

Oakland Police Department
Controlled Equipment Impact Report

Item(s): Unmanned Aerial System (UAS); Drones
Applicable Use Policy: DGO I-25, Unmanned Aerial System (UAS)



Description and Purpose

DJI Mavic Enterprise 2 Advanced	
Description	A Drone is an unmanned aircraft. Drones are more formally known as unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UAS), which describes the UAS, remote controller and operator.
Manufacturer's Product Description	Compact Commercial Drone with Thermal and Zoom Dual-Camera, and Spotlight and Loudspeaker Attachments Built for Search & Rescue, Fire Fighting, Inspection, and More
How the item works	UAVs are controlled by remote controllers. Operators will utilize the remote controller to direct the UAV to fly, hover, or land
Expected lifespan	UAVs will last approximately 2 years or more depending on usage. Batteries have shorter life spans as they gradually deteriorate due to normal usage.
Quantity	7 owned
Purpose and intended uses and/or effects	Understanding that real time intelligence can provide officers safety and tactical advantages, UAV's are beneficial in providing a bird's eye view during perimeters or barricaded suspects, which reduces or mitigates use of force and injuries to all parties. UAVs are also beneficial in search and rescue operations and crime scene documentation as they provide aerial coverage and views not possible while at ground level.

DJI Mavic Mini 2	
Description	A Drone is an unmanned aircraft. Drones are more formally known as unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UAS), which describes the UAS, remote controller and operator.
Manufacturer's Product Description	The Mavic Mini from DJI is a compact drone weighing in at under 9 oz.
How the item works	UAVs are controlled by remote controllers. Operators will utilize the remote controller to direct the UAV to fly, hover, or land
Expected lifespan	UAVs will last approximately 2 years or more depending on usage. Batteries have shorter life spans as they gradually deteriorate due to normal usage.
Quantity	5 owned

Purpose and intended uses and/or effects	Understanding that real time intelligence can provide officers safety and tactical advantages, UAV's are beneficial in providing a bird's eye view during perimeters or barricaded suspects, which reduces or mitigates use of force and injuries to all parties. UAVs are also beneficial in search and rescue operations and crime scene documentation as they provide aerial coverage and views not possible while at ground level.
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DJI Matrice 300 RTK	
Description	A Drone is an unmanned aircraft. Drones are more formally known as unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UAS), which describes the UAS, remote controller and operator.
Manufacturer's Product Description	The Matrice 300 RTK is a commercial drone features a 1080p video, which provides a live HD view from the aircraft's camera at distances of up to 9.3 miles (15 km) with Thermal and Zoom Dual-Camera, and Spotlight and Loudspeaker Attachments Built for Search & Rescue, Fire Fighting, Inspection, and More.
How the item works	UAVs are controlled by remote controllers. Operators will utilize the remote controller to direct the UAV to fly, hover, or land
Expected lifespan	UAVs will last approximately 2 years or more depending on usage. Batteries have shorter life spans as they gradually deteriorate due to normal usage.
Quantity	1 owned
Purpose and intended uses and/or effects	Understanding that real time intelligence can provide officers safety and tactical advantages, UAV's are beneficial in providing a bird's eye view during perimeters or barricaded suspects, which reduces or mitigates use of force and injuries to all parties. UAVs are also beneficial in search and rescue operations and crime scene documentation as they provide aerial coverage and views not possible while at ground level.

Fiscal Costs

Initial Costs

The Oakland Police Department (OPD) currently owns/possesses/uses the equipment.

Initial costs of the items were approximately:

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Equipment	Per-unit cost	Total cost
DJI Mavic Enterprise 2 Advanced	~\$7,300	~\$51,100
DJI Mavic Mini 2	~\$700	~\$3,500
DJI Matrice 300 RTK	~\$40,250	~\$40,250
etc	etc	etc

OPD proposes to obtain the equipment. Initial costs are anticipated to be:

Write an anticipated amount in the most easily understood manner possible. For items we already own/possess, leave blank.

Estimated or anticipated costs for each proposed use

Regardless of UAV, the UAVs are stored in locked and secured facility at the Oakland Police Department. The Electronic Services Unit (ESU) members have access to UAVs and will respond to an incident with the UAV when requested by an Incident Commander. ESU members may be on duty during incidents requiring the UAV. If they are, they may deploy as patrol officers, or as their regular duty assignment, and utilize any one of the UAVs. For a tactical team call-out, other ESU members will respond even if they are off-duty, resulting in overtime expenditures. The amount of the expenditure is based on the time the incident takes to resolve. Over time deployments can be tracked utilizing an i-code through fiscal.

