



City of Cambridge Police Department

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Christine Elow
Police Commissioner

Yi-An Huang
City Manager

To: City Manager, Yi-An Huang
From: Police Commissioner, Christine Elow
Date: April 18, 2023
Ref.: **Awaiting Report 23-08: Less-Lethal Review**

The purpose of this response is to address Awaiting Report 23-08 that the City Manager is requested to direct the Police Commissioner to explore additional less-lethal alternatives that pose the smallest risk of injury when deployed for standard issue in the Cambridge Police Department; and, be it further, that the City Manager be and hereby is requested to report back to the City Council with specific recommendations for possible purchase and implementation of less-lethal alternatives.

Whenever practicable, Cambridge Police officers are to use verbal and non-verbal engagement techniques and de-escalation actions to stabilize a law enforcement situation so that more time, options, and resources are available to gain a person's voluntary compliance and to reduce or eliminate the need to use force. However, when de-escalation tactics have been attempted and failed or are not feasible based on the totality of the circumstances, officers are authorized to use reasonable force to gain, maintain, or re-establish control to protect the lives and safety of others and/or themselves. In some situations, less-lethal weapons are critical tools as they can provide an alternative force option that can be effective without resorting to deadly force.

As a department, we constantly review and assess the needs of the community and our officers to ensure we can safely and effectively respond to and satisfy those needs. Part of this assessment includes regularly evaluating the latest less-lethal options available for law enforcement agencies that would supplement or replace the department's current set of tools utilized in a use-of-force incident.

Overview

As a summary, please find an overview of the outlined less-lethal options, if they are or are not currently in CPD's inventory, and if they would be recommended by the department for future expansion or consideration:

Item	Currently In Inventory	Not Currently In Inventory	Recommended
PR24 Control Device	■		Yes
OC Duty Aerosol	■		Yes
40 MM (Multi)	■		Yes
40 MM (Single) multiple	■		Yes

MK-9	■		Yes
Taser 10		■	Yes
FN 303		■	Yes
Vector shield		■	No
Mission 4		■	No
BolaWrap		■	No
P.A.V.A		■	No

As part of the overall consideration, we have asked that the Police Executive Research Forum (PERF), who are conducting an independent review of the department's policies and procedures along with the January 4th fatal police shooting, include an examination of the department's response to people in crisis as well as our less-lethal options. As a result, we are recommending that the department wait and evaluate PERF's final report and recommendations before we consider pursuing or expanding less-lethal options.

Below is a more detailed overview of the Cambridge Police's most current analysis of existing less-lethal tools currently used within the department, as well as those used by other local and national police departments and associated preliminary recommendations.

Existing Cambridge Police Department's Inventory:

PR24 Control Device

The PR24 Control Device is a 14-inch expandable baton with a side handle. Each sworn member of the police department currently wears a PR24 Control Device on their duty belt. The PR24 Control Device can be utilized in incidents involving an actively resistant individual. It can expand to 24 inches. The primary purpose of the PR24 Control Device is for defensive and control purposes-only. It is to defend the officer or other persons when under attack and/or to control a combative person.

Pros:

- The PR24 Control Device is one of the most widely deployed law enforcement intermediate force tools for decades.
- The PR24 Control Device is a proven solution for de-escalation, self-defense, and gaining compliance.

Cons:

- The PR24 Control Device may be awkward in deployment when an officer is in a stressful situation. The angle of deployment may be difficult when retrieving the device's side handle.
- The PR24 Control Device may be permanently damaged after one use, especially after being used to block another hard object. There is usually difficulty in effectively deploying the device afterwards.

Recommendation:

CPD would recommend continuing the PR24 Control Device as a less-lethal option for officers. It has proven success within our department in gaining compliance.

OC Duty Aerosol

OC (Oleoresin Capsicum) Duty Aerosol is classified as an inflammatory agent. Each sworn member of the police department currently carries a container of OC on their duty belt as a less-lethal tool, if necessary. The OC spray can be utilized in incidents involving an actively resistant individual. It is a stream delivery system targeting the face and eyes. There are two primary physiological effects of OC: the involuntary closure of the eye and the burning sensation in the upper respiratory tract and to the exposed skin.

Pros:

- OC Duty Aerosol is one of the most popular, less-lethal tools in law enforcement.
- OC Duty Aerosol is easy to deploy.

Cons:

- Some people can withstand and fight through the effects of OC.
- OC spray could accidentally blow-back at the officer, especially if it is windy or rainy.
- The cross-contamination with people and clothing is very high with OC.
- The recovery from the effects of OC is 30-45 minutes on average.

Recommendation:

CPD would recommend continuing the OC Duty Aerosol as a less-lethal option for officers. It has proven success within the department and around the country in gaining compliance. It is one of the most common less-lethal tools used in the United States.

