

ACRP Problem Statement 17-10-09**Recommended Allocation:** \$350,000*Airports and UAS: Managing UAS Operations in the Airport Vicinity***ACRP Staff Comments**

This is one of four UAS-themed problem statements developed as a result of the ACRP UAS Panel Workshop. (The others are 17-01-21, 17-01-23, and 17-03-09.) Funding the four problem statements in toto would maximize their benefit to the airport industry.

TRB Aviation Committee Comments

AIRFIELD AND AIRSPACE CAPACITY AND DELAY: Support. Recommend increasing funding to \$400,000, reflecting the addition of elements from 17-10-08 and 17-10-02. Strongly recommend building on ongoing FAA research into UAS detection and deterrence systems (Pathfinder 4) that the FAA Tech Center is currently leading.

Review Panel Recommendation and Comments

Recommended. There is value in the proposed research for airports.

AOC Disposition

This problem statement received an average rating of 4.0 points out of a possible 5 points among voting AOC members. There was significant discussion regarding the UAS-related problem statements, both those developed as part of ACRP's UAS workshop and those submitted from other authors. The AOC decided to approve \$1.0 million for UAS-related research for FY 2017 and directed staff to ensure specific research projects would be both prioritized in terms of timing and importance and also coordinated.

Airport Cooperative Research Program (ACRP)

Problem Statement

FY 2017

1. Problem Statement Title

Airports and UAS: Managing UAS Operations in the Airport Vicinity

2. Background

The explosive growth of Unmanned Aircraft Systems (UAS) over the last 18 months, combined with a rapidly changing regulatory and procedural environment, complicated by 4 different communities of users, challenges airport operators with addressing the myriad issues associated with UAS use around and near airports. ACRP Report 144, Unmanned Aircraft Systems (UAS) at Airports: A Primer, provided an initial perspective to educate airport operators.

UAS applications are rapidly growing in demand for services and aeronautical use applications. With UAS aircraft of all types of sizes, purpose and use, the potential positive economic impact and how an airport may incorporate UAS operations around their facility has unlimited opportunities. Under the Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 (FMRA)ⁱ the FAA is confronted with integrating all types of UAS operations into the National Airspace System (NAS). While the Small Unmanned Aircraft Systems (sUAS) proposed ruleⁱⁱ (NPRM) has determined that sUAS may be operated safely in the NAS under limited circumstances, including the 333 exemption processⁱⁱⁱ, the use of large UAS in the commercial sector is just beginning.

At the same time, airport operators must balance these new interests with providing existing users, tenants, and customers with a safe, secure, predictable operating environment that contributes to sustaining situational awareness.

3. Objective

The objective of this research is to develop a toolkit and educate airport operators on managing *non-airport-sponsored* UAS activities in the vicinity of the airport. The primary target of this report will be the estimated 3,500 federally obligated airport facilities as identified by National Plan of Integrated Airport System (NPIAS).^{iv} The report should reference airports of all types and categories including Primary and Nonprimary facilities, Large, Medium, Small and

Nonhub airports in addition to Local, Regional and Basic facilities as defined by the FAA Asset report^v. The elements of this toolkit cover:

- Responding to requests or notifications for UAS operations in the airport's area of interest^{vi}.
- Integration of airspace (e.g., zoning, operational).
 - Identifying low, medium, and high-risk areas in the airport vicinity.
 - Creating UAS corridors or other means of segregating traffic.
- Developing process for notifications and letters of agreement.
 - How an airport "acknowledges notification" or communicates that the "activity is not advised", or can say "yes" or "no" or "with constraints".
 - How an airport advises municipalities and police.

4. Proposed Tasks

This project will produce a guidance document and/or tools that airport sponsors and airport operators may reference when considering UAS operations in the airport's area of interest, and what factors should be considered along with responsibilities and authorities that currently are reflected in regulations/procedures. Additionally, the report should reference variations for public aircraft operating under a Certificate of Waiver or Authorization (COA), commercial aircraft using a 333 exemption and/or 14 CFR Part 107 (Operation and Certification of Small Unmanned Aircraft Systems, currently draft), or recreational UAS operating solely for personal enjoyment under community-based standards or Part 107.

- a. Review literature and scope the problem, e.g.:
 - a. Research and summarize rules and responsibilities for UAS flight coordination in airport areas of interest.
 - b. Research current UAS airspace management modelling for airport areas of interest.
- b. Prepare and submit a draft, proposed table of contents or subject matter outline.
- c. Research airports that have approved UAS operations in their area of interest.
 - a. Consider FAA UAS Test Sites, UAS Centers of Excellence, joint use airports with UAS, or international.
 - b. Identify coordination models and methods.
 - c. Identify airspace management considerations.
 - d. Identify safety data in airport areas of interest to inform airspace management modelling and impacts on other airport operations.
 - e. Identify municipal and/or law enforcement actions, constraints, restrictions or prohibitions that these airports have coordinated.
- d. Prepare an interim report addressing the following:
 - a. Identify the process that different types of UAS users must use when coordinating flights within Class B, C, or D airspace on the surface, or when

within 5 NM of airports in Class E or G airspace – the airport operators area of interest.

