**DATE:** April 9, 2019

**TO:** Honorable Mayor and City Council

**FROM:** Saul Jaeger, Police Lieutenant

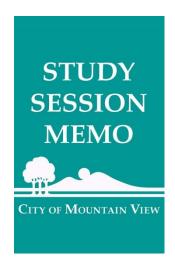
Max Bosel, Police Chief Juan Diaz, Fire Chief

Mike Fuller, Public Works Director

VIA: Daniel H. Rich, City Manager

TITLE: Consideration of Use of Unmanned Aircraft

Systems (UAS) in Support of City Operations



#### **PURPOSE**

The purpose of this Study Session is to provide information to the City Council regarding the use of Unmanned Aircraft Systems (UAS), commonly referred to as "drones," for operations and to solicit input and direction for the development of a UAS policy for the City.

#### **BACKGROUND**

UAS technologies have been successfully used for a variety of purposes by municipal governments throughout the country. From building inspections to disaster recovery and mitigation, UAS technologies can allow for better situational awareness and decision making. Additionally, as cities seek to implement "smart city" strategies, the use of UAS technology can play an integral part.

Several Mountain View City departments—Public Works, Fire, and Police—have been exploring the use of UAS technologies to enhance operations, work safer, and provide better and more efficient service within their respective areas of responsibility.

UAS provide an affordable aerial view of a location or event that allows decision makers to quickly evaluate the situation and make better, more well-informed decisions. Available technologies, such as high-zoom-capable cameras, infrared cameras, and environmental sensors, further enhance analysis of a potential problem or emergency incident. In addition, streaming and sharing of video delivers real-time situational awareness, as well as the ability to review footage for after-action analysis.

Regardless of the specific departmental mission, use of UAS can raise understandable concerns and questions about civil rights, privacy, and the appropriate use of such

technology. The American Civil Liberties Union has noted benefits of UAS technologies and has published recommended safeguards to protect individuals' rights around government use of UAS, to include limiting usage, data retention policies, policies for abuse prevention and accountability, and prohibiting use of weapons with UAS technology. Such safeguards are addressed below as potential elements of a UAS policy for City operations.

#### **DISCUSSION**

#### Potential Use By City Departments

The uses for UAS technology have been expanding for municipal operations. As outlined below, the City of Mountain View's Public Works, Fire, and Police Departments have identified various benefits in using UAS technology.

## Public Works Department

The Public Works Department is tasked with design, construction, maintenance, and operation of public infrastructure, facilities, and services throughout the City. This requires employees to inspect facilities and construction/improvement sites.

Using UAS technology would help enhance safety and accelerate projects by allowing employees varying views of a project without the need to climb on roofs or ladders. For example, an employee could deploy a UAS and carefully inspect a roof and gutter system in great detail from the street/sidewalk nearby. UAS equipped with thermal imaging technology could also allow operators to inspect pipes, wires, and other equipment.

The Public Works Department seeks to use the UAS to provide:

- Roof/gutter inspections
- Canopy inspections
- Roadway improvement project oversight
- Environmental assessments
- Project management

## Fire Department

UAS technology has proven to be a valuable asset during active fire events as well as during incident investigations. Several local fire departments are utilizing UAS for their operations: Alameda County Fire Department, Menlo Park Fire District, Fremont Fire Department, and the San Jose Fire Department are acquiring the technology.

UAS technology provides the ability for commanders to have a bird's-eye view of the event, allowing for asset allocation decisions as well as fire-fighting strategy and monitoring of smoke and other chemical plumes. Equipped with thermal imaging technology, commanders can also monitor hot spots throughout an event to help with suppression strategy and, after an event, to help ensure the fire is completely extinguished.

The Fire Department seeks to use UAS to provide:

- Lifesaving efforts during/after natural disasters
- Active monitoring of fire events
- Hazardous material incident management
- Mass casualty incident management
- Evidence and scene documentation

# Police Department

UAS technology has been put into practice as an invaluable tool for law enforcement. California agencies such as the Fremont Police Department, the Modesto Police Department, the Alameda County Sheriff's Office, and the Chula Vista Police Department are currently using UAS systems to enhance overall police response. Other agencies, including the San Jose Police Department, Santa Clara Police Department, and the Sunnyvale Department of Public Safety, are in various stages of considering UAS programs.

