

Body Worn Video Feasibility Study Final Report

December 2015

National Criminal Operations
Royal Canadian Mounted Police



Executive Summary

In 2010, the Royal Canadian Mounted Police (RCMP) conducted a body worn video (BWV) pilot. Limited research data was obtained as a result of the implementation of a small number of devices. No technical evaluation of the camera equipment was conducted.

In October 2013, the current BWV project was initiated. Cameras were deployed due to exigent circumstances. There was no camera technical evaluation conducted. The Office of the Privacy Commissioner (OPC) was advised of this action before it took place.

The BWV feasibility study was undertaken to: confirm it is a sound investment; evaluate all issues to be addressed such as privacy and storage; confirm best evidence capture to support criminal investigations and court proceedings; and determine the viability of this technology for frontline operations. This study has included technical evaluations, a literature review and several small pilots. Trials have assessed potential impact to member safety, tactical considerations and evidentiary value for court proceedings.

Several limited pilots collected data on specific variables including audio and video quality; video data file size; mounting compatibility in various positions and officer safety. Cameras researched and tested had issues with battery life and durability. Additionally, cameras do not always adequately capture the incident due to mounting difficulties. To date, no camera has been identified that meets RCMP requirements for its diverse operational policing environment. As a result, a request for information (RFI) was prepared to determine industry feedback on BWV camera capability.

A privacy impact assessment (PIA) was prepared for BWV. It was received by the OPC who provided their comments and recommendations. The RCMP has worked closely with the OPC over the past 24 months on this study. Consultation is ongoing.

Storage and retention of BWV evidence will involve high maintenance costs and require massive capacity solutions. IT plays a critical role in the implementation of BWC technology. The RCMP Chief Information Officer (CIO) is researching the option of cloud storage. This will include evidence management and storage which will be hosted by external vendors. Server infrastructure must be physically located in Canada for RCMP video recordings.

Implementation of BWV involves significant consideration regarding the cost of data storage and management, technical shortcomings of camera equipment and privacy concerns. This report summarizes the RCMP's feasibility study on body cameras. It outlines the RCMP's initiative related to potential use of BWV technology and presents three recommendations for consideration.



As the policy centre, National Use of Force is seeking direction on possible implementation from a set of three options:

- A. Status quo – no implementation of BWV
- B. Force wide implementation
- C. Limited permanent implementation in a division.



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1 Chapter: **Introduction**

Body worn video (BWV) is defined as any device worn on a designated member's uniform in an overt capacity for the primary purpose of recording video and audio evidence. BWV cameras are used by law enforcement agencies to capture audio/video recordings of incidents in order to aid investigations and gather evidence. BWV adds value to evidence gathered during an investigation, however should not be relied upon as the sole source for evidence. The purpose of BWV use is to provide a recorded account of police actions when responding to calls for service from the public.

Technology brings with it tremendous opportunity as well as an equivalent amount of unparalleled questions to be answered. We are no longer looking at cameras as just a means to create a video recording of an incident or an event, but now as a method to record police interactions with the public in an evidentiary manner that must withstand judicial scrutiny. The BWV device itself now resembles a computer data stick given what it is able to record and how the recordings must now be managed within software. It now shares similar capabilities to a smart phone with: global positioning system (GPS) functionality to determine geographic coordinates of where an incident was recorded; wi-fi capability to potentially live stream video to command centers; and, some models offer facial recognition capabilities. BWV camera technology is evolving rapidly. Software is required to remove or upload the video recordings from the cameras and to manage the recordings for evidentiary purposes. BWV cameras are reliant on information technology (IT) infrastructure to support the management and storage of video captured on the device. Consequently, the camera is now part of a larger overall system requiring evidence management and ability to play back the recording in court without proprietary limitations and to meet disclosure obligations.

1.1 **Background**

Police in the United Kingdom first began using body worn cameras (BWC) in 2005. The technology has been available for ten years. Victoria Police Department began piloting this technology in Canada in 2009.

In 2010, the RCMP conducted a Tasercam pilot and BWV was added after the initial project was underway. The BWV camera chosen in a short time frame was the Vidmic model. Limited research data was obtained as a result of the implementation of a small number of devices. No technical evaluation of the camera equipment was conducted as they were acquired based on accessibility.

In 2013, an exigent operational need was identified where camera equipment was deployed on members. Three BWV camera models were chosen based on availability. There was no



technical evaluation of the camera conducted and the Privacy Commissioner's Office was advised of this action before it took place. The current BWV feasibility study was initiated in October 2013. On 2013-11-13 a communique from Contract and Aboriginal Policing (CAP) senior management was disseminated through Criminal Operations Officers containing the directive that BWV is not currently approved for use outside the national feasibility study.

In 2014, CAP National Criminal Operations (NCROPS) engaged external partner agency Defence Research and Development Canada – Centre for Security Science (DRDC-CSS) to assist with the feasibility study and camera evaluation. In January 2014, a workshop was held to begin the BWV feasibility study with stakeholders. Issues such as privacy, disclosure, data storage and retention previously identified by NCROPS were scoped. The issue of officer discretion to turn on the camera versus being dictated by specific instances listed in policy was identified as a significant factor, given that it will determine when an incident is recorded and will form the basis of how much data is stored. In June 2014, a technical and functional workshop was conducted to determine camera requirements in preparation for camera procurement.

1.2 Scope

The RCMP has undertaken the current BWV feasibility study to: confirm BWV is a sound investment; evaluate all issues to be addressed such as privacy and storage; confirm best evidence capture to support criminal investigations and court proceedings; and determine the viability of BWV technology for frontline operations. This project will provide evidence of the suitability of BWV for the RCMP and create a plan for its possible implementation.

1.3 Objectives

The objective of the feasibility study was to identify all potential challenges for implementing a BWV program within the RCMP and to provide viable solutions to either mitigate or address the issues such as privacy and data storage. Limited implementation pilots were conducted at Depot and in operational settings to determine requirements for the technology regarding court evidence, officer safety and any tactical considerations. The project established requirements that will assist in defining a solution. This study has included technical evaluations, a literature and case law review and several small pilots. Trials have assessed potential impact to member safety, tactical considerations and evidentiary value for court proceedings.

2 Chapter: Literature Review

A literature review was completed by researchers to provide a comprehensive evaluation of the impact and method of BWV use by law enforcement. The findings concluded: BWV aids in evidence collection; reduces misconduct charges and court time; and assists investigations. The literature review found the main limitation to be the cost of implementing BWV technology.

The Literature Review summarized the following:

“The various reports on BWV revealed that its use has produced a positive impact on law enforcement. It aids in the collection of evidence, the investigation of incidents, largely reduces the amount of misconduct charges, reduces court time, aids the trier of facts and the prosecution, and assists law enforcement in training and carrying out their duties. However, what is equally clear is that there are prohibitive factors to the use of BWV. The main limitation is cost. The amount of storage is large (i.e., petabytes worth of storage are required), and the costs are high in terms of being able to maintain the storage and retention that is necessary for BWV evidence. Other costs may include court transcriptions, which are time consuming as well as expensive. The operational costs alone could make the pursuit of BWV use challenging, if not unfeasible despite its numerous advantages. To ascertain the overall potential for BWV use in Canada, further investigation is needed to reveal any storage solutions, how to offset administrative demands, and clear policies that encompass privacy and disclosure issues, as well as procedures for usage. Below is a brief breakdown of the main advantages and disadvantages described in the BWV reports reviewed.

Advantages:

- *The main advantage appears to be a notable reduction in police misconduct complaints perhaps as a result of a better description of police officer action explanation*
- *Public Complaints are less*
- *Officers act in a more professional manner due to being more self-aware of their conduct when interacting with the public*
- *Officers are more cognizant about how they use force, although this could pose a potential risk to officer safety (i.e., second guessing, being too cautious)*
- *Public often becomes more civil when they become aware they are being recorded*
- *Aids in gathering evidence and offers a more accurate and fuller account of any incident recorded versus relying solely on eye witness or officer recall.*
- *When confronted with footage of their actions, defendants are pleading guilty earlier. This in turn leads to a decrease in court costs as fewer trials go to court due to early guilty pleas.*

- Overall, it appears to improve community relations as public opinion generally expresses a greater sense of trust and safety with use of BWV.
- Provides a great understanding of the realities of policing.

