APPLICATION FORM

All applications must include the following information. Separate applications must be submitted for each eligible program. **Deadline: June 1, 2018.** Please include this application form with electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact Gage Harter.

PROGRAM INFORMATION

County: County of Loudoun, Virginia
Program Title: Public Safety Small Unmanned Aircraft Systems
Program Category: Criminal Justice & Public Safety Technology

CONTACT INFORMATION

Name: Michael Chapman
Title: Sheriff of Loudoun County, VA
Department: Loudoun County Sheriff's Office
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SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: Tim Hemstreet
Title: County Administrator
Signature:
1. Program Overview

The Loudoun County Sheriff’s Office (LCSO) Search and Rescue Team recently acquired a small Unmanned Aircraft System (sUAS), commonly referred to as a drone. It is the first in Virginia and the sixth in the United States to be equipped with a Project Lifesaver antennae. The Project Lifesaver program is an electronic based locating system for people with medical conditions such as Alzheimer’s, Autism, or other conditions, that have a tendency to wander from home and become lost.

Project Lifesaver clients are equipped with a wristband transmitter that emits an automatic locating signal. If the client becomes lost, the specially trained deputies with the Loudoun County Sheriff’s Office Search and Rescue Team will now use the sUAS, equipped with the Project Lifesaver payload, to help locate the client. As of Fall 2017, the LCSO had 107 clients in the Project Lifesaver program. The LCSO fully implemented Project Lifesaver in 2010 and has been 100% successful in locating 23 missing clients over the past seven years with many being rescued in under 30 minutes.

The LCSO sUAS is also enabled to carry a payload of infrared and high resolution cameras to assist in search and rescue operations. Members of the LCSO Search and Rescue Team who operate the sUAS are licensed pilots through the Federal Aviation Administration (FAA).

The sUAS was approved for purchase by the Loudoun County Board of Supervisors in FY 2017. The $94,000 cost included the sUAS and accessories, multiple payloads to include the Project Lifesaver antennae, infrared and high resolution cameras, as well as the training of the pilots from the LCSO. It is a fraction of the cost of using a helicopter in similar situations.

Per the Code of Virginia, the sUAS may only be deployed by law enforcement without a warrant when operating for the purpose of search and rescue and related training.
2. Project Details

Loudoun County Sheriff's Office, prior to the purchase of the sUAS, did not have dedicated air support for SAR missions. A request was made to adjoining agencies for assistance. The average search time for a helicopter was 20 minutes. In some instances, the helicopters may not be available due to maintenance, weather, or other calls for service in that jurisdiction. Or if the helicopter was assisting Loudoun County, it may be recalled back to the primary jurisdiction. The approval process averaged 30-45 minutes, only to expect an average of 20 minutes flight time to the search area. With the implementation of the Loudoun County Sheriff's Office sUAS, response times to a search area have reduced and flight times have increased up to 45 minutes, per battery. Currently, the LCSO’s sUAS is equipped with three batteries which allows for extended search times during both daylight and night flight missions, which can be charged on site reducing the downtime significantly.

After the sUAS was purchased, policies and procedures were developed and six Deputy Sheriffs, also members of the SAR team, were chosen to become UAS Pilots. These six pilots were extensively trained and successfully became certified as licensed Federal Aviation Administration (FAA) Part 107 Small Unmanned Aircraft Pilots. Each pilot was subsequently trained by Project Lifesaver International staff, as well as Sentera Corporation personnel to effectively and safely operate the sUAS during specific PLS missions.

The Loudoun County Sheriff’s Office then researched, applied for, and successfully granted the required “Certificates of Authorization” and specialty “Night Flight” waivers through the FAA, to operate the sUAS safely in restricted Class B airspace and during night time flight missions. Currently for the year 2018, the LCSA SAR Team has been deployed 28 times and during those
searches, the sUAS was successfully utilized to locate and recover several lost individuals or those reported to have wandered off away from loved ones.

During the Project Lifesaver training using the sUAS, it was determined that once the sUAS was above fifty (50) feet “Above Ground Level” (AGL) the antenna could receive a transmitting signal from a client’s bracelet approximately 5 miles away. Once a strong signal is located by the sUAS antenna payload, the deputies who are certified as “Electronic Search Specialists” and assigned to the ground search team can triangulate the signal using hand-held receivers more efficiently and effectively, based on the signal’s direction acquired by the sUAS. There are approximately one hundred (100) plus individuals participating in the LCSO’s Project Lifesaver Program, residing within the borders of Loudoun County, Virginia. The utilization of the sUAS program to locate PLS clients who have wandered off and away from loved ones, has reduced initial search and recovery times from hours down to a matter of minutes.

Since the inception of the LCSO sUAS Program in July 2017, the cooperation among local, state and federal entities, to include private sector organizations has enhanced the department’s, as well as the County’s, involvement in the development and use of this technology with in the community and throughout public safety. Each time the LCSO SAR Team deploys the sUAS, a community wide alert is transmitted to let our community members and leaders know that a sUAS mission is occurring. This notification allows for better cooperation between law enforcement and the community to prevent interference during the mission.

