

camera during the search. Large quadcopter unmanned aircraft can drop items to missing or stranded persons, such as a life vest. Some rural public safety agencies are beginning to move beyond quadcopter unmanned aircraft with their relatively short battery life and are operating fixed wing UAS that can remain aloft for longer periods, increasing the amount of time the unmanned aircraft can maintain the search for a missing person.

As public safety agencies develop a UAS program, one of the first priorities is to determine the types of missions the agency will fly. Once this decision is made, equipment selection can begin. Some thought should be given to the experience of the pilots who will be operating the UAS. Pilots who have little experience may be better suited to flying less expensive UAS during implementation of the program with larger more sophisticated and expensive aircraft purchased later as pilots gain experience.

The cost to an agency implementing a UAS program can run from less than \$5,000 to more than \$100,000. The wide range in cost is directly related to the capabilities of the UAS and the type of payload it can carry. More expensive UASs can operate in a

## The UAS transmits live video to a ground control station, which can be viewed by the pilot, incident commander or other personnel.

wider range of environmental conditions and carry more sophisticated payload. Optical cameras can be used to document a scene, thermal cameras can be used during search and rescue or firefighting operations and other sensors can be used for analyzing a hazardous materials plume. Smaller agencies implementing a UAS program may start with a single UAS and build the program. Even large agencies with unmanned aircraft costing in excess of \$25,000 frequently use smaller unmanned aircraft for missions that do not require a specialized payload. Small unmanned aircraft can be carried in the field by mobile units and can be flying and providing an aerial perspective before larger unmanned aircraft are transported to the scene. Many agencies are currently using consumer or prosumer unmanned aircraft

that cost less than \$3,000. A developing application is the use of tethered aircraft. The tether allows for continuous operation of the unmanned aircraft, eliminating the need for battery changes.

An aerial perspective can increase the effectiveness of a public safety agency's ability to respond to or plan for critical incidents. Traditionally, manned aircraft such as helicopters or fixed wing aircraft have been the only means of obtaining this aerial perspective. Drones are increasingly being used by public safety agencies for this purpose. ●

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