Disadvantages:

- Cost is the main disadvantage – cost of the actual devices is one issue, but there appears to be a much larger expense when it comes to making video transfers to hard copy, cost of personnel needed for storage and retention, cost of transcribers for legal use of BWV evidence, and potentially cost in time for officers using BWV for file work. However, evidence of longer time for reports is mixed, with some police departments reporting longer time writing up reports when using BWV, while other police departments have reported less time.
- Privacy issues
- Disclosure issues
- Officer acceptance issues
- Equipment compatibility with officer uniforms including their protective gear such as vests and utility belts (it should be noted however that technology in this area is constantly evolving so compatibility with uniforms and officer gear may no longer be an issue).
- Equipment comfort (i.e., the U.K. reported police officers had great discomfort using the headbands for the head cams)
- Criticism could arise over discretionary use of when officers decide to turn it on and turn it off. Justification may be required from members to explain the discretion of turning off the camera and its activation.”¹

2.1 Academic Studies

There is now significant interest in law enforcement use of BWV technology. Various academic studies are underway to begin to study the implications of this technology.

The Literature Review investigated results of the study conducted in 2012 with Rialto Police Department in California. This study indicated a statistical reduction in use of force incidents during public and police interactions as a result of BWV camera implementation. Other studies include United Kingdom (UK) police agencies and academic sources.

¹ Ellingwood, H. & Yamamoto, S. (2014) *Body worn video camera use by law enforcement: A critical review*. Ottawa, Ontario: National Criminal Operations, RCMP, unpublished.

The RCMP has been approached by students and faculty at Carleton University, Simon Fraser University and the University of Regina regarding the BWV feasibility study and possible avenues for further research.

Public Safety Canada (PSC) is also currently engaged in an independent evaluation of law enforcement use of BWV from a sociological perspective regarding the impact of cameras. In October 2015, NCROPS shared best practices with respect to the PSC study.

In January 2014, the International Association of Chiefs of Police (IACP) published the “IACP Technology Policy Framework” and concluded the following:

“Realizing the value that technology promises law enforcement can only be achieved through proper planning, implementation, training, deployment, use, and management of the technology and the information it provides. Like all resources and tools available to law enforcement, the use of new technologies must be carefully considered and managed. Agencies must clearly articulate their strategic goals for the technology, and this should be aligned with the broader strategic plans of the agency and safety needs of the public. Thorough and ongoing training is required to ensure that users are well versed in the operational policies and procedures defined and enforced by the agency. Policies must be developed and strictly enforced to ensure the quality of the data, the security of the system, compliance with applicable laws and regulations, and the privacy of information gathered. Building robust auditing requirements into agency policies will help enforce proper use of the system, and reassure the public that their privacy interests are recognized and protected. The development of these policies is a proven way for executives to ensure they are taking full advantage of the technology to assist in providing the best criminal justice services, while protecting the privacy, civil rights, and civil liberties of citizens.”²

In the February 2015 Issue of “The Police Chief” an article was published titled, “Police Body-Worn Cameras: An Overview” which concluded the following:

“Cameras help clarify many police and citizen interactions, improve the overall quality of police service and provide valuable evidence for prosecution. The available evidence related to using BWCs suggests they are here to stay, and more agencies will likely use them as circumstances allow. The benefits of using BWCs are numerous and most concerns related to BWCs can be managed effectively. It is important to note that BWCs are not a panacea in any respect. They can clearly help clarify many police and citizen interactions and improve the

² International Association of Chiefs of Police (2014). *Body-Worn Cameras Model Policy*. Alexandria, VA: IACP. Link: www.theiacp.org/policycenter

overall quality of police service, as well as provide valuable evidence for prosecution. Additional research is needed to more definitively identify the benefits and concerns of BWCs. Agencies implementing BWCs have an opportunity to collaborate with universities for structured research on BWCs, thus contributing to the advancement of knowledge in this growing area.”³

A noteworthy study was conducted by Harvard Law Review in April 2015. This study was conducted from a public and legal perspective regarding law enforcement use of this technology. The primary benefits documented were:

“to reveal instances of police misconduct, reform police (and civilian) behaviour, and build trust between the police and the community, all of which provide strong justifications for adoption.” The report cites the following drawbacks: “the adoption of such a pervasive, indiscriminate technology may have unintended negative consequences; how officers can circumvent the technology to insulate themselves from oversight; open-records laws in most states make it possible for departments to deny access indefinitely; raise the question of who stands to benefit most from this technology; privacy may be violated; the costs of storing and transmitting this data can be particularly staggering; officer mounted wearable cameras, paired with facial recognition, could easily become much like the current crop of automated license plate readers, constantly reading thousands of faces (license plates), interpreting identity (plate number), and cross-checking this information against national and local crime databases in real-time; & a final, fundamental concern regarding body cameras goes to the heart of their functionality: the reliability of the video footage they produce.” Harvard Law Review concluded: “balancing the benefits and drawbacks of this powerful new technology is not an easy task, and the decision to equip police departments with cameras should not be made lightly. Policymakers, citizens, and police departments must think carefully about these and other drawbacks to a body camera regime to make sure that, if this technology is to be adopted, it is used effectively and ultimately improves the quality of police services.”⁴

³ The Police Chief (February 2015). *Police Body-Worn Cameras: An Overview*. Alexandria, VA: IACP. Link: <http://www.policechiefmagazine.org>

⁴ Harvard Law Review. (April 10, 2015) *Considering Police Body Cameras*. Cambridge, MA. Link : <http://harvardlawreview.org/2015/04/considering-police-body-cameras/>

Police Executive Research Forum (PERF) published a report in 2014 titled, “Implementing a Body-Worn Camera Program: Recommendations and Lessons Learned” which provides the policy recommendations. PERF concludes:

“The recent emergence of body-worn cameras has already impacted policing, and this impact will increase as more agencies adopt this technology. Police agencies that are considering implementing body-worn cameras should not enter into this decision lightly. Once an agency travels down the road of deploying body-worn cameras, it will be difficult to reverse course because the public will come to expect the availability of video records.

When implemented correctly, body-worn cameras can help strengthen the policing profession. These cameras can help promote agency accountability and transparency, and they can be useful tools for increasing officer professionalism, improving officer training, preserving evidence, and documenting encounters with the public. However, they also raise issues as a practical matter and at the policy level, both of which agencies must thoughtfully examine. Police agencies must determine what adopting body-worn cameras will mean in terms of police-community relationships, privacy, trust and legitimacy, and internal procedural justice for officers.

Police agencies should adopt an incremental approach to implementing a body-worn camera program. This means testing the cameras in pilot programs and engaging officers and the community during implementation. It also means carefully crafting body-worn camera policies that balance accountability, transparency, and privacy rights, as well as preserving the important relationships that exist between officers and members of the community.

PERF’s recommendations provide guidance that is grounded in current research and in the lessons learned from police agencies that have adopted body-worn cameras. However, because the technology is so new, a large body of research does not yet exist regarding the effects body-worn cameras have on policing. Additional research and field experience are needed before the full impact of body-worn cameras can be understood, and PERF’s recommendations may evolve as further evidence is gathered.

Like other new forms of technology, body-worn cameras have the potential to transform the field of policing. To make sure this change is positive, police agencies must think critically about the issues that cameras raise and must give careful consideration when developing body-worn camera policies and practices. First and foremost, agencies must always remember that the

ultimate purpose of these cameras should be to help officers protect and serve the people in their communities.”⁵

Various sources of academic research information were reviewed within the feasibility study by both the RCMP and independently by DRDC. Areas of study vary significantly and results are inconclusive based on evaluation criteria and methodology. Consequently, there is no consensus in the research to report on at this time.

2.2 Force Science Institute

2.2.1 Publications

The advancement of cameras such that they can now be worn by police officers impacts use of force investigations. The Force Science Institute (FSI) has developed several publications and established BWV camera education for law enforcement into their course offerings.

FSI published a report titled, News#265: “10 Limitations of body cams you need to know for your protection” as follows:

1. A camera doesn't follow your eyes or see as they see.
2. Some important danger cues can't be recorded.
3. Camera speed differs from the speed of life.
4. A camera may see better than you do in low light.
5. Your body may block the view.
6. A camera only records in 2-D.
7. The absence of sophisticated time-stamping may prove critical.
8. One camera may not be enough.
9. A camera encourages second-guessing.
10. A camera can never replace a thorough investigation.⁶

Camera limitations will need to be fully recognized and understood by the police officers deploying BWV devices. This FSI report #265 is significant as it identifies that BWV “*cameras have limitations which need to be fully understood and evaluated to maximize their effectiveness.*” (Lewinski, FSNews#265) Camera limitations must be conveyed to RCMP

⁵ Miller, Lindsay, Jessica Toliver, and Police Executive Research Forum. (2014) *Implementing a Body-Worn Camera Program: Recommendations and Lessons Learned*. Washington, D.C.: Office of Community Oriented Policing Services, U.S. Department of Justice. Link:

<https://www.justice.gov/iso/opa/resources/472014912134715246869.pdf>

⁶ Force Science Institute. *FSNEWS#265:10 limitations of body cams you need to know for your protection*. Mankato, MN: FSI. Link: <http://www.forcescience.org/fsnews/265.html>

members in any deployment of this technology in an operational environment. Additionally, cameras may fail completely due to battery life, software and hardware issues. Camera limitations in any form must not impact member safety or the execution of their duties. Consequently, communication of camera limitations is essential.