Currently, OPD ESU has a staffing of 1 Lieutenant, 1 Sergeant and 14 Officers. OPD ESU has deployed robots and or pole cameras a total of fifty-seven (57) times in 2022, and eighteen (18) of these deployments were during bi-monthly training. OPD ESU members are not selected to the team based on their assignment, but rather by their ranking during the Order of Merit List (OML) selection process. However, applicants need to be assigned to a field assignment at the time of application as opposed to office assignment. Based on the staffing levels and assignments in 2022 of ESU, OPD had full coverage throughout the week except for several nights between 2am-7am. Every January exists watch change and officers select their patrol assignments based on seniority. This minor shortfall on coverage may change next year due to the watch change.

It is also the goal of OPD ESU to expand our team to twenty (20) Officers in 2023. This will assist in coverage and in workload. OPD ESU also is creating a Visual Observer (VO) training

course in order to train all patrol officers in becoming a VO. The course will be similar as ACSO course, which consists of 1 hour of lineup training and a Power Point presentation.

Estimated or anticipated costs of potential adverse impacts

Potential adverse effects are myriad, and there is no way of anticipating every possible adverse impact. Additionally, even some known possible adverse effects may be so remote that they were not assessed for the purposes of this report. Finally, costs of even likely adverse effects may vary wildly based on other circumstances which are difficult to predict and can vary from incident to incident. Keeping this in mind, some potential adverse effects and their possible costs are:

Deliberate misuse might cause the Department to be exposed to liability, which could include monetary judgments against the City.

Unintentional misuse might cause the Department to be exposed to liability, which could include monetary judgments against the City.

Failures of the equipment might cause the Department to have to purchase additional items, at a cost per item as indicated.

Estimated or anticipated ongoing costs

Costs for operation include training, personnel, maintenance and upgrade costs.

Training and personnel costs – Currently, ESU has mandatory training twice a month. This training consists of two 10-hour days and typically occurs at the OPD or any other nearby facility or location. There has not been any rental fees or associated costs to locations of training currently. Some training may either require the ESU member attending to be on overtime, or for overtime to backfill that respective ESU members position while they are at training. If an ESU member elects to attend a POST certified training or outside training course there could be associated costs. Unknown yearly costs.

Storage costs – UAVs are housed at secured OPD facilities and vehicles and there are no associated costs.

Maintenance and upgrade costs – Currently, there is no known life span for an UAV, but manufactures suggest 2 years. With proper care the life expectancy will be longer. However, normal wear and tear can take place and will require replacement of parts. Depending on the part, the cost per item can range from fractions of a dollar to several hundred dollars.

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There are random software updates to all UAVs, which require the usage of WiFi to download. All software downloads and/or upgrades are free.

Like any fleet (vehicle, motorcycle, UAV, etc), there comes the cost of wear and tear. As UAV's were used on a more frequent basis the batteries hold less and less charge and will then hold no charge at all (like any other battery). Propellers are very fragile and also suffer minor breaks and cracks. OPD ESU conduct pre-inspections prior to deployment and at times will notice these minor cracks/chips and then replace the parts.

ACSO budgets approximately \$15,000 a year for battery replacements, and minor wear and tear on UAV's. ACSO has sixty (60) UAV's and 25 operators. OPD has a fleet of eleven (11) currently and fifteen operators (15) to include the ESU team leader and commander. Year to day ACSO has 228 missions and OPD has 101 deployments. Based on ACSO's budget on their fleet OPD expects an annual spending of approximately \$2,500-\$3,000/year on battery replacements and minor wear and tear on UAV's.

OPD ESU also subscribes to FAA107 deployment which allows OPD ESU operators to submit flight plans to the FAA for immediate approval in controlled airspace at available airports. Subscription costs are approximately ~\$150-\$200/mo (~\$1,800 - \$2,400/yr).

Equipment	Monthly	Yearly Total cost
Battery & minor wear and tear	Unknown	~\$3,000
FAA107 Deployment	~\$150-\$200	~\$1,800 - \$2,400

Impacts

Reasonably anticipated impacts

Deliberate misuse.

Though unlikely, it is possible that Unmanned Aerial System (UAS); Drones may be deliberately misused by employees. Some of the ways that the Department attempts to prevent deliberate misuse is through background checks of prospective employees, supervision and training, strict policy guidelines, robust reporting and accountability practices, and discipline for deliberate misconduct up to and including termination. Suspected criminal misuse of equipment may also be forwarded to the District Attorney's office or other appropriate prosecuting agency for charging consideration.

