



## APPLICATION FORM

All applications must include the following information. Separate applications must be submitted for each eligible program. **Deadline: June 3, 2019.** 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: Caroline County, VA  
Program Title: Caroline County UAS Program – Public Safety and Beyond  
Program Category: Criminal Justice & Public Safety

### CONTACT INFORMATION

Name: Jason Loftus  
Title: Fire - EMS Chief  
Department: Dept. of Fire - Rescue and Emergency Management  
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Email: jloftus@co.caroline.va.us

### SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: Alan Partin  
Title: Deputy County Administrator  
Signature: 

2019 Virginia Association of Counties Achievement Awards Nomination  
Caroline County UAS Program – Public Safety and Beyond  
Caroline County Department of Fire – Rescue and Emergency Management

**Executive Summary**

Caroline County has had a joint public safety unmanned aircraft system (UAS) {aka – Drone} team since 2017. This team, comprised of members of Fire – Rescue (both career and volunteers) and the Sheriff’s Office maintains a fleet of three UASs each with different capabilities. The team responds to a wide variety of both emergency and non-emergency governmental support missions throughout the County. These include everything from searching for lost kayakers, investigation of smoke in the area calls, to flying potential business properties for the County’s Economic Development Department. The program regularly interacts with other localities and state agencies as well as joint trainings with leaders in the private UAS sector.

The team maintains a fleet of three UASs and their supporting payloads. The team is proud to say that over 90% of the program’s funding has been supported through grant acquisition. Caroline believes it’s program is a great example of the complete utilization of this technology while maintaining fiscal responsibility.

## Overview

In 2016 the Caroline County Department of Fire - Rescue and Emergency Management began to explore the possible use of unmanned aircraft systems for use to assist with damage assessments and search-and-rescue activities within the county. The Deputy Chief of Fire and Rescue was asked to head up this new program endeavor. The Department set to work researching the best practices as well as initial equipment to start this program. Initial training was held through an education course conducted by Piedmont Community College. The concept was brought to the County Board of Supervisors who embraced UAS completely realizing the benefit that could be brought to Public Safety. Equipment was purchased and a combined UAS team with members from the career fire rescue service, the volunteer fire and rescue service, and the County Sheriff's Office was formed.

## Mission Types

The county purchased its first UAS in February of 2017. Later that summer the County received its certificate of authorization to conduct public aircraft operations from the Federal Aviation Commission. Since then the County team has conducted numerous Public Safety operations/missions. These have included searching for missing persons on both land and water and forest fire situational awareness.

The program has had many additional uses of UAS technology outside of direct public safety missions as well. For example, the County Economic Development Director often asks the county team to fly and photograph potential development properties. This allows his office to deliver a first-hand bird's-eye view of a parcel highlighting its potential to business investors. This photography is performed at a fraction of the cost of hiring manned aviation.

The UAS Team has assisted Public Utilities in conducting surveys of County buildings. Being able to quickly and safely capture high resolution photogrammetry Caroline County rooftops is especially beneficial. UAS cameras are able to quickly identify roof discoloration / deterioration or even clogged gutters while operating safely from the ground. Most recently, Utilities asked for the UAS team's assistance in identifying the location of a new service road in support of the County's new nature trail. This survey saved both time and money for the County.

### **Interagency / Regional Collaboration**

The County's drone program has fostered a strong relationship with the Virginia Department of Forestry. VDOF frequently calls upon the Drone team to assist with searching for calls of smoke in the area. The UAS can quickly be deployed above the tree lines to determine the direction or validity of a potential forest fires. This is extremely important since Caroline has large secluded areas of timber and forest.

Caroline's Team has provided UAS mutual aid and start up technical advice to neighboring King George County as well, helping them to establish their own program. It has shared its knowledge, policies, and procedures with other jurisdictions to assist them with their programs. Caroline has also conducted joint UAS training with the Virginia Department of Emergency Management, allowing both agencies to work together and learn one another's capabilities.

### **Financing**

Caroline began its program with an approximate \$1,500 investment, starting with one UAS. Caroline's drone program has grown to include three aircraft. The County is particularly proud of receiving a Homeland Security grant for \$33,000 to pay for its second UAS, payloads

(including both thermal image and zoom cameras), and specialized training. The team's third drone was purchased for \$2,810 utilizing grant funds.

Caroline is proud to say that over 90% of the program's funding has been supported through grant acquisition. Caroline believes its program is a great example of the complete utilization of this technology while maintaining fiscal responsibility.

#### Innovation

Unlike most programs, Caroline maintains a support contract with a private company (ZADIS) for both manned and unmanned aircraft services. This gives the County ability to expand its survey capabilities and assessments in the event of a large emergency. For example, the Team has exercised the ability to capture GIS flight data from a manned aircraft, import it into our GIS system, and identify ground points and addresses for further detailed damage assessments / survey. This would be extremely useful in conducting damage assessment along a future tornado's path.

The County has utilized its UAS technology to capture pre-disaster video and photo footage of County buildings. These archives provide the county with a photographic baseline record of the condition of buildings. This baseline is very useful in the event of collecting financial assistance in the event of a disaster.

Photos



Figure 1 - Caroline Board Members F. Thomas and J. Black look on during UAS Demo



*Figure 2 - UAS used to locate remote brush fire*



*Figure 3 - UAS capturing preplan photos of high school*



*Figure 4 - UAS conducting search and rescue training*



*Figure 5 - UAS Economic Development Flight*



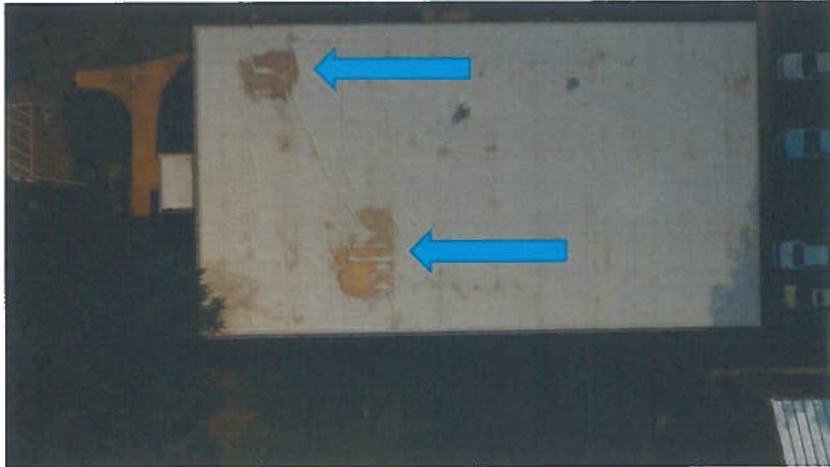


Figure 6 - UAS inspecting roof of a County building



Figure 7 - Joint training with VA Dept. of Emergency Management