A police officer's recollection of an incident is critical evidence in court testimony. Nevertheless, human memory is not perfect and the element of time may further wear away specific details of an event. BWV offers broad strokes of corroboration to an incident. An FSI article, identifies that there will be discrepancies between the footage from a camera and an officer's notes, reports and testimony due to human factors such as memory.

FS News#145: Do head cameras always see what you see in a force encounter?

"All things considered, this is the bottom line Lewinski believes is essential to recognize: "A camera will never represent precisely an officer's view of a scene or what an officer was thinking at any given instant or how he was interpreting what he was seeing, even if the camera is right beside the officer's eye. Ideally, a camera may help us understand why an officer acted as he did, but in some cases it may be only a start. Ultimately, we need to judge uses of force from the viewpoint of the officers involved rather than from the viewpoint of a camera. Otherwise, an officer reviewing a recording may be confused by discrepancies between what he remembers and what the camera shows, and persons judging the incident may inappropriately hold him accountable for actions and statements that don't appear to jibe with the filmed record." ⁷

⁷ Force Science Institute. (2010-03-12) *FSNEWS#145: Do head cameras always see what you see in a force encounter?* Mankato, MN: FSI. Link: <http://www.forcescience.org/fsnews/145.html>

3 Chapter: Canadian and International Context

3.1 Canadian Law Enforcement BWV Landscape

Other Canadian law enforcement agencies are also considering BWV. Victoria Police Department conducted a pilot in 2009. Edmonton Police Service concluded a three year feasibility study in December 2014. As reported by the Canadian Broadcasting Corporation, Hamilton Police Service had initially determined cost was prohibitive to start a pilot at an estimated \$1.3 million.⁸ Toronto Police Service began a one year pilot in May 2015. Open source reporting identified that TPS deployed 100 cameras within traffic, foot patrol and anti-violence units to determine feasibility. TPS deployed the Reveal Media and Panasonic camera models.

The two Canadian police services who have decided to implement BWV cameras to date are Calgary Police Service (CPS) and Amherstburg Police Service (APS). CPS held a Symposium in September 2014 to explore BWV cameras and identify key strategies toward implementation. Incident based camera activation was adopted by both agencies.

3.2 Coroner's Inquests

Coroners inquests received by the RCMP recommended use of body worn video mentioning use of BWV include:

1. Purdie, Zinser & Beddow:
In 2013, Adam Purdie, Brendon Beddow & Justin Zinser inquests in E Division recommend police recordings.
2. Matters inquest:
The Greg Matters inquest recommended that “for ERTs to wear audio-visual recording equipment upon deployment” in January 2014.^{9 10}

⁸ CBC News. (2015-11-20) *Hamilton puts off police body-worn cameras for 'foreseeable future'. Pilot would cost an estimated \$1.3 million in hardware, personnel costs.* Link: <http://www.cbc.ca/news/canada/hamilton/news/hamilton-puts-off-police-body-worn-cameras-for-foreseeable-future-1.3327947>

⁹ CBC News. (2014-06-30) *Jury makes 9 recommendations in Greg Matters inquest. Jury recommends audio-visual equipment, mental health training for RCMP emergency response teams.* Link: <http://www.cbc.ca/news/canada/british-columbia/jury-makes-9-recommendations-in-greg-matters-inquest-1.2517854>

¹⁰ CBC News. (2013-10-20) *Calls for 'cameras on cops' renewed in latest B.C. inquest. 7 coroners inquest juries in past few years recommended audio and video recording of police actions.* Link:

3.3 International Law Enforcement BWV Landscape

On November 24, 2015, Taser International announced they won “a major bid to outfit 22,000 London Metropolitan Police Officers with Axon Body Cameras. UK’s largest police force will deploy Taser’s Axon Body 2 cameras.”¹¹

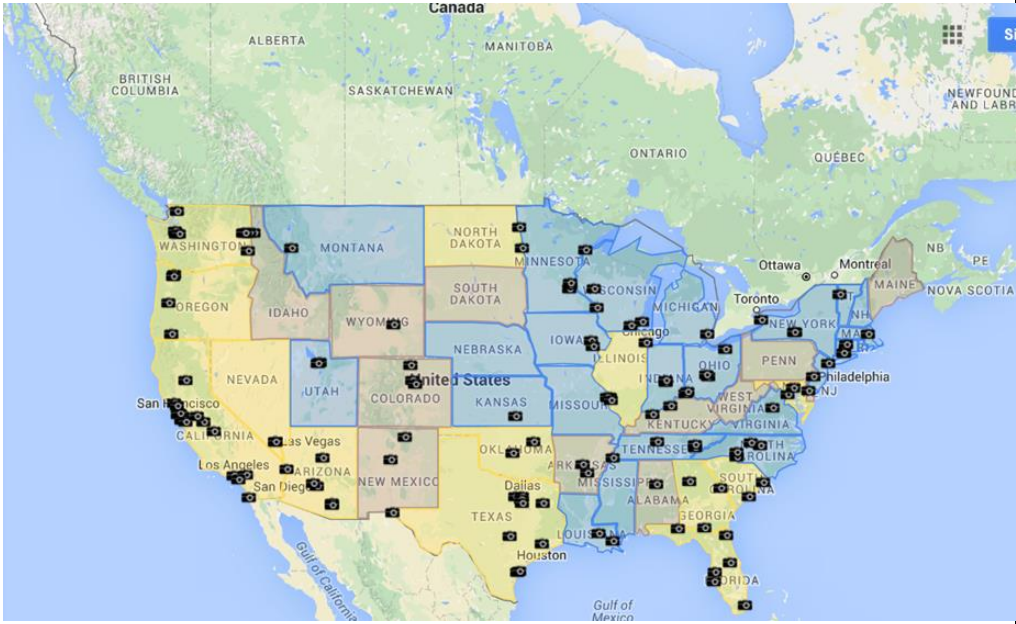
The London Met issued a one page summary of their trial results within their final BWV Report titled, “Police, Camera, Evidence: London’s cluster randomised controlled trial of Body Worn Video” in November 2015. The executive summary from this report is as follows:

Overall the findings suggest there are potential benefits of BWV, although those related to criminal justice outcomes were not fully realised during the timescales of the trial and need the support of criminal justice partners to be achieved.

- *BWV can reduce the number of allegations against officers, particularly of oppressive behaviour. Complaints related to interactions with the public also reduced and, although it did not reach statistical significance, the trend in overall complaints was consistent with these findings.*
- *There was no overall impact of BWV on the number or type of stop and searches conducted. In addition, there were no differences in officer’s self-reported behaviour relating to how they conducted stops.*
- *No effect was found on the proportion of arrests for violent crime. When an arrest had occurred, there was a slightly lower proportion of charges by officers in a BWV team.*
- *There was no evidence that BWV changed the way police officers dealt with victims or suspects.*
- *The Public Attitude Survey found, in general, London residents are supportive of BWV, with their opinions of the technology positively associated with their views of how ‘procedurally just’ the police are, and their confidence in the MPS.*
- *Officers reported a range of innovative uses of BWV, including professional development; use of intelligence; and sharing information with partners and the public.*¹²

<http://www.cbc.ca/news/canada/british-columbia/calls-for-cameras-on-cops-renewed-in-latest-b-c-inquest-1.2127500> & CBC News. (2014-11-28) *Solomon Uyarasuk inquest: Jury recommends reopening investigation* Link: <http://www.cbc.ca/news/canada/north/solomon-uyarasuk-inquest-jury-recommends-reopening-investigation-1.2853880>

¹¹ Taser International Announcement on 2015-11-24.

Country	International Law Enforcement BWV Landscape Police Agency BWC implementation list
UK	<p>Too many agencies to list. Notables include:</p> <p>Hampshire Constabulary – Insp. Steve Goodier presented at Calgary Police Service’s 2014 Symposium</p> <p>London Metropolitan Police</p>
Australia	<p>South Australia Police</p> <p>South Melbourne Police</p>
United States	<p>Too many agencies to list. Notables include:</p> <p>Rialto, California</p> <p>LAPD</p> <p>NYPD</p>
U.S. Interactive Map link	<p>https://www.google.com/maps/d/viewer?mid=zm7Rb0jg6SZo.kYaxZ2qW64NY&hl=en_US</p>  <p>“This map shows states and cities that have adopted laws and/or policies on access to videos from police BWC.”¹³</p>

¹² Metropolitan Police Service. (2015) *Police, Camera, Evidence: London’s cluster randomised controlled trial of Body Worn Video*. London, U.K.: London MPS. Link: https://www.london.gov.uk/sites/default/files/bwv_report_nov_2015.pdf

¹³ Reporters Committee for Freedom of the Press (2016) Washington, D.C. <https://www.rcfp.org/bodycams>. Link: https://www.google.com/maps/d/viewer?hl=en_US&mid=1AFuew5l-lqTDO4BQrajJpkoTw8E

Both domestically as well as internationally, police agency reporting indicates that there is no real quantifiable benefit of BWV camera implementation. Reduction in citizen complaints against officers is common which was identified in the Literature Review. *In 2011, a 50% reduction in the total number of use of force incidents compared to control conditions was captured by Rialto Police Department in California.*¹⁴ Academic reports indicate that statistically there is very little difference with camera implementation regarding use of force encounters. However, public pressure toward increased police transparency demands a resolution to one sided public recordings of police interactions. It is these citizen demands for police accountability which causes police agencies to consider and often implement new technology such as BWV cameras.