Unintentional misuse.

Unintentional misuse of Unmanned Aerial System (UAS); Drones may come in many forms, from unfamiliarity or lack of training to the encountering of a scenario that was not anticipated in training or policy. The Department attempts to prevent unintentional misuse through thorough training, clear policy prescriptions, and robust review processes such as force reports, force review boards, and pursuit review boards.

Perception of militarization or exacerbation of a police/community divide.

While it is not the intent of the Department that this occur, the Department does recognize the possibility that its use of Unmanned Aerial System (UAS); Drones may lead to a perception of militarization of the Department, or an exacerbation of any existing divides between the Department and the community it serves and is a part of. The Department attempts to overcome challenges such as this by taking full advantage of community forums required by policy and law (see for instance the mandated community engagement meeting in DGO K-07 and CA Government Code § 7072(b)), by completing full and robust reports such as this one, and by collaborating with the Police Commission in the creation of use policies and procedural safeguards surrounding this equipment.

Privacy Considerations.

The Department also recognizes the deployment of drones within cities can capture images which others feel are private or intrusive. The department worked with the Privacy Advisory Committee for several years in drafting policy with direct emphasis on privacy considerations. Policy clearly states when a UAV shall record, when it shall stop recording, the prohibited usages and the length of period recordings can be kept on file. Random surveillances are also prohibited.

Mitigations

Complaint receipt and investigation procedures – [DGO M-03](#)

The use of controlled equipment, as with any use of the police powers, is subject to the rules and laws that govern the Department and its employees. Complaints and allegations that the Department or its employees have violated these rules or laws are treated with the utmost seriousness, including proper intake at the Internal Affairs Division and investigation by the appropriate investigative individual. Where allegations are found to be substantiated, the Department uses a progressive discipline structure to serve both deterrent and rehabilitative functions. Finally, deliberate misconduct or actions contrary to the Department’s values are not tolerated, and can lead to termination of employment.

OPD’s complaint receipt and investigation procedures serve as important procedural mitigations to the possible adverse impacts of the use of this equipment.

Community outreach and specific inquiry pathways – [DGO K-07](#)

Use of controlled equipment, especially equipment that may have analogues used by militaries or quasi-military federal law enforcement, can drive perceptions of a militarized police force that is pre-disposed to the use of force as opposed to thoughtful, deliberate resolutions to incidents using de-escalation and minimizing the use of force. An important procedural mitigation to this type of perception is regularly communicating with the community served, as a way for information to be shared in both directions. This serves to dispel common misconceptions as well as provide valuable perspective for the Department and its employees. OPD uses community outreach, such as social media, community events, and a specific, annual community forum as required by DGO K-07. Additionally, OPD’s overarching controlled equipment policy sets forth processes for inquiries about the equipment.

Equipment-specific use policy and Police Commission oversight – [OMC 9.65](#)

While most every law enforcement agency is bound by state law (Government Code § 7070 et. seq.), the very nature of police oversight in Oakland provides one of the most powerful procedural mitigations of potentially adverse impacts. For instance, state law requires that most agencies have their controlled equipment use policies approved by their governing body (e.g., City Council, or Board of Supervisors). In the case of OPD, however, there is an additional layer of oversight in the Police Commission, which must review any controlled equipment use policy prior to it being approved by the City Council. This requirement, set forth in Oakland’s municipal code section 9.65, is a procedural mitigation to the possible adverse impacts of the use of this equipment.

Technical safeguards

The Mavic Enterprise 2 Advanced: have obstacle avoidance system enabled by technologies such as infrared sensors, stereo vision sensors, ultrasonic sensors, and GPS. These sensors work together to make sure the drone detects and avoids obstacles in the flight path to prevent crashes.

The and the Matrice 300RTK: have obstacle avoidance system enabled by technologies such as infrared sensors, stereo vision sensors, ultrasonic sensors, and GPS. These sensors work together to make sure the drone detects and avoids obstacles in the flight path to prevent crashes. The Matrice 300RTK further has the ability for dual pilot capability where one pilot operates flight path and the other operates the camera and spotlight.

The Mavic Mini 2 does not have obstacle avoidance, however they do have GPS.

For each UAV, a Visual Observer (VO) is required per policy, which is an added protection to avoid collisions. Additionally, prior to any deployment OPD officers must request permission from the Air Traffic Controller (ATC) to fly. Officers are proficient in reading FAA air space regulations and understand above ground level (AGL) restrictions and no fly zones. If officers request to fly or exceed AGL restrictions they must contact Washington, D.C. and request permission.