Providing real-time aerial views of active incidents allows officers to work safely and efficiently and provide commanders with better situational awareness. For example, traditionally, when a suspect has run from police and is hiding, officers would search the area on foot and with K-9s, if available. A UAS equipped with thermal imaging and a high-resolution camera would greatly improve the chances of locating the suspect,

lessen the chance of officers and suspects being injured, and could limit the need for officers to enter private property as part of the search.

In addition, UAS technology provides investigators with the ability to document a crime scene or a traffic collision with aerial video and photographs.

The Police Department seeks to use UAS to provide:

- Aerial perspectives of an incident/investigation for situational awareness
- Evidence collection and documentation
- Searching for and locating lost or missing people
- Disaster response and recovery
- Response to suspected explosive devices or dangerous scenes
- Crime/collision scene documentation and/or reconstruction

# **Technology Platforms**

There are a variety of UAS platforms, cameras, and software available for municipal operations allowing for the secure dissemination of video throughout an event as well as varying flight platforms/software with different levels of flight autonomy.

For example, most off-the-shelf and/or commercially available UAS products are flown directly by a pilot, have built-in camera systems, and include a small amount of autonomy, which can be turned on and off as needed. Examples of autonomous functions include obstacle avoidance and the ability to return to a specific area if the signal is lost or in an emergency. There are also more robust systems which can be flown remotely and even some with complete autonomy, and many with a combination of the two, which allow for video streaming to a large number of devices as the incident is occurring.

Mission and budget are two main factors to consider when deciding which systems to purchase and/or deploy, and City staff suggests that the City consider "pilot" testing both technologies for a variety of applications.

## **UAS Deployment Requirements**

All UAS flights must be conducted in accordance with Federal Aviation Administration (FAA) guidelines, and any policy adopted by the City would be in compliance with FAA Rules. Specifically, the UAS Rule, "Operation and Certification of Small Unmanned Aircraft Systems" (Part 107) governs UAS operations, and sets forth operation, registration, and operator certification requirements. In addition, Part 107 authorizes operators to obtain waivers of certain rules for special circumstances (such as operations at night or in restricted air space), where there is a legitimate public purpose for such operations, and the FAA finds the UAS will not endanger other aircraft or people and property on the ground or in the air. In addition, public agencies wishing to operate drones for public purposes must obtain a Certificate of Authorization from the FAA. To obtain this authorization, the public agency must submit to the FAA a Public Declaration Letter which attests to its valid existence as a public agency, and certifies that it will operate its UAS only for public, noncommercial purposes.

UAS equipment is deployed by at least two people consisting of a pilot and an observer, who function as a team. The pilot operates the UAS for the mission, generally switching between watching a controller screen and visual observation of the UAS itself. The observer maintains visual contact with the UAS throughout the flight, looking for any other aircraft and/or obstructions, and keeps radio contact with flight towers (if necessary) and any others involved in the mission (command post, etc.).

Many municipal public safety entities that started a UAS team have identified the need to send the live video from the UAS to other sources, such as incident command posts. A real-time video feed allows efficient scene management, proper deployment of resources, better situational awareness and safety, or viewing open areas and City infrastructure that would be difficult to reach.

The Police Department has explored the use of UAS through research of programs operated by other municipal agencies, reviewing publications and articles, and testing a UAS platform during a concert event at Shoreline Amphitheatre. This experience will inform a UAS policy for Council's consideration.

## **Policy Elements**

Staff understands that the public may have questions about government use of UAS technology, related to how privacy will be maintained and how the collected data/evidence will be retained and used. Because of this, it is critical for the City to have strong policies and procedures in place for any UAS operations with strict adherence and accountability to those policies and procedures. Staff has reviewed

current policies from the Chula Vista Police Department and the Redwood City Fire Department as examples.