¹⁴ Farrar, W. & Ariel, B. (2013) *Self-awareness to being watched and socially desirable behavior: A field experiment on the effect of body-worn cameras and police use of force*. Washington, D.C.: Police Foundation. Link : <https://www.bja.gov/bwc/pdfs/130767873-Self-awareness-to-being-watched-and-socially-desirable-behavior-A-field-experiment-on-the-effect-of-body-worn-cameras-on-police-use-of-force.pdf>

4 Chapter: Trials & Pilots

Trials and pilots were conducted within the BWV feasibility study to provide an objective assessment of law enforcement use of the camera technology. Evaluation criteria allowed testing to focus on specific variables to identify any impact to officer safety, tactics and court evidence.

The most comprehensive research was conducted at the RCMP “Depot” Training Academy where cadets utilized cameras during scenario based training. Further examination was conducted during operational pilots and tactical deployments. For the purpose of this reporting: a trial is defined as a comprehensive evaluation of BWV technology conducted over a longer time frame; a pilot is defined as use within a specific jurisdiction to determine RCMP requirements for camera characteristics over a specified time frame; and a deployment is defined as an operational need or exigent circumstance where cameras were deployed quickly for a particular operation or event. Stakeholders such as the OPC were informed of each camera implementation. Data gathered from this research and assessment of experimentation results informed the viability of BWV technology related to: officer safety, tactical considerations and evidence capture for court.

4.1 Depot trials

Depot agreed to facilitate camera equipment evaluation trials during cadet training scenarios. This provided a substantial opportunity to evaluate camera functionality in a non-operational environment using structured scenario based training. Metrics evaluated elements such as what the camera was able to capture versus what the cadets reported they saw during scenarios. The Depot trials allowed camera characteristics to be accurately measured to support evaluation of RCMP requirements for the technology against repeatable incidents involving use of force interventions, ranging from lethal confrontations to low risk applications.

On June 26, 2014, National Use of Force (NUF) hosted a second workshop to assess user and technical requirements for BWV cameras and to review the draft plan for conducting experimentation at Depot. Technical specifications, user requirements and functionality necessary to assist front line uniformed officers in their duties were the focus of the workshop with the primary purpose of evidence capture. A features chart was established for camera requirements for the procurement process based on feedback from workshop participants and supplemental research.

On September 5, 2014, a request for proposal (RFP) was posted on the Public Works and Government Services Canada (PWGSC) website to purchase 24 cameras used in the Depot trials. Defence Research and Development Canada-Centre for Security Science (DRDC-CSS) funded this purchase. The RFP closed on September 22, 2014. The following camera models were deployed:



**BodyCam by Provision****AXON Flex by Taser International****AEE AD76 by Compusult****PC-03 by Y&S Engineering**

A troop of 32 cadets was designated to participate in the BWV trial. The troop start date was September 8, 2014 with a graduation date of February 27, 2015. Depot identified several weeks in which a cross section of scenarios would provide opportunities to include BWV cameras. Technical characteristics were measured by DRDC-CSS based on metrics derived from operational requirements.

The pilot at Depot provided a unique opportunity to collect considerable data in a low risk environment during active physical situations on a structured daily/weekly basis with a focus on repeatable testing. Months of pilots in the field would not provide the same number of incidents upon which to test cameras. Depot trials allowed camera characteristics to be accurately measured to support evaluation of RCMP requirements for the technology against repeatable incidents involving use of force interventions.

The pilot at Depot collected data on variables including audio and video quality; video data file size, mounting compatibility in various positions, and officer safety. The pilot revealed durability concerns, and the fact that cameras were not always capturing the incident due to mounting difficulties.

The final report detailing the results of the Depot evaluations from DRDC-CSS titled, *"Scoping, Technical and Operational Evaluation of Body Worn Video"* was published publically on their website in October 2015.¹⁵ The primary conclusion from this report is that "the evaluations showed that BWV cameras are technically capable of the required collection of video during realistic scenarios, but are currently subject to significant limitations of camera mounting, video quality, and user interface."

In addition, DRDC-CSS concluded that *"There are effects on officers in operations from: the physical operation of the camera; the awareness that it is on, in terms of officer behaviour; 'management' of the camera view and context; decisions about when to turn the camera on/off; and the effect on subjects with whom the officer is interacting. These effects should be considered when deciding whether to implement BWV."*

4.2 Operational trials

Several camera deployments were conducted throughout the project to provide evidence toward suitability of this technology for RCMP frontline operational policing. Camera features, performance, audio quality and the capacity to capture evidence were evaluated from each deployment. A brief questionnaire was prepared by DRDC-CSS to capture input from cadets during Depot trials and it was modified to include tactical experience for operational trial feedback from members in the field as well. The primary purpose of the questionnaire was to capture operational feedback to identify any officer safety concerns related to wearing BWV cameras, and the ability of the camera device to record the necessary elements and tactical considerations based on camera usage for the overall study. Operational deployments were conducted regularly within the BWV feasibility study. Evaluation of camera features, performance, audio quality and the capacity to capture evidence was conducted in an analysis of feedback after each deployment.

Interim policy guidelines were developed, in conjunction with OPC guidelines, to provide direction to members during operational deployment of cameras. Further policy development is contingent on legal opinion and direction from senior management. The interim guidelines were devised in conjunction with the OPC Guidance document released February 2015 and analysis of other police agency policy. The guidelines have not gone through the formal policy process and must be revised should national implementation occur.

¹⁵ Espenant, Mark; Murwanashyaka, Jean Nepo; De Gagné, Mathieu; & Wollbaum, April. Defence Research and Development Canada. (October 2015) *Scoping, Technical, and Operational Evaluation of Body Worn Video*. Scientific Report DRDC-RDDC-2015-R204. CSSP-2014-TI-2031 Final Report. Regina, Saskatchewan & Ottawa, Ontario: DRDC-CSS. Link: http://cradpdf.drdc-rddc.gc.ca/PDFS/unc199/p802456_A1b.pdf

4.2.1 Deployment description:

4.2.1.1 E Division: Burnaby, B.C. November 19, 2014 to December 15, 2014.

Description: eight cameras were deployed during an energy sector protest on Burnaby Mountain. Cameras were returned as the operational need diminished.

Burnaby Feedback: Mounting was an issue. Battery life was insufficient.¹⁶

4.2.1.2 E Division: Prince George, B.C. – Canada Winter Games

Description: eight cameras on designated regular members for the duration of the Canada Winter Games from February 13, 2015 to March 1, 2015.

Prince George Feedback: No criminal charges associated to video recordings for court proceedings. Members liked the concept of BWV but not specific camera model. They believe BWV is good but cameras pose a safety concern because if a member is down the evidence can be taken by a suspect. Suggestion was made that the camera should only be a lens and that a secure system could be located on the duty belt or in the car for footage. Comments included: “Officers will get used to the camera and grow to depend on the recordings to articulate what actions they used to bring a situation under control if needed with a few model changes” and “Camera was a distraction as its use diverted attention away from the incident.” This pilot showed BWV camera technology is improving but this model did not meet the operational needs of members who deployed these cameras.¹⁷

4.2.1.3 J Division: 2014 Mount Alison University Exercise

Description: A planned emergency response exercise was held on the Mount Alison University campus on Thursday, May 29, 2014. RCMP members, partnering first responders and university personnel tested evacuation and lock-down procedures during response to an active threat scenario.

Mount Alison Feedback: No feedback was collected from this deployment due to operational circumstances shortly thereafter. Nevertheless, the Exercise tested a fire/ambulance/RCMP response on a Canadian university campus. RCMP objectives included: to improve interoperability between partner agencies, test SAFE plans, IARD protocols, and Critical Incident Response procedures.

4.2.1.4 E Division: Kamloops, B.C.

¹⁶ Information from Burnaby Detachment was received in December 2014.

¹⁷ Information from Prince George Detachment deployment was received in March 2015.