Procedural safeguards

OPD only allows ESU members, who have attended ESU training, and are FAA107 Certified to deploy a UAV. Officers must submit a letter of intent and go through a selection process prior to being selected to join the OPD ESU. Once selected, Officers must attend bi-monthly training and it is recommended to attend one of the following courses prior to deploying a UAV in the field:

- 1) FAA107 Basic Pilot Operators Course consisting of day flying and test preparation, and/or
- 2) POST Certified UAV Pilot Operators Course consisting of day flying and test preparation

Once one of these courses have been attended, or the officer has become FAA107 certified, the officer must attend the following:

- 3) OPD in-house Basic Operators Course consisting of 24 hours of flight, to include nighttime flying.

Alternatives

De-escalation and alternative strategies

OPD officers are mandated to use de-escalation strategies and tactics when safe and feasible. These strategies and tactics, which are predicated on de-escalation best practices around communication, containment, positioning, and time/distance/cover, reflect the Department's commitment to de-escalation over the reliance on force to compel compliance.

However, even during de-escalation strategies and actions, controlled equipment may be used or ready to further a safe outcome to the event for the engaged person, the community, and the officers. Generally, a built-in alternative to the actual use of controlled equipment – especially as a force option – is its use as a tool to provide safety, information, or containment to an incident so that officers can bring the situation under control and hopefully encourage a peaceful outcome. This, in conjunction with other de-escalation or alternative strategies, provides a baseline for OPD officers in the conduct of their duties when using or contemplating the use of this controlled equipment.

There are other manufacturers of UAVs, but the majority of agencies utilize DJI products due to the advanced technology, the ease of use, the HD quality of video and the durability of the product. Most other drones have similar capabilities but are far behind in technology and quality. Without such technology, the only alternative in most cases would be the need for an officer to place themselves in a location to physically see or hear. Without the real-time intelligence of a UAV some of the other options officers have are the following;

- air support (Argus, or outside agency), but depending on time, weather and personnel air support may not be available or delayed.
- OPD K-9's can be utilized, but without first clearing the area the risk of a bite (use of force) is escalated
- Officers can also use community support and contact a resident to have them look out a window which provides an additional vantage point. This has proven successful in the past but depending on circumstances this can place the resident in danger.

Location

Unmanned Aerial System (UAS); Drones will typically be used within the areas that OPD has jurisdiction or in areas of the State of California where OPD is specifically conducting operations or investigations. This includes the entirety of the City of Oakland, and may include neighboring jurisdictions or other areas within the State.

Third Party Dependence

This item does not require third-party actors for operation.

This item does require third-part actors for operation:

UAVs at times require firmware updates or random software updates to all UAVs, which require the usage of WiFi to download. All software downloads and/or upgrades are free and are supplied by DJI.

Additionally, as noted above, communication with ATC is necessary prior to deployment, and clearance from Washington, D.C. FAA ATC may also be required officers feel the need to operate passed air space requirements.

Track Record

Other agencies utilize UAVs and the Alameda County Sheriff's Office, Chula Vista Police Department and Huntington Police Department are the founding departments in California for creating UAV programs. These departments set the standards for UAV programs throughout the nation and as police departments and other law enforcement entities begin to adapt and create their own programs, they have realized the benefits of such programs. Many agencies have discovered the safety it brings to both officers and the community. Use of Force incidents are drastically curbed which brings incidents to a safe resolution, but also assists in preventing future civil litigations. Agencies have also discovered the addition of these fleets assist immensely in lost/missing person searches, search and rescue and crime scene recreations.

Several agencies still do not have UAV programs such as, BART Police, San Francisco Police Department, Berkeley Police Department, Burlingame Police Department, Alameda Police Department and many more.

Other agencies such as Chula Vista Police Department have a full time UAV program, which began in 2015, and label their program as "Drone as First Responder Program". Their full time Drone Team deploy from the roof top of their agency and respond to priority calls for

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service. They provide real-time intelligence to responding officers, or clear the service call prior to any patrol vehicle arriving on scene.

ACSO began their program in 2015. They were one of the first agencies have drones in the field with patrol officers. They assisted in perimeters, barricaded suspects, lost/missing persons, search rescues, scene recreation and much more.

The main common denominator for all the programs is the prohibited usage of drones for random surveillance or for random fly overs during peaceful gatherings and first amendment demonstrations.