40mm Specialty Impact Weapon and Munitions System (SIWAMS) — Single-Launcher

The 40mm SIWAMS (single-launcher) is a shoulder-deployed system that can discharge 40mm impact rounds. Typically, three to four 40mm SIWAMS (single launcher) are available for officers each shift. The 40mm SIWAMS (single launcher) are stored in patrol supervisor cruiser and can be utilized in incidents involving an actively resistant individual. Multiple 40mm SIWAMS (single launcher) could be deployed during one incident.

Pros

- The 40mm SIWAMS (single-launcher) is currently deployed and accessible for officers.
- The 40mm SIWAMS (single-launcher) can be deployed from a distance that allows officers to create space between themselves and the threat.

Cons:

- A multiple deployment and discharge of the 40mm SIWAMS (single-launcher) could result in sympathetic lethal force.
- Multiple deployments of the 40mm SIWAMS (single-launcher) would still require a large response of officers to provide lethal cover.
- The 40mm SIWAMS (single-launcher) was deployed on January 4, 2023 and not effective in stopping Arif Sayed Faisal nor did it result in gaining his compliance.
- The 40mm SIWAMS (single-launcher) may not be effective when individual's pain receptors are lessened due to substances, alcohol, or other factors.
- The 40mm SIWAMS (single-launcher) impact round may miss its intended target.

Recommendation:

CPD would recommend exploring deploying multiple 40mm SIWAMS (single-launcher) during one incident. Our Training and Certification Unit, along with our use of force experts, would determine the feasibility of deploying multiple 40mm SIWAMS (single-launcher) during one incident.

40mm SIWAMS (Multi-Launcher)

The 40mm SIWAMS (multi-launcher) is a shoulder-deployed system that discharges 40mm impact rounds. The 40mm SIWAMS (multi-launcher) is stored at Cambridge Police Headquarters and only accessible to Special Response Team members. The 40mm SIWAMS (multi-launcher) could be utilized in incidents involving an actively resistant individual.

Pros:

- The 40mm SIWAMS (multi-launcher) discharges an impact round each time it is fired and can hold up to four rounds.
- An officer could discharge several rounds in a short amount of time without having to reload the system.
- The 40mm SIWAMS (multi-launcher) can be deployed from a distance that allows officers to create space between themselves and a threat.
- The 40mm SIWAMS (multi-launcher) can be stored in cruisers and be accessible to officers responding to calls for services.
- The 40mm SIWAMS (multi-launcher) is currently in the CPD inventory and accessible to Special Response Team members.

Cons:

- The 40mm SIWAMS (multi-launcher) may be difficult for some officers to carry and manipulate due to the system's weight and functionality.
- The 40mm SIWAMS (multi-launcher) may not be effective when an individual's pain receptors are lessened due to substances, alcohol, or other factors.
- The 40mm SIWAMS (multi-launcher) impact round may miss its intended target.

Recommendation:

CPD would recommend exploring expanding accessibility for the 40mm SIWAMS (multi-launcher) as an additional option for officers. The 40mm SIWAMS (multi-launcher) could provide officers with a tool to discharge numerous impact rounds in a short amount of time without having to reload. The 40mm SIWAMS (multi-launcher) can be easily stored in cruisers and readily accessible for officers responding to calls for service. The 40mm SIWAMS (multi-launcher) can be deployed from a distance that allows officers to create space between themselves and the threat. Additionally, a Cambridge Police officer, who is a local and national use of force subject matter expert, has researched the 40mm SIWAMS (multi-launcher) and strongly believes that this tool could be a valuable resource for officers.

MK-9 Stream OC Aerosol

The MK-9 was originally intended for crowd management, but now has a designation for duty aerosol (DA). The MK-9 is stored at Cambridge Police Headquarters and only accessible to Special Response Team members. The MK-9 could be utilized in incidents involving an actively resistant individual. It will deliver 14 short bursts of OC at an effective range of 18-20 feet. This 1.3% MC OC aerosol product utilizes a stream delivery method providing a target-specific, strong concentrated stream for greater standoff. CPD currently has five in its inventory that are only accessible to the Special Response Team.

Pros:

- The MK-9 stream can be delivered from 18-20 feet, which provides distance for officers.
- The MK-9 stream can deliver 14 bursts, which provides officers the option to deliver multiple bursts in a short amount of time.
- The MK-9 stream is concentrated, which reduces the possibility other officers or others in the area will be contaminated.
- The MK-9 stream can be stored in cruisers and readily accessible for officers.
- The MK-9 stream is in the CPD inventory and accessible to Special Response Team members.
- The MK-9 stream can be stored in cruisers and accessible to officers responding to calls for services.