Description: On May 14, 2015 from 1000 – 2000 hours an IARD exercise was held at Thompson Rivers University (TRU) campus to test: RCMP emergency response to an active shooter, communications between stakeholder agencies and TRU emergency and evacuation plan processes.

Kamloops feedback: “Camera fell off during intervention. The camera was too large and the mechanism securing it to the vest was insufficient.”¹⁸

4.2.1.5 E Division: Houston, B.C.

Description: the specific purpose was for two cameras to be used at a protest which had been ongoing for four or five years but saw tensions increase. Two members were designated to use the cameras when interacting with the protestors each day. Deployment from July 22, 2015 to September 30, 2015.

Houston detachment feedback: “It removes the need to wear another piece of equipment. The camera does not secure well to the uniform.”¹⁹

4.2.2 Pilot descriptions:

4.2.2.1 2010 Codiak, New Brunswick & Kelowna, British Columbia

Description: the RCMP conducted a national approved BWV pilot. Limited research data was collected without technical evaluation of the camera equipment. Evaluation was measured primarily on user feedback. Equipment did not meet needs and further testing was recommended.

4.2.2.2 2013 Nanaimo, B.C.

Description: Nanaimo detachment initiated a division approved pilot which ran four months from June to September 2013. Cameras were purchased based on availability and were not designed specifically for BWV. Pilot participants provided valuable strategic technical comments to the national BWV project manager for consideration in the development of BWV.

Nanaimo Feedback: Video data transfer was minute for minute so it took as long to upload as the actual video recording length.

4.2.2.3 2013 November Codiak/Moncton, New Brunswick

Description: A national approved pilot project in New Brunswick was initiated as part of the overall BWV project after an exigent operational need was identified. This pilot ran from

¹⁸ Feedback information from Kamloops received in May 2015.

¹⁹ Information received from personal communication in September 2015.

November 14 to December 7, 2013 and in several instances, BWV provided good evidence for trial. BWV was used during an energy sector protest to capture video of several arrests in which charges were laid.

J Division Feedback: Neither camera model has a battery life greater than 3-3.5 hours in standby mode. Members instructed to only activate device when needed to maximize battery life. Data management and storage quickly became challenges.

4.2.2.4 2015 K & H Divisions

Description: A national approved limited implementation pilot of BWV was conducted to expand pilot trials to an operational environment. Pilots ran from June 23, 2015 to October 15, 2015.

K Division: Wood Buffalo detachment in Fort McMurray, Alberta reporting included:

- some members liked opportunity to record/document the actions of them and the public;
- video & audio quality is good; opportunity to de-escalate situations;
- user friendly and affords member accountability.
- battery life is too short;
- the unit overheats;
- retention clips breaking caused camera to fall off members;
- subject turned off camera during struggle;
- seatbelt activated the camera; unit enters sleep mode and requires a reboot for activation before recording is possible;
- size of the unit is too large;
- “camera angle horizontal is good, vertical often a concern, angle of view- possible eyeglass mount” a future consideration;
- light on top of unit silhouettes members and impacts their night vision.

H Division: Windsor detachment:

- improved level of professionalism from members
- clients had an improved attitude change
- found BWV camera to be an invaluable tool
- battery life did not have longevity to last entire shift
- Software challenges experienced.

H Division: Indian Brook detachment:

- Chief and Band Council were notified of pilot
- cameras are a game changer as clients are less likely to fight officers once advised they were on camera
- battery life is problematic
- challenges included battery life and camera stuck in boot mode



The evaluation of cameras in the scenario based training environment at Depot as well as the operational trials in the field in E, K, J & H Divisions provided considerable evidence toward identifying equipment limitations and experimentation results toward camera functionality. BWC can capture police interactions with the public with a great degree of accuracy.



5 Chapter: Issues and Solutions

5.1 Evidentiary Issues

5.1.1 Camera Activation

The issue of camera activation was identified as a significant factor at the January 2014 workshop. Understanding that this will determine when an incident is recorded and will form the basis of how much data is collected; this decision will have significant storage and retention implications.

Activation was researched and three options were described in briefing material. Option 1 was to record a member's entire shift; option 2 was to record at member's discretion based on policy; and option 3 was to record during every public interaction. In May 2014, CAP Senior Management advised that the RCMP will activate the camera at a member's discretion based on policy to provide guidance around when to use the cameras. This decision is in line with Police Executive Research Forum (PERF) recommendations published in 2014.²⁰ Factors supporting this direction include: cost, privacy, storage and legal elements. Additionally, camera operation is limited by battery life which will be discussed in further detail in this report under Section 5.3.4.

5.1.2 Disclosure

Requirements for digital disclosure vary from province to province for video evidence. In some divisions it is accepted to burn video recordings onto a DVD for disclosure purposes. The difficulty with video evidence on DVD is that the audit trail must be proven to illustrate the recording is a copy of the original taken at the time of the incident. Proprietary video introduces difficulty with playback of recorded footage. Consequently, footage must be able to be viewed in a format that is acceptable within Canadian courts.

5.1.3 Notetaking

Whether to take notes before or after viewing video footage will need to be included in policy. At this point, the recommendation is that members write their notes in the same manner as any other investigation on their use of force incident before viewing the video recording. Once a member completes their initial notetaking of an incident they are then permitted to watch the

²⁰ Police Executive Research Forum (2014) *Implementing a body-worn camera program: recommendations and lessons learned*. Washington, D.C.: U.S. Department of Justice. Link: [http://www.policeforum.org/assets/docs/Free Online Documents/Technology/implementing a body-worn camera program.pdf](http://www.policeforum.org/assets/docs/Free%20Online%20Documents/Technology/implementing%20a%20body-worn%20camera%20program.pdf)

BWV recording. A member must then document in their notes that they watched the recording and any subsequent notes are a result of articulation of any discrepancy between the member's initial notetaking and what the member saw on the video recording. The subsequent notes should articulate the contextual factors and anything the member did not actually see during the incident but was captured in the recording. Anytime a camera is turned off, it must be documented in the member's notebook and include the rationale, such as 'discussion of police tactics'. Camera failures must also be documented in the member's notes.

Generally, it is recommended that officers review video but there are disadvantages. If a video does not depict what an officer remembers the officer will testify to his perceptions. The officer must articulate perception. However, if the officer articulates his perceptions which do not match the BWV content, this may be viewed as an inconsistency in the evidence. A critical disadvantage to an officer viewing video is that it can bias or influence an officer's memory or perception of their recollection. If the officer views the video it must be documented.

5.2 Privacy

5.2.1 OPC Considerations

The complexity of the initiative and the significant amount of research and consultation with stakeholders identified privacy as a critical element within the feasibility study. The BWV project was measured and assessed in the context of the potential impact on our democratic society, civil liberties and the fundamental right to privacy as recognized in Canadian law. Extensive research was conducted to provide justification for the RCMP to undertake this initiative as opposed to adopting other options with less impact on privacy.

Various sources have identified privacy considerations as a risk to BWV camera deployment by law enforcement. *"For the ACLU, the challenge of on-officer cameras is the tension between their potential to invade privacy and their strong benefit in promoting police accountability. Overall, we think they can be a win-win—but only if they are deployed within a framework of strong policies to ensure they protect the public without becoming yet another system for routine surveillance of the public, and maintain public confidence in the integrity of those privacy protections. Without such a framework, their accountability benefits would not exceed their privacy risks."*²¹

²¹ Stanley, Jay. (2013) *Police Body Mounted Cameras : With Right Policies in Place a Win For All*. Alexandria, VA: American Civil Liberties Union (ACLU). Link: <https://www.aclu.org/police-body-mounted-cameras-right-policies-place-win-all>

In February 2015, the Office of the Privacy Commissioner (OPC) published a guidance document to establish recommendations and ensure compliance with privacy legislation.²²

The RCMP has worked closely with the Federal OPC over the past 24 months during the RCMP's BWV feasibility study. Consultation was continuous and the OPC was updated on an ongoing basis regarding camera deployments.

The privacy impact assessment (PIA) identified privacy implications within legislation and provided mitigation strategies to support the use of cameras for specified time periods during technology pilots. In July 2015, the RCMP's PIA was completed and sent to the OPC as per federal requirements. The OPC guidance document was referenced in the creation of the RCMP's PIA for BWV.

Police interaction with members of the public may be recorded during routine investigations. Any person within range of the video and audio recording including suspects, victims, witnesses and bystanders may have their personal information impacted as a result of evidence capture. Canadians value their privacy and we must develop policy to respect that fundamental right.

The first individuals likely to experience an invasion of their privacy will be RCMP members. Surveillance of members has been raised as a concern. Research has suggested BWV cameras may improve the level of professionalism when police are dealing with the public.