UAV’s places officers at a place of advantage for safety. The usage of such technology is paramount in the de-escalation of incidents and the mitigation in use of force. Without such technology, the only alternative in most cases would be the need for an officer to place themselves in unknown areas and without real time intelligence.

Below is a list of deployments in 2021 and 2022. It should be noted that ACSO conducted all UAV deployments in 2021 and in 2022, up until March 2022. Since this time OPD took lead in majority of deployments. ACSO, or other outside agencies were contacted when OPD was unavailable.

Table 1 below details the deployments of ACSO Drones in 2021-2022 and OPD Drones in 2022 beginning March 2022.

Table 1: 2021-2022 ACSO & OPD Drone Deployments

	ACSO	ACSO	OPD
Incident Type	2021	2022	2022
Mass casualty incidents	0	0	0
Disaster management	0	1	0
Missing or lost persons	3	0	3
Hazardous material releases	1	0	0
Sideshow events	4	4	4
Rescue operations	1	0	2
Training	0	0	18
Barricaded suspects	13	11	12
Hostage situations	0	1	0
Armed suicidal persons	1	2	0
Arrest of armed and/or dangerous persons	21	20	41

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Scene documentation for evidentiary or investigation value	7	1	2
Operational pre-planning	1	0	0
Service of high-risk search and arrest warrants	0	3	18
Exigent circumstances	0	0	1
Total	52	43	101
Total Deployments Outside of Training	52	43	83

Of the 43 incidents noted above by ACSO in 2022, there were six incidents where ACSO responded and did not deploy. Reasons noted for these ‘non-deployments were inclement weather and suspect(s) already detained prior to arrival. It should also be noted that Hayward and San Leandro each deployed once in our City in 2021.

OPD ESU also understood the importance of deployment locations and keeping a track record of such locations. Prior to 2022 there were only 5 geographical areas in Oakland and the 2022 watch changed brought back Area 6. Below is a breakdown of where the UAV’s were deployed geographically, by each police area in the relevant years

Table 2 below details the Police Areas where UAS were deployed in 2021 and 2022.

Table 2: OPD UAS Deployment by Police Area

Deployment by Area	ACSO Deployments 2021	ACSO Deployments 2022	OPD Deployments 2022
Area 1	9	6 (1 by Hayward)	11
Area 2	5	3	7
Area 3	9	8 (1 same deploy)	17
Area 4	8	2	16
Area 5	17	12	17
Area 6		8	10
Citywide	4*	0	0
Outside of Oakland	0	1	3
Total*	52	40	81

In 2021 there were four deployments for Sideshow which were not documented as a specific area; the sideshow activity involved moving vehicles and involved multiple police areas.

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In 2022 ACSO also deployed outside the city of Oakland in the City of Berkeley. OPD requested ACSO assistance for an arrest of an armed suspect. In 2022 OPD deployed in Alameda and Emeryville. Hayward also deployed in our City in 2022 because OPD and ACSO were unavailable.

OPD ESU further tracked the race of detainees connected to UAS Deployments in 2021 and 2022.

Table 3 below provides race and gender data related to 2021-2022 UAS deployments.

Table 3: Race and gender of Detainees Connected to UAS Deployments in 2021-2022

2021 ACSO	Race - Female	Race - Male	Total
Black	2	18	20
Hispanic	0	5	5
Asian	2	1	3
White	1	1	2
Other	0	1	1
Total			31

2022	Race - Female	Race - Male	Total
Black	24	63	87
Hispanic	10	27	37
Asian	0	12	12
White	2	6	8
Other	0	6	6
Total			150

OPD knows the race of detainees connected to UAS deployments. However, the race of individuals involved in many UAS deployments is not known. There are cases such as barricaded suspects, or searches of perimeters where no suspect is ever discovered or detained. There could also be UAS used for missing persons where the person's identity is not entirely known nor discovered.

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As noted above, the deployment of UAV's has increased considerably. The emphasis has now been placed on "time", "de-escalation" and "real-time intelligence" to bring incidents to a safe resolution. Several success stories to the deployment of UAV's have been:

- Identifying vehicles related to Sideshow activity
- Locating suspects hiding in yards
- Locating suspects hiding in residences
- Surrounding residence(s) during search warrants to minimize officer exposure in danger areas when there is minimal to no cover/concealment
- Flying up to second story windows and gaining real-time intelligence on interior of residence during barricaded incidents and search warrants
- Assisting in the search of lost/missing persons.
- Assisting Homicide Investigators in the search of evidence in rural areas
- Assisting in the search of any other injured victims during freeway rollover in brush area.