IMPACT

Just two months after the implementation of the sUAS technology, a specific incident took place which garnered nationwide recognition. In December 2017, a 92-year-old man failed to return home from a hunting trip in the Shenandoah National Park. After a local jurisdiction’s ground search team
exhausted their resources, a call for mutual aid was requested and granted for the LCSO SAR/UAS Team to respond and assist on the following day: 16 hours after the rescue mission began. After a 20-minute drone search, the pilot was able to locate an elderly gentleman wearing a bright orange hat; the drone’s camera was able to positively identify the person in the orange hat as the missing 92-year-old. The pilot led the ground search team to the individual’s location, using GPS coordinates. Search teams were able to locate the individual, after about 40 minutes of hiking, and successfully escort him out of the wooded and rocky terrain safely after 27 hours in the woods.

“Project Lifesaver continues to offer the client’s caregiver peace of mind. This new technology will allow our deputies to more efficiently search for residents in the Project Lifesaver program and other missing persons and bring them home safe,” said Loudoun County Sheriff Mike Chapman.

REGIONAL COLLABORATION

LCSO sUAS pilots have participated locally, regionally, and nationally by representing Loudoun County, VA on regional subcommittee panels involving UAS policy development and implementation. Those opportunities have allowed for continued collaboration that will benefit sUAS operators in the Public Safety field.

The opportunities for LCSO sUAS Pilots to attend as panel members or participants, which have occurred in the past year and continue to have a positive impact on the LCSO sUAS program, are listed below:

- Loudoun County Economic Development—George Washington University’s Science and Technology Campus UAS Panel
- Loudoun County Economic Development – Unmanned and Ready for Business UAS Panel
Employing Small Unmanned Aircraft System Technology for Search and Rescue
Loudoun County, Virginia

- Loudoun County Sheriff’s Office and Loudoun Economic Development UAS Integration Pilot Program Awareness and Training Opportunity Focus Group
- Virginia Department of Emergency Management (VDEM) Search and Rescue/UAS Public Safety Group
- Metropolitan-Washington Area Council of Governments (MWCOG) – sUAS Public Safety Sub-committee with the Federal Aviation Administration (FAA)
- Metropolitan-Washington Area Council of Government (MWCOG) – Search and Rescue Sub-committee
- Justice Technology Information Center (JTIC) UAS Public Safety Focus Group
- National Institute of Justice UAS Public Safety Collaboration Focus Group

3. Program Model

The LCSO Search and Rescue Team’s research of the sUAS program established the following process and guidelines that is shared to assist other public safety jurisdictions with their individual sUAS Programs:

- Funding approval by the Loudoun County Board of Supervisors, the County Administrator and the Sheriff, Michael L. Chapman.
- Request for Proposal or Sole Source procurement of an unmanned aircraft system
- sUAS Pilot Selection Process
- sUAS Pilot Training (minimum 80 hours of academic and physical training)
- FAA CFR 14 Part 107 Small Unmanned Aircraft System certification and licensing
- sUAS vehicle registration through FAA
- Establish policy and procedures required by the FAA and the department for safe and efficient management of the sUAS program.
• Apply for FAA Certificates of Authorization (COA)
  - Must have a registered sUAS aircraft
  - Blanket COA established for Class G airspace
  - Special COA to operate in Class B (local, regional and international airports)
  - Special COA for night flight operations

The Loudoun County Sheriff’s Office contracted with Evans Incorporated to help facilitate the COA application process. Also contracted to provide the academic and physical training for the sUAS Pilots was through Dart Drones, Inc and Sentera, Inc (partnering with Lockheed Martin and Project Lifesaver International). The process was completed within 3 month of acquiring the sUAS and the LCSO conducted the first sUAS deployment in October 2017.

4. Innovative Approach

Through collaboration among the LCSO, County of Loudoun Economic Development department, and the FAA counterparts, successful completion of the FAA Integration Pilot Program (IPP) application, awarded and recognized the Northern Virginia area as a sUAS testing and training site for small unmanned aircraft systems in the Herndon area. The IPP selection for the Northern VA area will allow for better collaboration efforts among the private sector, the community hobbyists and local, state and federal public safety partners to enhance their sUAS performance through more specified and precision training at the sUAS testing center.

5. The Team

The Loudoun County Sheriff’s Office sUAS Program could not be made possible without the support of our Sheriff, Michael L. Chapman; Loudoun County Board of Supervisors and Board Chairperson, Phyllis Randall; and the LCSO Search and Rescue/sUAS Team Pilots – Master
Deputy Matthew Devaney, Captain Michael Cox, Sergeant Howard Craig, Deputy First Class Edward Jappell, Jamie Holben and Ryan Hamilton. Sheriff Chapman’s STEP UP strategy (Service, Technology, Efficiency and Professionalism) for the department involves utilizing technology to better enhance services provided to the citizens and communities within Loudoun County. The sUAS Program is just one factor that exemplifies the services provided and often requested by other jurisdictions during emergency situations and community outreach events.