5.2.2 Video Retention & Purging

During pilots and trials all recorded footage was uploaded onto an approved secure storage device for disclosure, retention and purging purposes at the end of each shift. Any video management and storage system must have a mechanism for purging.

*The Privacy Act requires personal information that is used for an administrative purpose be retained for a 2 year period, in order to allow individual access, and it is not necessary to retain transitory records for this period of time.*²³ However, further business requirements identified by the RCMP Information Management Branch (IMB) and Access to Information (ATIP) Unit dictate records must be retained for two years after the last administrative action.

²² Office of the Privacy Commissioner of Canada. (February 2015). *Guidance For the Use of Body-Worn Cameras by Law Enforcement Authorities*. Ottawa, Ontario: OPC. Link: https://www.priv.gc.ca/media/1984/gd_bwc_201502_e.pdf

²³ Treasury Board of Canada Secretariat. (2014) *Policies, directives, standards and guidelines*. Link: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=16557#cha5>

In the BWV Interim Guidelines, a transitory record is defined as follows: *Information sources that are only required for a limited period of time to ensure the completion of a routine action or the preparation of a subsequent record. Transitory records which do not contain personal information; ie. video of a person, must be disposed of or deleted once they have served their purpose and no longer have value to the organization after thirty days... recordings containing personal information must be retained for [a minimum of] two years.*²⁴

5.2.3 Video Vetting | Redaction

Video redaction is necessary for both disclosure purposes as well as for ATIP requests. Personal information must be protected of those not subject to disclosure but who are captured on a video recording in an incident. Personal identifiers such as faces, one of a kind tattoo or any other distinctive features must be blurred out if they are not part of the investigation or ATIP request.

There are various commercial software programs available for video redaction. Currently, the RCMP does not have access to this type of software.

Access to Information (ATIP) requests for BWV footage will become a demand on resources and will require redaction software to protect the privacy of Canadians. BWV footage will have to be reviewed for personal information and potentially redacted consistent with the requirements of the ATI Act. This will require additional resources to review and redact recordings.

5.3 IT

5.3.1 Storage

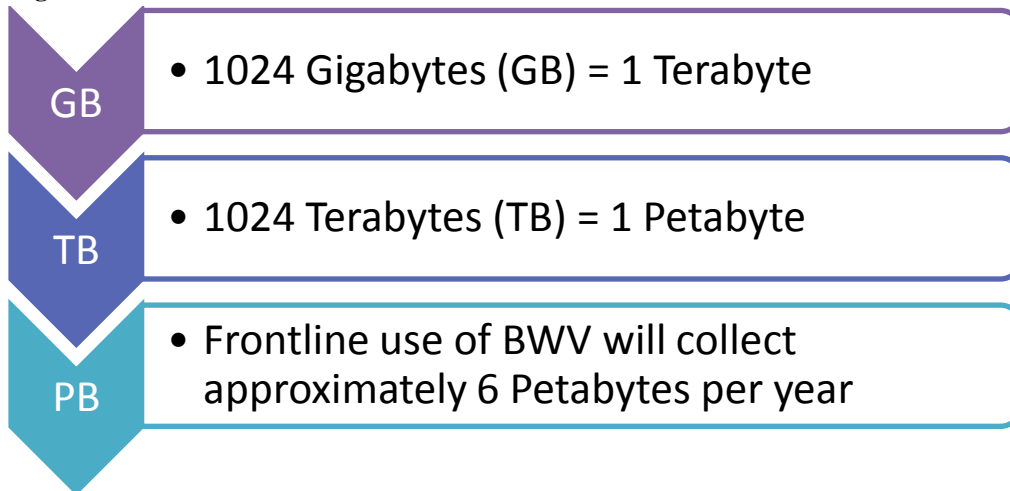
National Criminal Operations (NCROPS) has worked closely with the Chief Information Officer Sector (CIO) regarding the long term storage and management of video data with respect to the BWV project requirements. CIO participants attended the initial workshop in January 2014. The long term storage solution was identified as a significant issue early in the BWV feasibility study. The in-car video (ICV) storage requirements also became part of the overall storage requirement. The CIO was asked to determine storage options that would be able to

²⁴ Information Commissioner of Canada. (2014) *Records Management and You!* Unpublished PowerPoint Presentation from the Information Commissioner of Canada. Link: http://www.oic-ci.gc.ca/eng/rr-sl-odi-adi_2010_education-site-education_records-management-gestions-documents.aspx#link0

accommodate the massive amount of video data to be accumulated and to address storage challenges such as slow upload speeds in Northern and rural detachments.

The average video collected during a shift amounts to approximately one and a half-hours or approximately three gigabytes (GB) of data. Based on 10,000 frontline members, the RCMP will collect approximately six petabytes (PB) of BWV data per year. One PB of storage capacity is equivalent to a volume of one million GB of data. The cost of management and storage of this amount of video data is enormous and may be estimated in the ten million dollar range annually.

Figure 1 - Data Size



This is a crucial element of the project as storage requirements and data management, i.e. court disclosure, downloading etc. will have the most significant impact on the organization, through added cost and person hours.

Storage and retention of BWV evidence will involve high maintenance costs and require massive capacity solutions. Costing estimates are significant for storage of recordings and comprise the majority of costs if BWV is implemented. The CIO is developing a strategy based on a platform for the storage and sharing of digital data files that will enable the RCMP to achieve full integration and interoperability.

The RCMP is in a difficult position when it comes to implementing technology as it operates in geographic regions that are remote, which creates the challenge of fractional bandwidth and very limited connectivity. Fractional T1 lines compound this limitation as the infrastructure is not robust enough to push the data through as it currently exists. Logistically, the RCMP would have to request cache servers at each detachment to improve management of video due to network capability and restrictions of the physical infrastructure. Redundancy must be incorporated into a video system to safeguard against power outages and malicious attacks.

In June 2014, the CIO actively researched possible storage. The key requirement for the RCMP with respect to video data and digital assets is the ability to store, manage and share information in a safe manner which will ensure consistent standards across the Force, thereby reducing cost. This transformation initiative was a component of the Information Management Renewal (IMR) Program. In August 2015, the strategy changed to Cloud as an option. Outsourcing to an off the shelf Cloud product does not require internal resources as the RCMP would employ consultants and the requirement is network connectivity.

When considering cloud storage, it is essential that server infrastructure for RCMP video recordings be physically located in Canada. It must be determined exactly where data is being held. The United States (U.S.) Patriot Act was enacted by Congress in 2001. The acronym USA PATRIOT Act: Preserving Life and Liberty is defined as “Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism.”²⁵ It demands that any data or information crossing US borders belongs to the Department of Homeland Security (DHS). This data and information is subject to DHS access without notice. Canadian law enforcement data on a cloud hosted infrastructure would not be exempt from the U.S. Patriot Act. This poses a significant risk which can be reduced by an American company hosting with server infrastructure on Canadian soil. Additionally, if a vendor host goes out of business or becomes bankrupt, it must be contractually documented as to the process of how to retrieve the RCMP data. The issues of where to place the volume of data and how to access it will also become problematic. Finally, a third party auditing function must be factored into a cloud strategy according to the CIO Architecture Office. An audit process will ensure that infrastructure is located upon Canadian soil and meets the security standards in contractual obligations.

Further research and policy development is required whether an on premise or cloud service option is pursued for video management and storage. The RCMP is not close to fielding either storage solution at this point, as a financial business case will be required for each option in order to make evidence based decisions on video storage enterprise solutions.

5.3.2 Data Management

Digital evidence is not new to the RCMP as we have technical experts who are able to identify a video recording as the original and can admit it into court in their testimony. However, this is a massive tasking for all frontline video recordings. A key finding was the ability to track video recordings by metadata which essentially is a unique marker of the time and date stamp.

²⁵ Department of Justice. (October 2001) *The USA PATRIOT ACT: Preserving Life and Liberty. Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism*. Washington, D.C.: DOJ. Link: <http://www.justice.gov/archive/ll/highlights.htm>

Metadata is fundamental to illustrating that a recording is in its original form. Recordings should be incident specific and distinguishable accordingly. Automatic video tagging from the recordings' metadata will safeguard the digital data as an exhibit that can be accessed and searched in a records management system. Evidentiary requirements demand that an original image be preserved such that it can be demonstrated the video recording is the original capture of an incident. Digital exhibits must be logged in the same manner as physical exhibits to ensure the preservation of evidence; consequently, the metadata of each video be tracked to provide an audit trail of the recording and who viewed it. The audit trail based on metadata of the video recordings would be equivalent to an exhibit log for physical evidence. An audit trail is mandatory as well to preserve the chain of custody for video recordings. Data management must include the video's metadata and an audit trail for the recording to stand up to court scrutiny. Evidentiary rules exist and must be applied to video recordings for chain of custody and redundancy. The recording must be available for court and catalogued for efficient retrieval.