Cons:

- The MK-9 stream does not have a carrying container and may limit an officer's ability to transition to other tools.

Recommendation:

CPD would recommend expanding the accessibility of the MK-9 stream as a less-lethal option for officers. The MK-9 stream delivers a concentrated stream that increases officers' ability to immobilize individuals posing a threat.

Recommended Tools Not Currently a Part of Cambridge Police Department's Inventory:

Axon Taser 10

Made available in January 2023, the Axon Taser 10 is one of the newest Electronic Control Devices (ECDs) on the market. Each sworn member of the police department could carry a ECD on their person. The Axon Taser 10 could be utilized in incidents involving an actively resistant individual. It transmits controlled pulses of electricity carefully designed to stimulate skeletal muscles of the human body. The pulses affect the sensory and motor function of the peripheral nervous system and can impair their physical abilities. Electronic Control Devices do not rely on pain compliance, but instead prevents coordinated actions using temporary neuro-muscular immobilization.

Pros:

- The typical recovery time is instant, unlike pain compliance tools and OC aerosol.
- The Taser 10 has nearly doubled the range of prior models to a 45-foot maximum range, whereas the prior model's maximum range was 25 feet.
- It has a 10 single probe cartridge allowing the user up to nine opportunities to achieve connection – there is a maximum of four energized connections.
- This model has a warning alert mode, allowing the user the opportunity to de-escalate without deploying cartridges.
- The ECD could be issued to each officer, which would make the tool immediately accessible for officers responding to calls for service.
- Preliminary results of the Taser 10 indicate a 95% effectiveness rate.

Cons:

- There have been recent high-profile deployments of ECDs, which have resulted in death.
- The Cambridge community has previously expressed opposition to the utilization of this type of less-lethal device following prior demonstrations.
- According to the Police Executive Research Forum (PERF) in 2020, the ECDs were not effective 40 percent of the time due to distance and clothing, however this was prior to the AXON Taser 10 becoming available.

Recommendation:

CPD would recommend exploring the Axon Taser 10 as a less-lethal option when confronted with a person who is armed with something other than a firearm. Axon's Taser 10 would provide officers with an option to immobilize a person if other efforts to gain compliance were ineffective. Further, Axon's Taser 10 maximum range provides increased efficiency when deployed, reducing the concerns related to distance in PERF's 2020 report. Additionally, a Cambridge Police officer, who is a use of force subject matter expert locally and around the country, has extensively researched the Axon Taser 10 and strongly believes that this tool could be a valuable resource for officers and fill a gap not available from CPD's existing tools.

FN-303 Less Lethal Launcher by FN Herstal

The FN-303 Less-Lethal Launcher is a shoulder-fired weapons system that is accurate from up to 160 feet. The system could be stored in cruisers and utilized in incidents involving an actively resistant individual. Its propulsion system is powered by a CO2 canister on the side of the weapon. The FN-303 is a drum-fed magazine that can hold up to 15 kinetic impact rounds.

Pros:

- The FN-303 is highly modular and lightweight. This would allow for optics to be mounted on the rail system for greater accuracy.
- Accurate up to 160 feet. This creates a greater distance between the threat(s) and the officer.
- Magazine can hold 15 kinetic impact rounds.
- Operates using a compressed air CO2 canister. Therefore, there is no recoil when fired.
- Safe to use at close range.

Cons:

- New weapons system
- Cost
- Training

Recommendation:

CPD would recommend exploring and improving its shoulder-fired capabilities beyond the 40mm launcher. Based on a Commanding Officer's training and real-world experience, he does not believe that the 40mm as a standalone has enough stopping power to immobilize a subject who is on narcotics or in an altered state of mind.

Not Recommended for Cambridge Police's Future Inventory:

Vector Shield

The Vector Shield is a much smaller version of a ballistic shield. The Vector Shield system could be stored in cruisers and utilized in incidents involving an actively resistant individual. Members of the Department have attended multiple product presentations and demonstrations over the past two years.

Pros:

- The Vector Shield can be stored in cruisers and accessible to officers responding to calls for services.

Cons:

- The Vector Shield may provide limited protection for officers who are assaulted at a close distance.

Recommendation:

CPD would not recommend exploring the Vector Shield as a less-lethal option. A Cambridge Police supervisor and officer participated in a Vector Shield demonstration. In their opinion, the Vector Shield would not be effective in providing our officers with additional protection. Additionally, a Cambridge Police officer, who is a local and national use of force subject matter expert, observed a Vector Shield demonstration. In his opinion, he does not believe our officers should use the Vector Shield to disarm a subject with an edged weapon. In his research, the officer investigated an incident where the Vector Shield was deployed by a local police department and proved to not be effective with a person armed with a large knife.

The Mission 4 by Byrna Technologies Inc.

