

EL DORADO COUNTY GRAND JURY 2019-2020



COUNTY DRONE USE

CASE 19-09 • JUNE 8, 2020

Public Release

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A drone is an unmanned aircraft capable of sustaining directed flight, either preprogrammed or remotely controlled. County drone use is providing value to the Sheriff, District Attorney and the Department of Transportation. This report is about the policies, usage and benefits associated with County drone use.

METHODOLOGY

Interviewed

- Representatives from the County Sheriff and District Attorney Offices and the Department of Transportation (DOT)

Documents Reviewed

- *2019 Survey UAV¹ - Drone*, by the El Dorado County Department of Transportation (DOT), detailing a breakdown of drone survey costs presented to the BOS
- *Pix4dmapper*, the leading photogrammetry² data processing software for professional drone mapping
- Federal Aviation Administration *Part 107 - Small Unmanned Aircraft Systems*
- *El Dorado County Sheriff's Office Fiscal Division Unmanned Aerial Systems Annual Budget Fiscal Year 2019/2020*
- Sheriff's Office Policy Directive 15-005, Section 612
- *Mountain Democrat* articles regarding the use of drones by the El Dorado County District Attorney's Office and DOT

DISCUSSION

The El Dorado County Sheriff and District Attorney use drones on a continuing basis. In addition, the County Department of Transportation has developed a drone program that is in the final stage of testing. All use of drones is subject to Federal Aviation Administration (FAA) regulations. Only trained and certified operators are authorized to pilot drones. FAA regulations require pilots to obtain an FAA license before legally operating drones. Drone pilot training can be completed in about three hours at a cost of \$1,000; testing costs are \$200. An FAA drone pilot license must be renewed every 24 months.

¹ Unmanned Aerial Vehicle

² The use of photography in surveying and mapping to measure distances between objects

FAA regulations limit drone use:

- Drones cannot fly more than 400 feet above ground, unless pre-approved to fly higher.
- Drones cannot fly at night without prior approval.
- Drones cannot operate near controlled air traffic facilities, like airports.

Drones are powered by rechargeable batteries. The range and duration of a drone flight is limited by payload weight and battery capacity. A typical flight can last between 20 and 25 minutes before battery power begins to decline. Some drones can sense remaining battery life and automatically initiate a return to base.

Sheriff

Sheriff's Office Policy Directive 15-005, Section 612, establishes guidelines for the use of drones and for the storage, retrieval and dissemination of images and data they capture. Drones are not used to conduct random surveillance, or target persons based solely on individual characteristics such as race, ethnicity, national origin, religion, disability, gender or sexual orientation. They are also not used to harass, intimidate or discriminate against any individual or group, or to conduct personal business of any type.

An administrator manages the drone program, ensuring that policies and procedures conform to current laws, regulations and best practices. There are ten deputies and two sergeants assigned to the Drone Unit.

The Sheriff's Office launched their first drone in 2016. Drone deployment requires written authorization by the Sheriff or an authorized designee. Complaints regarding drones and their usage are forwarded to and handled by the Sheriff.

Drones are used when a live aerial view will benefit deputies on the ground. Tactical commanders can get an advantageous viewpoint of dangerous and complex Special Weapons and Tactics (SWAT) missions. Drones help commanders prioritize strategies by quickly giving clear views of vast areas when looking for missing children or at-risk adults along with locating hazards like pools or ponds. Other viable uses are crime scene photography and disaster assessment in addition to search and rescue operations on rivers, lakes, canyons, mountain sides and other obscure or inaccessible locations.

Drone costs vary depending on size and designated usage. Large drones can cost up to \$35,000. A medium-sized drone for everyday use is about \$5,000. Micro-drones are around \$200. The Sheriff's annual budget for on-going drone operations is \$20,488. A representative from the Sheriff's Office advises their drone use is for increased effectiveness and deputy safety, not monetary savings to the department.

District Attorney

The El Dorado County District Attorney's Office is one of the first in California to use drones in presenting cases to juries. Drones capable of collecting evidence in high resolution video are remarkably effective and helpful during jury trials. Flight logs provide crucial detail and establish timelines which aid in presenting cases and documenting crime scenes. Drones provide video details from an overhead viewpoint, capturing crime scene evidence that might otherwise be overlooked. They can eliminate crime scene walk-throughs lowering staff costs and reducing the possibility of damaging or altering a crime scene. Jury panels can view crime scenes while seated in the courtroom rather than being subjected to distractions during crime scene visits that might influence their judgments. In some cases, evidence gathered from a drone is compelling so that the accused plead guilty, lowering trial costs.

The District Attorney's Office launched their first drone in 2018. New drone packages typically range from \$1,500 to \$2,000 each, depending on accessories. Editing software costs approximately \$500. Rather than purchasing new computers, they have been able to use their existing County issued computers.

Previously, when the District Attorney's Office needed aerial views of crime scenes, they enlisted a California Highway Patrol helicopter at a cost of about \$1,000 per flight. Drone use can offset CHP costs after their second use. The District Attorney's Office is creating a fleet of crime scene documenting drones. The office has four drones, but only one is currently operational.

The District Attorney's Office has no written policy on drone use.

Department of Transportation (DOT)

After securing funding and County approval, DOT purchased their first drone in early 2020. DOT drone use is in a preliminary testing phase; they have not yet used the drone for a County project. DOT plans to use drones during the planning phases of new projects. The drone will provide detailed and three-dimensional elevation aerial data of project sites. Additionally, the drones will provide construction mapping and monitoring of construction progress.

DOT is currently developing a drone policy. When DOT does use a drone on a project, they will notify County residents and businesses within the drone's flight path in advance. DOT will post the date, time and location of drone project operations on their website.

DOT will initially spend approximately \$50,000 for the drone, staff training, certification, insurance, software, computer and monitor upgrades and accessories. Continuing cost is about \$7,800 annually for maintenance, training, insurance and software upgrades.

According to DOT, using drones will eventually eliminate the need to contract with expensive aerial survey companies. The County now spends between \$10,000 - \$12,000 for small to medium projects and between \$18,000 - \$27,000 for larger projects. Drone photos of project sites will allow the County to reduce staff time by eliminating about 60 percent of ground shots taken in the field.

The recent \$50,000 drone purchase may allow DOT to eliminate a land surveyor position, saving the County nearly \$169,000, more than offsetting the drone's cost and maintenance expenses.

FINDINGS

F1. The benefits of drone usage in El Dorado County include streamlining everyday tasks, providing additional safety to County employees and a more efficient use of tax dollars.

F2. The District Attorney has no written policy on drone use.

RECOMMENDATIONS

R1. The District Attorney should consider developing a written policy establishing guidelines for their use of drones.

REQUEST FOR RESPONSES

This Grand Jury report is an account of an investigation or review. It contains findings and recommendations, and names those who should respond to each finding and each recommendation pertaining to matters under the respondent's control.

Please review *How to Respond to an El Dorado County Grand Jury Report*, a separate document included with this report.

Responses are requested in accordance with California Penal Code §933 and §933.05.

- **Responses to F1 are invited but not required from the County Board of Supervisors, County Sheriff and the County District Attorney.**
- **Responses to F2 and R1 are required from the County District Attorney.**