



RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

Public Safety Small Unmanned Aerial Systems (sUAS) Compliance Training

PROJECT SUMMARY

Last Updated: 4 March 2020

Background:

The use of drones within the public safety departments has rapidly expanded as their capabilities to assist in saving lives are realized. As drone's safety policies and standards continue to evolve, many fire departments in the U.S. and elsewhere are without the proper information, knowledge, and experience needed to establish and maintain a compliant, legal public safety program. This project will provide the guidance, knowledge, and learnings to assist fire departments to establish a compliant drone program.

This topic directly relates to the activities addressed by NFPA 2400, *Standard for Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations*. This research project is utilizing the definition of small UAS as defined in NFPA 2400 (2019 edition, section 1.3.2 and A.1.3.2), which indicates a small UAS to be an unmanned aircraft weighing less than 25 kg (55 lbs) on takeoff, including everything onboard or otherwise attached. The use of the term "drone" herein is intended to mean "sUAS".

The curriculum that will be developed by this project will address sUAS utilization across all operational settings including structural and wildland firefighting, search & rescue, hazardous material responses, natural disasters, and any other events in which public safety operations would benefit from use of drones. Concepts addressed will include, but not be limited to:

- Organization Deployment and Considerations for sUAS (i.e., program criteria; operational needs assessment; and purchase specification);
- Professional Qualifications for sUAS Public Safety Personnel (i.e., job performance requirements (JPRs) for remote pilot in command and for visual observers; and operations needing a sUAS coordinator);
- Operational Applications (i.e., firefighting such as structural or wildland; search & rescue; hazardous materials response; natural disasters; and large gatherings; and
- Maintenance of sUAS (i.e., elements of a maintenance program; discrepancy reporting; and record keeping)

Project Goal:

The overall project goal of this project is to substantially increase the availability of free training and education on the safe implementation and utilization of small unmanned aerial systems (sUAS) used for public safety operations. To accomplish this goal, this project has the following objectives:

- 1) Usage Assessment: Assess the current and trending knowledge, policies, and standards on public safety drone usage, and provide a summary of the key involved organizations;
- 2) Program Knowledge Base: Develop a training program framework, including resources, education, and a searchable knowledge database, to allow public safety organizations to comply with current regulations and standards;
- 3) Use Case Tracking: Implement an information collection mechanism that collects and tracks applicable details on public safety departments drone programs and their relevant use cases;

- 4) Interactive Web Portal: Establish an interactive web portal to freely disseminate the essential information and training materials, to support the evolution of regionally and nationally compliant public safety department drone programs in accordance with FAA regulations and ANSI accredited model standards (e.g., NFPA, ASTM, etc.), and to support on-going use case tracking; and
- 5) Outreach Campaign: Conduct an information outreach campaign to promote awareness of the freely available information and training materials on this topic to all interested public safety organizations.

Implementation and Schedule:

This project is funded by DHS/FEMA Assistance to Firefighters Grant (AFG) Program (Award No. EMW-2018-FP-00471). This project involves multiple partners as follows:

- National Fire Protection Association (NFPA): Serving as the project's lead organization providing overall project administration and dissemination of project deliverables.
- Fire Protection Research Foundation (FPRF): Handling advisory guidance, content development through the project contractor, workshop planning/implementation/documentation; and assistance with outreach.
- FPRF Contractor: Developing the baseline content and materials, with review and refinement at the stakeholder workshop.
- ASTM International
- Colorado Department of Fire Service – Center of Excellence for Advanced Technology Aerial Firefighting

The project is scheduled to be completed by August 2021.

Project Tasks:

This project will involve the following project tasks:

- 1) Task 1 - Project Initiation. This task will be led by the FPRF and includes the establishment and administration of an advisory Panel with a target minimum of 10 key stakeholders, 8 of whom are from the emergency response community. A minimum of 3 conference call meetings between the Research Team and the advisory Panel will be held, with additional meeting possible to resolve special issues. FPRF will handle all administrative details with the advisory Panel, including its establishment and documentation of meetings. The FPRF Contractor will be responsible for review and refinement of their project deliverables.
- 2) Task 2 - Baseline Materials. The FPRF will identify and confirm an FPRF Contractor with appropriate skills and abilities to develop and refine the primary baseline materials used for this effort. The FPRF Contractor will have responsibility for the collection of all applicable literature and data, and provide appropriate analysis and documentation. They will identify impacts, the available data, data gaps, and potential methodologies. The deliverables generated by this task are the responsibility of the FPRF Contractor and will be the basis for the project Final Report. These materials will be reviewed by the advisory Panel prior to finalizing the project's Final Report. The FPRF contractor will present the final report at the workshop. This task includes all of the following:
 - a) Literature Review: Summary of all the applicable current and relevant literature on the use of drones by public safety organizations, including an overview of all applicable state and federal regulatory documents that directly and indirectly impact emergency responders.
 - b) Usage Assessment: Assessment of the current and trending knowledge, policies, and standards on public safety drone usage, and including a summary of all key organizations, to support the development and implementation of job performance requirements (JPRs) for all the drone applications within the scope of this project;

- c) Interim Report/Progress Update: Provide an interim report/progress update of the baseline information and materials in preparation for review at the curriculum design virtual meeting with Research Team.
 - d) Use-Case Tracking: The FPRF Contractor will be responsible for developing and conducting an informal questionnaire of the public safety departments to populate the program Use-Case Tracking Knowledge Base (Task 4). In support of this activity, it is expected that the FPRF Contractor will identify and collect relevant public safety drone usage and application information from a minimum of 25 Departments (more is preferred). This activity may be completed through an information collection questionnaire sent to various public safety departments. This information will be delivered in appropriate format as agreed to the FPRF.
 - e) Final Report: Generate a draft final report based on the above tasks. Review the draft final report with project panel. Finalize the report based on panel feedback and comments.
- 3) Task 3 - Training Curriculum. The development of a training curriculum will be handled by NFPA, and will utilize all the information and materials developed by the FPRF Contractor. This will be refined and adjusted based on the refinements occurring to the baseline materials occurring throughout the project. The Training Curriculum is intended to be a turn-key program that can be directly utilized and implemented by any public safety organization in support of this topic.
 - 4) Task 4 - Use-Case Tracking Database. Development of a framework and data architecture to support the implementation of the Use-Case Tracking Database that will be administratively handled by NFPA with direct coordination from the NFPA Data & Analytics division.
 - 5) Task 5 - Web Portal. This task will be led by NFPA, and involves the establishment of a workable web platform for the broad-scale dissemination of project deliverables, along with supporting documentation necessary for web portal implementation
 - 6) Task 6 - Workshop. This task will be led by FPRF, who will be responsible for the design, implementation and documentation of the workshop. The FPRF Contractor will be responsible for the presentation and review of baseline materials final report at the workshop. The workshop will be an in-person meeting and will bring together the project advisory Panel and additional stakeholders to review and provide direct feedback on the baseline material deliverables. The workshop will review the proposed methodologies, identify perceived gaps, prioritize actionable needs, and generate recommended enhancements. The workshop proceedings will be handled by FPRF. Attendance at the workshop is targeted to be at least two-dozen participants.
 - 7) Task 7 - Finalize Project Deliverables. All deliverables including Training Curriculum, Use-case Tracking Database, and Web Portal will be reviewed with the advisory panel to confirm the final project deliverables prior to dissemination.
 - 8) Task 8 - Outreach Campaign. NFPA will lead an outreach campaign to make all applicable project deliverables broadly available, with the intent of generating wide-spread awareness of the training curriculum, database and other project tools that they can utilize.

Project Deliverables:

This anticipated outcomes from this 2-year effort involves the following overall deliverables, sorted by the responsible member of the Research team:

FPRF Contractor

- a) *Interim Report/Progress Update* of the baseline information and materials in preparation for review at the curriculum design virtual meeting with Research Team (see task 2.c.).
- b) *Provide fire department use cases information collected and associated data to populate the Use Case Tracking Database* (see task 2.d.).
- c) *Draft Final Report*, based on the project tasks (see tasks 2.e.).
- d) *Final Report*, following final review by the advisory Panel (see task 2.e.).

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- e) *Advisory Panel meeting documentation (see task 1).*
- f) *Workshop Proceedings (see task 6).*

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- g) *Training Curriculum, which incorporates all applicable project deliverables into a format and program in support of public safety department training (see task 3).*
- h) *Use Case Tracking Database, that collects and tracks applicable details on public safety department drone programs and their relevant use cases (see task 4).*
- i) *Interactive Web Portal (see task 5).*
- j) *Outreach Campaign (see task 8).*