The Mission 4 is a shoulder-fired, less-lethal rifle based on the AR-15 platform similar to CPD's M-4 patrol rifle. The system could be stored in cruisers and utilized in incidents involving an actively resistant individual. This weapons system fires using a CO2 canister that is stored in the butt stock of the rifle. It holds two 19-round magazines that fire a kinetic impact round from distances of up to 175 feet. Members of the Department have attended product presentations and demonstrations over the past few months.

Pros:

- The Mission 4 is a similar rifle platform as CPD's M-4 patrol rifle, so it will be a more streamlined transition during training.
- The Mission 4 has a rail mount system that is similar to CPD's M-4, which would allow for optics to be mounted on the rifle and greatly improve accuracy.
- The Mission 4 is fired using a CO2 canister located in the buttstock of the weapon. Because it uses CO2 as its propulsion system, the weapon is lightweight and has very little to no recoil.
- The Mission 4 can be fired from an extremely far distance (175 feet). This creates even more distance between the threat and the officer.
- The Mission 4 holds two 19-round magazines and can fire up to 60 rounds before the CO2 canister needs to be changed.

Cons:

- New weapons system
- Not viewed as having enough stopping power than the 40MM launcher
- Cost
- Training
- Feasibility

Recommendation:

CPD would not recommend the Mission 4 after various Tactical Operations and Training Division members participated in a product demonstration in March 2023 with Byrna Technologies. It was not viewed as having enough stopping power than the 40MM launcher and was viewed as duplicative.

BOLAWrap

The BOLAWRAP is a remote restraint device. Each sworn member of the police department could carry a BOLAWrap on their person. The BOLAWrap could be utilized in incidents involving an actively resistant individual. The BolaWrap deploys an eight-foot Kevlar tether to temporarily restrain subjects from 10 – 25 feet.

Pros:

- The BolaWrap could be issued to each officer making the tool immediately accessible for officers responding to calls for service.

Cons:

- A Cambridge Police officer has received extensive BolaWrap training. As a part of that training, the officer participated in a BolaWrap demonstration and found it to be ineffective in restraining his movement.
- The subject must be standing still for it to have a chance at working.
- The laser beam used to aim and show the trajectory of the Kevlar cable is very difficult, if not impossible, to see in sunlight.
- Uses a delivery system that is very loud and closely resembles the sound of a firearm (more so than the 40mm SIWAMS). BolaWrap would potentially be exposing our officers, and an involved subject, to unusually high noise decibels on every deployment and the risk of sympathetic lethal force.
- The BolaWrap notes their product is painless. However, the Cambridge Police officer who participated in the demonstration experienced pain caused by the Kevlar cord.
- The BolaWrap requires a large amount of open space around the subject and may be limited to outdoor deployments.

Recommendation:

CPD would not recommend exploring the BolaWrap as a less-lethal option. A Cambridge Police officer, who is a local and national use of force subject matter expert, has already participated in extensive BolaWrap training, including a demonstration. In his opinion, the BolaWrap would not be an effective resource for our officers. Additionally, two primary considerations appear to be limitations for the BolaWrap for the Cambridge Police: 1) the space requirement to deploy the BolaWrap and 2) the subject must be standing still for it to have the opportunity to restrict someone's movement.

P.A.V.A. (Pelargonic Acid Vanillylamide) Spray Canister

The P.A.V.A. Duty Spray is similar to pepper spray. The P.A.V.A. could be stored in a police cruiser and utilized in incidents involving an actively resistant individual. This is currently used by 60% of police services in the United Kingdom. P.A.V.A. is less likely to contaminate officers or bystanders. It contains a 0.3% solution of Pava, a synthetic capsaicinoid. This solution was selected because this is the minimum concentration, which will fulfill the purpose of immobilizing a person. Due to the formula, there is minimal cross-contamination. P.A.V.A. is significantly more potent than CS gas.

Pros:

- The P.A.V.A. spray canister could be issued to each officer making the tool immediately accessible for officers.
- The P.A.V.A. spray is less likely to contaminate officers or bystanders.
- The P.A.V.A. spray is significantly more potent than CS gas.

Cons

- The P.A.V.A. spray is significantly more potent than CS gas, which has been restricted in Cambridge.

Recommendation:

CPD would not recommend exploring the P.A.V.A. Duty Spray as a less-lethal option. The P.A.V.A. Duty Spray is stronger than CS gas and the use of CS gas has been restricted in Cambridge.

We hope that this detailed preliminary overview provides sufficient background and demonstrates how thoughtful we are when making these important evaluations. As previously noted, once PERF concludes their recommendations, we intend to compare both reports before proceeding with a final recommendation. If there are any additional questions, information needed or concerns regarding this matter, please let me know.

Respectfully,



Christine Elow
Police Commissioner