“Annotation of video recordings must be automatic to separate one incident from another for retention and purging purposes. Tagging and categorization of videos must not become an administrative burden for members”²⁶

RCMP video management is significantly larger than just BWV data. Data includes other video sources such as: interview room, cell block, in-car systems, unmanned aerial vehicles and seized recordings from the public. Video units with necessary personnel may be required to support detachments. Administrative support will be required to maintain new systems and the demand for approved methods for video management, retrieval and storage.

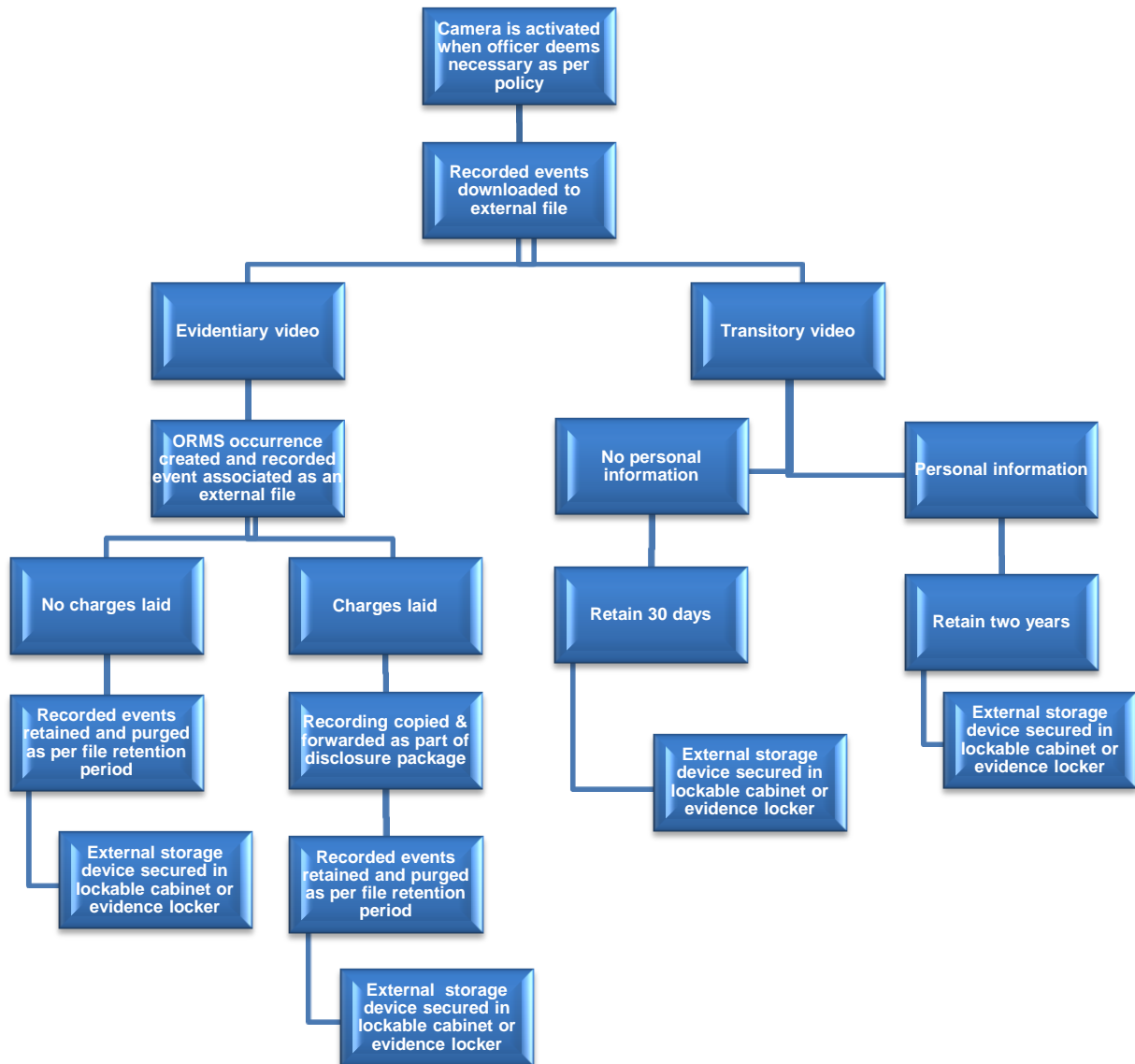
Video data transfer must be automatic within the software. A dock and go feature is extremely beneficial given that video transfer would otherwise cause an enormous time burden to members at the end of their shift. Pulling members off the road to transfer operational video footage does not add value to adoption of this technology. Any future procurement of cameras should include software to transfer video from the camera to data management systems automatically.

The amount of data must also be manageable. Video data may have financial restrictions going forward as the cost of retaining it will be significant. IT plays a critical role in the implementation of video storage.

²⁶ Police Executive Research Forum. (2014) *Implementing a Body-Worn Camera Program: Recommendations and Lessons Learned*. Washington, D.C.: U.S. Department of Justice. page34.



The following process map illustrates the two streams of information to be collected from BWV recordings:



5.3.3 Security

Departmental Security Branch (DSB) was consulted during the project, specifically for the security level of the technology. DSB personnel assisted NCROPS with the Statement of Sensitivity (SoS) for BWV. The sensitivity of BWV video recordings is within the range of routine operational data, with an expectation of privacy for the personal information. This resulted in a classification of Protected B which will demand that all video recorded must be encrypted at the source (on the camera), in-transit when the recording is removed from the



camera, and at rest in storage. Two-factor authentication or equivalent will be required for BWV data. Each video is a digital exhibit for which the audit trail must be proven using its metadata; it must be evident in court that it is an original video taken at the time of the incident.

DSB advised that Treasury Board Secretariat (TBS) requires all IT systems which process data for production to be accredited by the Departmental Security Officer (DSO). Accreditation assists in controlling disparate systems. Nevertheless, BWV technology overall is too vague to conduct a Threat & Risk Assessment (TRA) as a specific camera is required for evaluation of its precise requirements for a TRA. Should an implementation plan be approved for BWV it would then be a candidate for accreditation independently from any other system. The enterprise video storage system would need to conduct its own TRA as a separate entity given that it has its own set of requirements regardless of any dependencies. The purpose of a TRA is to identify risk and set a mitigation strategy to reduce the risk.

Another consideration is that malware can be embedded onto the camera devices themselves which will allow a computer virus to relay any footage to the originator when the device is connected to a computer. This may further cause problems for the internal network used to manage recordings. Another potential way to compromise police recordings may be with software updates or upgrades. An auditing process, vigilance and attention to contract detail may mitigate concerns related to spyware, malware or viruses.

5.3.4 Camera Technology Findings

Several limited pilots collected data on specific variables including audio and video quality; video data file size; mounting compatibility in various positions and officer safety. The feasibility study and related trials revealed that to date there was no camera identified that meets all of the RCMP's requirements. The cameras that have been researched and tested have issues with battery life and durability. Additionally, the cameras do not always adequately capture the incident due to mounting difficulties. Significant limitations were identified in the areas of camera mounting, video quality and user interface.

As a result of these limitations, a request for information (RFI) was prepared. The results of the RFI responses did not provide new technology from that studied during the feasibility study.

Several camera models have a setting to allow lights and sounds to be diminished during situations in low light to reduce risk to officers wearing the camera and not become a target from camera usage at night.

Cameras must not have ability to see beyond the capability of the human eye. Additionally, a removable memory card will not be authorized for cameras deployed in the field as operational

data must have an audit trail and must not be removed from the device without an audit trail for evidentiary purposes in court disclosure.

The cameras used in the K & H Division pilot projects were purchased after the six month technical evaluations conducted at the RCMP Training Academy in Regina, SK and were a different model than those used at Depot. Unfortunately, similar issues were encountered during the pilot as during the technical evaluations at Depot in that there were numerous technical malfunctions. The manufacturer replaced all of the cameras with an 'upgraded version'; however this did not remedy all of the technical issues. Additionally, during the RCMP feasibility study issues with battery life and recording capability of the cameras have been identified as problematic. To date, no camera has been found that meets all of the RCMP requirements.

Mounting and battery life were determined to be the two most restricting components to camera operation during feasibility study evaluation. Currently camera vendors are actively looking at improving battery life. Industry is willing to adapt to client needs to develop better mounting options. However, battery life is a more unattainable solution as supply will dictate the price and research to improve this key element.

A further restriction identified was software failures. Software drives camera operation and video evidence management which includes the automatic processes of tagging and logging recordings. It is essential to include data management in any future RFP to ensure audit trails and logs can be presented in court as evidence of an original recording.

