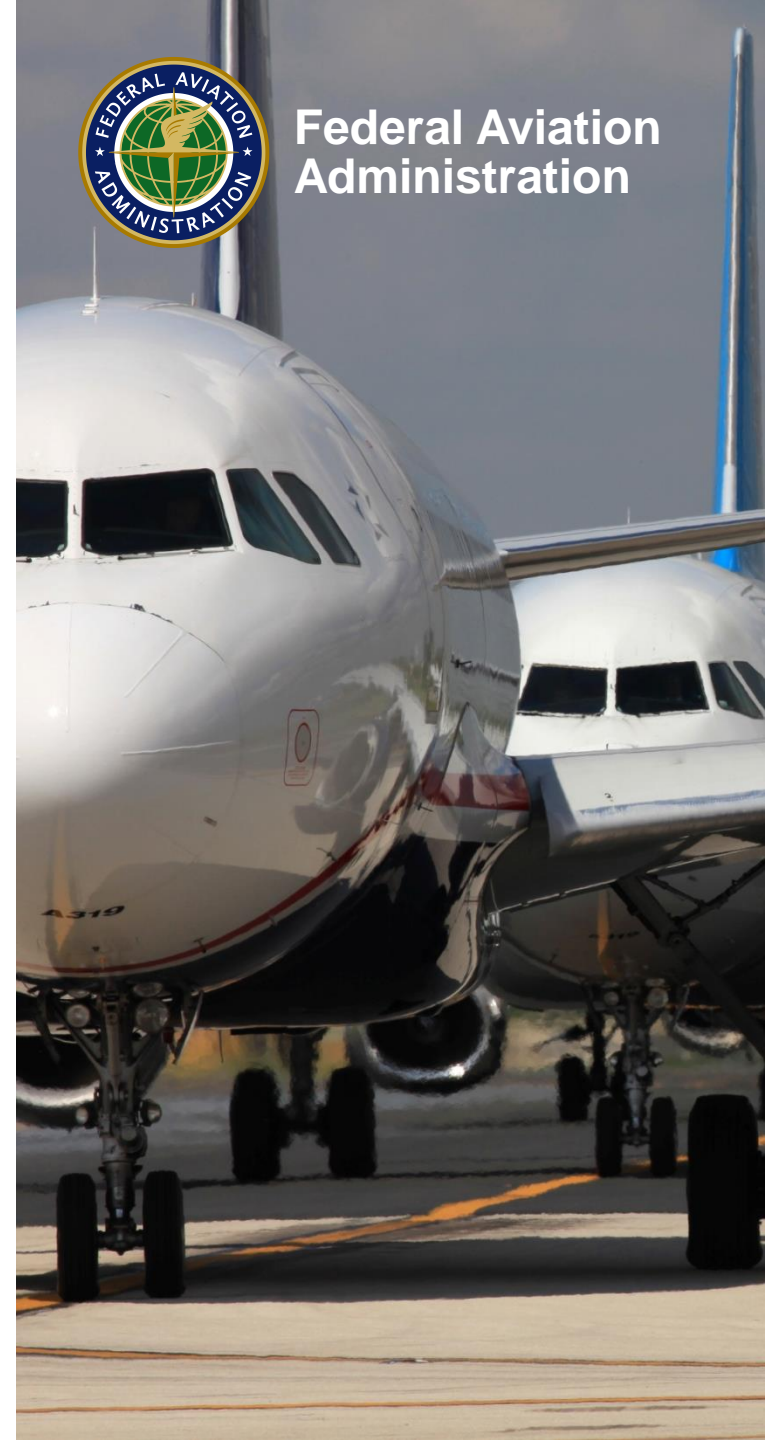
Presented To: Small Business Aviation Safety Roundtable

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Date: April 9, 2015



Federal Aviation Administration



UAS-Related FAA Reauthorization Provisions and FAA Rulemaking

- FAA Modernization and Reform Act of 2012 (P.L. 112-95) directed the agency to take steps toward integrating unmanned aircraft systems (UAS) into the National Airspace System (NAS).
- The Act had specific provisions to address rulemaking for Small UAS.
- The FAA is proposing to add a new part 107 to Title 14 Code of Federal Regulations (14 CFR) to allow for routine civil operation of small UAS in the NAS and to provide safety rules for those operations.



Proposed Small UAS Rule

- **Currently in DRAFT**

- Notice of Proposed Rulemaking (NPRM) Published to Federal Register on February 23, 2015
- Public comment period underway; concludes on April 24, 2015

- **Provisions included in NPRM**

- Until final rule is issued, all civil non-recreational/hobby operations (i.e. other than model aircraft) must be authorized on a case-by-case basis, either through airworthiness certification or granting of “Section 333” exemption



Operator Certification and Responsibilities

- **Pilots of a small UAS would be considered “operators”**
- **Operators would be required to:**
 - Pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center
 - Be vetted by the Transportation Security Administration
 - Obtain an unmanned aircraft operator certificate with a small UAS rating
 - Like existing pilot airman certificates, never expires
 - Pass a recurrent aeronautical knowledge test every 24 months



Operator Certification and Responsibilities (continued)

- **Operators would be required to:**
 - Be at least 17 years old
 - Make available to the FAA, upon request, the small UAS for inspection or testing, and any associated documents/records required to be kept under the proposed rule
 - Conduct a preflight inspection, to include specific aircraft and control station system checks, to ensure the small UAS is safe for operation



Operational Requirements

- **Visual line of sight (VLOS) only**
 - Unmanned aircraft must remain within VLOS of the operator or visual observer
- **At all times the small unmanned aircraft must remain close enough to the operator for the operator to be capable of seeing the aircraft with vision unaided by any device other than corrective lenses**
- **May use visual observer, but not required**
- **First-person view camera cannot satisfy “see-and-avoid” requirement but can be used as long as requirement is satisfied in other ways**