- b. Create a table of airport authorities and responsibilities related to the coordination of UAS operations in the area of interest. This should address the regulatory responsibilities of Federal Aviation Administration, airports and UAS operators for complying with regulations like Part 139, Part 91, Part 107, Micro UAS ARC (due April 1, 2016) other public law, etc.
- c. Provide a model and/or samples for airport operators to identify high, medium, and low risk areas within their area of interest for different UAS operations.
- d. Provide best practices and sample documents that airport operators can apply to facilitate, coordinate with ATC, constrain, restrict, or prohibit UAS operations in the area of interest, depending on levels of risk.
- e. Provide best practices and/or checklists to guide the airport operator in recommendations to municipal governing bodies and local law enforcement to manage UAS operations in the area of interest and/or respond to potentially unsafe conditions or violations.
- e. Identify emerging UAS management tools and software, topics for future research, emerging regulations forecast, and recommended schedule for review of this toolkit.
- f. Finalize the product.
- g. Coordinate with:
 - a. Airports and UAS: Problem Statement on UAS & Community Engagement.
 - b. A11-01/08-03: Evolving Law on Airport Implications by Unmanned Aerial Systems Operations.

5. Estimated Funding

Estimated funding for this research is \$300,000.

6. Estimated Research Duration

Because the regulatory landscape is changing, timeliness of this report is a strong consideration. It's understood that this material is somewhat new to the researcher, however, the estimated research duration is 12 months.

7. Related Research

ACRP Report 144, [Unmanned Aircraft Systems \(UAS\) at Airports: A Primer.](#)

ACRP Legal Aspects of Airport Problems - 11-01 / Topic 08-03 Evolving Law on Airport Implications by Unmanned Aerial Systems Operations

FAA on UAS FAQs: [http://www.faa.gov/airports/special_programs/uas_airports/.](http://www.faa.gov/airports/special_programs/uas_airports/)

GAO-13-346T Unmanned Aircraft Systems: Continued Coordination, Operational Data, and Performance Standards Needed to Guide Research and Development.

FAA Report: Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap.

8. Process Used to Develop the Problem Statement

This problem statement has been developed through cooperative effort and review of previously submitted problem statements including: **16-10-04**: Integration of Unmanned Aerial Systems into Airport Infrastructure and Operations, **15-03-11**: UAS Impacts on Ground Operations – Considerations for Airport Operators and Tenants, **15-03-16**: Special and Joint Use Airports for UAS, and coordination with industry representatives during a UAS panel workshop of industry, Airport and UAS Subject Matter Experts (SME) conducted on March 16, 2016 at the National Academy of Sciences, Keck Center.

It is worth considering that this research project be evaluated as part of a UAS initiative suite of projects that can be conducted simultaneously to ensure they do not overlap in scope or research efforts. This would also ensure that UAS concepts of similar scope, definition and priorities will be developed and reviewed consistently on the applicability of UAS at airports, while providing airport sponsors and public use facilities with clear direction and understanding of airport requirements related to potential different UAS applications and the economic vitality of UAS as a transportation resource in the vicinity of an airport. If adopted as a suite of projects, it is also recommended that this project coordinate with pending ACRP UAS projects identified at the March 16, 2016 Workshop, including:

Airports and UAS: Stakeholder Engagement

Airports and UAS: Integrating UAS into Airport Infrastructure and Planning

Airports and UAS: Potential Application and Benefit of UAS by Airports

9. Person Submitting Problem Statement and Date

March 25, 2016

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ⁱ FAA Modernization and Reform Act of 2012 (FMRA), Public Law: 112-95, § 336(a).

ⁱⁱ Operation and Certification of Small Unmanned Aircraft Systems, Proposed Rule, 80 Federal Register 9544 (February 23, 2015) (Docket FAA-2015-0150) (NPRM).

ⁱⁱⁱ https://www.faa.gov/uas/legislative_programs/section_333/

^{iv} As codified under Title 49 U.S.C. § 47101

^v FAA (2012). General Aviation Airports: A National Asset.

^{vi} For the purposes of this, the area of interest is: Class B, C, or D airspace on the surface, or when within 5 NM of airports in Class E or G airspace. This definition may be modified in coordination with other referenced projects.