## **Privacy Considerations**

The use of the UAS raises privacy considerations. The protection of individual civil rights and the reasonable expectation of privacy would be key components of any decision made to deploy the UAS. Operators would take reasonable precautions to avoid inadvertently recording or transmitting images that infringe upon an individual's right to privacy. This includes consideration by the operator on when to turn on/off the recording function and the route of the UAS during deployment.

The following uses would be prohibited:

- 1. Placing weapons on the UAS;
- 2. Conducting random/proactive surveillance activities;
- 3. Targeting a person based solely on individual characteristics, such as race, ethnicity, national origin, religion, disability, gender, or sexual orientation; or
- 4. Conducting any business other than official City business.

Guidelines for evidence collection and retention would include:

- 1. Following a UAS operation by any City department, the recording will be retained in accordance with department policy.
- 2. Data collected by the UAS shall be retained as provided in the established records retention schedule, or retained as evidence of a crime.
- 3. Unauthorized use, duplication, and/or distribution of UAS videos are prohibited. Personnel shall not make copies of any UAS videos for their personal use and are prohibited from using a recording device such as a personal camera or any secondary video camera to capture UAS videos.
- 4. Requests for a UAS video shall be accepted and processed in accordance with Federal, State, and local laws, and departmental policy (discovery, media inquiries, subpoenas, Public Records Act requests, etc.).

- 5. Request for Deletion or Accidental Recording:
  - a. In the event of an accidental activation and recording of the UAS camera system, the designated department director shall review the video and approve or deny the deletion request.

## **Program Oversight**

It is recommended each department develop individual policies following the general structure below in order to ensure adequate program oversight and adherence to FAA rules and City and departmental standards.

- Establish a Program Manager to provide:
  - Overall direction of the UAS program
  - Overall performance and accountability of the UAS program
  - Selection of UAS members
  - Budget oversight
- Establish a Program Coordinator to provide:
  - Day-to-day supervision of the UAS program
  - Maintenance of all training, flight, and maintenance records for all pilots, observers, and the equipment used in the course of their duties
  - Ongoing proficiency on all UAS operated by the program

# **Training**

The City's UAS programs would require the implementation of training plans for UAS operators, not only to ensure compliance with FAA rules, but also to ensure understanding and compliance with the City's policies and procedures for the program.

UAS team members will initially attend an FAA-Certified training class (Part 107), pass the Commercial UAS Pilot Exam, and be licensed through the FAA as a Part 107 Commercial UAS Pilot. They will be required to maintain this certification and provide current documentation of such certification to the Program Coordinator.

Team members will also be required to attend ongoing training on a regular basis, coordinated and concurrent with any in-service-type training, in order to simulate real-world scenarios such as mass casualty events, fire-related incidents, active-shooter incidents, foot pursuits of suspects, crime scene documentation, building/infrastructure inspections, etc.

It is recommended each department be responsible for their specific training plan but communicate with the other UAS program managers and encourage participation in other interdepartmental training.

It is an FAA requirement to accurately track all flights, including training, in a flight log. It is recommended to post this flight log on the City's website and make this flight log available to the public upon request.

#### **RECOMMENDATION**

Staff seeks input and direction from the City Council in regard to the development of a City UAS program, specifically:

- 1. Does the Council support the development of a UAS program for the City?
- 2. Does the Council concur with general policy elements as proposed?
- 3. Does the Council have any additional input for the program?

#### **NEXT STEPS**

Based on Council comments and direction, staff will draft an overarching policy for Council approval. In addition, staff will develop department-specific procedures as appropriate, seek approval for funding UAS technology, and acquire an FAA Certificate of Authorization which allows the City to operate UAS for public purposes for flights in Mountain View and the general area, and to obtain any waivers needed for authorization for UAS operations at night, in restricted areas, and in any other special circumstances. The certification and waiver process collectively can take six to eight months.

Staff would also begin selecting and training UAS team members as well as developing interdepartmental relationships with the program managers to encourage collaboration.

# **PUBLIC NOTICING**

In addition to the City's standard agenda posting requirements, notice of this item was publicized via social media. Should a program proceed, the City, in partnership with each department spokesperson, will develop an outreach campaign for the UAS programs.

SJ-MB/5/CAM 300-04-09-19SS 190166