Operational Requirements

- **No person may act as an operator or visual observer for more than one unmanned aircraft operation at one time**
- **A person may not operate a small unmanned aircraft if he or she knows or has reason to know of any physical or mental condition that would interfere with the safe operation of a small UAS**
- **Each small unmanned aircraft must be registered with the FAA and must visibly display its FAA-issued registration number (N-number) and other identification data on the aircraft**



Operational Limitations

- **Unmanned aircraft must weigh less than 55 lbs. (25 kg.)**
- **Maximum airspeed of 100 mph (87 knots)**
- **Maximum altitude of 500 feet above ground level**
- **Minimum weather visibility of three miles from control station**
- **Daylight-only operations**
 - Official sunrise to official sunset, local time
- **Small unmanned aircraft may not operate over any persons not directly involved in the operation**



Operational Limitations (continued)

- **No operations are allowed in Class A (18,000 feet and above) airspace**
- **Operations in Class B, C, D and E airspace are allowed with the required ATC permission**
- **Operations in Class G airspace are allowed without ATC permission**
- **Must yield right-of-way to other aircraft, manned or unmanned**
- **Cannot be operated from a moving aircraft or ground vehicle. Can be operated from moving watercraft.**
- **No careless or reckless operations**



Aircraft Requirements

- **FAA airworthiness not required**
 - Operator must maintain a small UAS in a condition for safe operation, and
 - Prior to flight, operator must inspect the UAS to ensure it is in a condition for safe operation
- **Aircraft registration required**
 - Same requirements that apply to all aircraft
- **Aircraft markings required**
 - Same requirements that apply to all aircraft
 - If aircraft is too small to display markings in standard size, markings must be made as large as practicable



Rulemaking: Small UAS NPRM

Examples of operations that would be allowed under NPRM:

- Commercial aerial photography;
- Crop monitoring/inspection;
- Antenna inspections;
- Aiding certain rescue operations such as locating snow avalanche victims;
- Bridge inspections;
- Real estate listings;
- Public aircraft operating as civil aircraft (no COA); and
- Wildlife nesting area evaluations.



Model Aircraft

Section 336 of Public Law 112-95 prohibits the FAA from issuing rules “with regard to” model aircraft that meet all of the criteria specified in that section. The criteria of section 336 are:

- The aircraft is flown strictly for hobby or recreational use;
- The aircraft is flown within visual line of sight;
- The aircraft is capable of sustained flight in the atmosphere;
- The aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization;
- The aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization;
- The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; and
- When flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport) with prior notice of the operation.



Model Aircraft (cont'd)

- **Proposed part 107 will not apply to model aircraft meeting the criteria of section 336.**
- **However, section 336 allows the FAA to enforce against model aircraft that endanger the safety of the National Airspace System. Accordingly, the NPRM would:**
 - Codify the model aircraft definition of section 336 in a new subpart in 14 C.F.R. part 101; and
 - Prohibit model aircraft operators from endangering the safety of the NAS.



Other NPRM Content

- **Preamble includes discussion about a micro UAS option that includes the following constraints:**
 - Lower weight (max 2kg, 4.4 pounds),
 - Frangible construction,
 - Lower speed (max 30 knots),
 - Lower altitude (max 400 feet AGL),
 - Manual control over flight path,
 - Distance of at least 5 nautical miles from airport, and
 - Operations in Class G airspace.



Other NPRM Content (cont'd)

- **In exchange for complying with the constraints, micro UAS operators would be able to:**
 - Fly directly over people not involved with the operation; and
 - Obtain a UAS operator certificate without taking a UAS operator knowledge test by self-certifying that they have the requisite aeronautical knowledge to operate a micro UAS safely.



Rulemaking : Economics – Start Up Costs Per Applicant

- Each operator and owner would be a new entrant into the commercial small UAS market and would incur the following estimated startup and recurrent direct compliance costs in current dollars:

Type of Cost	Cost	
	Initial	Recurrent
Applicant/small UAS operator		
Travel Expense	\$9	\$9
Knowledge Test Fees	\$150	\$150
Positive Identification of the Applicant Fee	\$50	-
Total applicant/small UAS operator	\$209	\$159
Owner		
Small UAS Registration Fee	\$5	\$5
Total Owner	\$5	\$5
Total	\$214	\$164



Economics: Total and Present Value Cost Summary

- The proposed small UAS rulemaking's total and present value costs by category for five-year analysis interval:

Type of Cost	Total Costs (000)	7 % P.V. (000)
Applicant/small UAS operator		
Travel Expense	\$151.7	\$125.9
Knowledge Test Fees	\$2,548.6	\$2,114.2
Positive Identification of the Applicant Fee	\$434.3	\$383.7
Owner		
Small UAS Registration Fee	\$85.7	\$70.0
Time Resource Opportunity Costs		
Applicants Travel Time	\$296.1	\$245.3
Knowledge Test Application	\$108.9	\$90.2
Physical Capability Certification	\$20.0	\$17.7
Knowledge Test Time	\$1,307.1	\$1,082.9
Small UAS Registration Form	\$220.5	\$179.7
Change of Name or Address Form	\$14.9	\$12.3
Knowledge Test Report	\$154.9	\$128.5
Pre-flight Inspection	Not quantified	
Accident Reporting	Minimal Costs	
Government Costs		
TSA Security Vetting	\$1,026.5	\$906.9
FAA - sUAS Operating Certificate	\$39.6	\$35.0
FAA - Registration	\$394.3	\$321.8
Total Costs	\$6,803.1	\$5,714.0

Numbers may not add due to rounding