BWV technology has now evolved into second generation cameras. Second generation systems offer capabilities beyond point and record functionality. Capabilities now include wi-fi, streaming, GPS and facial recognition technology. First generation cameras tested had both hardware and software failures. Second generation BWV cameras are more complex, although battery life is still not meeting needs of an entire shift. These capabilities will result in an increased drain on battery life of the cameras. Technical issues may have implications on member attitude and acceptance of BWC due to the level of frustration from not having confidence in the operation of the device.

A BWV camera must be easy to operate such that a member does not have to take their eyes off a subject or situation to activate the device. Battery life must sustain a shift as we cannot place ourselves in a position to be asked by the courts why the camera was not activated when the technology was available and thereby have charges dismissed. Mounts must securely attach the camera to a police officer without concerns of the device falling off during a use of force interaction. It is in these situations we must rely on the camera to operate appropriately when we need it the most. The image quality must be stable and not blurry from movement. Image

stabilization is not currently available to contend with motion. Redaction software is essential to prepare BWV recordings for court disclosure and ATIP requests.

It is essential that camera technology meet RCMP requirements. More importantly though is that the procurement process identify a vendor who can provide a reliable software management and who will support a back end storage system in the long term. A system which has capability to store other sources of video would be highly beneficial. Data must be easily shared with prosecutors. Proprietary restrictions embedded within software would impede ease of sharing for disclosure and we cannot resort back to copying DVDs. It is the video management and storage systems that are more valuable than the camera itself. Vertical integration with the back end system is essential going forward. A key strategy will be to procure a vendor who has been managing police evidentiary video for a long time. An established vendor will continue to be around in ten years. A vendor must also be highly invested in BWV cameras and systems as we will require long term support for the management of recordings. A vendor who does not have a primary focus on BWV devices and systems may not determine this to be profitable and decide not to support it over time.

5.3.5 Cost

Cameras deployed at Depot, purchased by DRDC, ranged in price from \$256 to \$650 per unit. The SoS requires BWV footage to be classified at a Protected B level for this information which demands encryption for both camera hardware and software. Encryption necessitates increased cost for cameras which can encrypt video data at the appropriate level. Cameras to date which have encryption capability are in the higher price range of \$800 to \$1300.

Cameras typically come with a one year warranty which may result in substantial replacement costs due to typical wear and tear on the device. There may be options for extended warranties at an additional cost however; some types of breakage may not be covered.

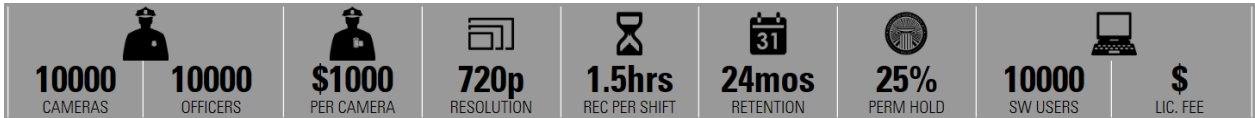
Video, audio and digital asset data storage will involve substantial cost. A digital evidence management system is required for BWV implementation. Moreover, a national video management and storage solution is necessary whether or not the Force decides to implement BWV. Full production for a national storage solution may take years due to processes, logistics, funding, procurement and personnel requirements.

An internal server infrastructure requires additional equipment, management of the data, technical employees and systems to secure the data collected. Logistically, technicians must visit each site to maintain these servers and their connectivity.



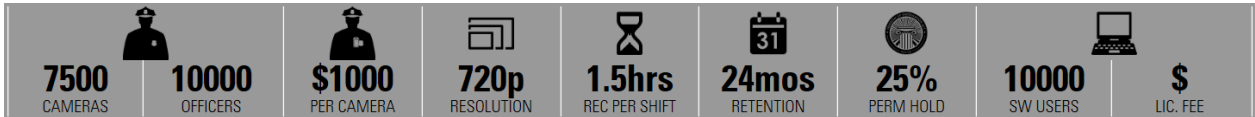
Cloud hosting by a third party vendor requires an online database, adequate bandwidth to access the database, management of the data, technical assistance and forensic auditing. There are financial and staffing ramifications with each storage option.

Various industry providers offer pricing on cloud storage based on a range of fees for service. Current research of providers with infrastructure in Canada includes vendors such as Taser International (TI). For example, TI offers Evidence.com pricing in the United States on their website²⁷ ranging from applicable basic packages at \$39 per user/month including redaction software to \$79 per user/month including camera upgrade every 2.5 years and unlimited data storage for Axon cameras. At the low end, estimates for only the software as a service portion and no annual licensing fees, would be approximately \$7,956,000 per year. At the high end, costing would be approximately \$16,116,000 per year. Another vendor who provides similar service is Motorola Solutions with their cloud service product called Command Central Vault. Based on the cost estimates provided on Motorola’s website,²⁸ the estimated cost for digital evidence management and storage would be:



This estimate is for individual issue of cameras which requires 37,125 Terabytes at a calculated initial equipment cost of \$10,000,000. Total licensing fees are in addition to this estimate.

A second estimate for shared issue of cameras is as follows:



Shared issue results in an estimate of the same 37,125 Terabytes requirement at a calculated initial equipment cost of \$7,500,000. Total licensing fees are in addition to this estimate.

The video resolution does not appear to impact the cost from 720p to 1080p even though this should increase the amount of storage.

²⁷ AXON. (2015) Web link. *Evidence.com Pricing*. Seattle, WA: Taser International. Link: <http://www.axon.io/pricing>

²⁸ Motorola Solutions. (2015) *Digital Evidence Management Solution: Calculator*. Web link. Schaumburg, IL: Motorola Solutions, Inc. Link: https://www.motorolasolutions.com/en_us/solutions/digital-evidence-management-solution/calculator.html

Cloud service results in considerable operating expenses but does not require capital investment or life cycle management of hardware. The CIO's Architecture Services advises that third party auditing function costs must be factored in as this does not exist yet. Additionally, CIO Sector indicates that users should not expect cloud storage to save them money, but users can expect agility.

Should the CIO decide detachment servers are the best way forward, then costing can be determined based on usage and size of each of the 700+ RCMP detachment locations. Ongoing discussion with the Divisional Information Officers will reflect costing based on volumetric numbers for requirements.

These municipal examples provide a glimpse into requirements for a large, medium and small infrastructure base. The number of cameras in use at each site directly impact the volume of data storage required.

BWV life cycle costs must be further analyzed to determine an ongoing equipment replacement and update estimate. Camera technology typically comes with a one year standard warranty. Deployment of equipment to date involved routine breakage of mounting systems, preventing the camera from attaching to the member's uniform. Breakage rates of equipment must be factored into estimates as mounting was found to be a significant consideration during the feasibility study. Additionally, accessory costs for various charging stations, vehicle mounts, wires to offload the recordings and mounting options are contingent on the specific camera model procured. Hardware re-capitalization will require a consensus on an amortization schedule. BWV cameras are now essentially data sticks and are similar to laptop equipment which would demand a three year lifecycle.

Financial cost is a significant impediment to implement BWV cameras for a police agency. The initial purchase of cameras, accessories and storage is a significant investment. Price varies considerably due to camera functionality, storage capacity and battery life. The range of camera prices currently is \$256 to \$1500 and the operable average is \$800 to \$1300 for cameras which meet RCMP technical and functional requirements. Costs related to maintaining camera equipment, repairing technical problems, reviewing and categorizing footage, and responding to ATIP requests are all contributing factors toward ongoing financial budgets. Storage is the most onerous financial factor. Storage costs are fluid and depend on internal infrastructure or cloud-based third party vendor pricing. It must be defined in contractual agreements with third party cloud vendors that the police must own their data within the hosted holdings.

Video management requires additional person hours where jobs do not currently exist. Additional resources will be necessary to inventory recordings as exhibits for court disclosure purposes. Administrative resources will be required to assist with the technical component as



well as the physical infrastructure piece. There are already extreme demands on resources regarding video requirements to ensure video is available for court and to prevent accidental loss.

5.4 Communication Strategy

There has been significant interest in the RCMP's BWV feasibility study over the past two years. Several examples include: CBC Radio interviews, technology interest requests, routine media requests and procurement based requests. In September 2014, National Communications published an InfoWeb posting on the Rotator to inform RCMP members internally of this initiative. NCROPS worked closely with the RCMP's National Communication Services (NCS) to respond to numerous media requests for information regarding the BWV project.

Public perception of RCMP use of this technology must be measured in a national communications strategy. A communication strategy is a key component prior to implementation as it will provide insight into the realities of a police officer's job that must be considered. NCS is currently working on a communications strategy that will deal with adoption or non-adoption of BWV technology. It is expected that any decision made by the RCMP with regards to BWV will generate internal and external interest.

5.5 Training

It is essential for our members to really understand how to use and understand BWV technology to collect evidence. Training and policy guidance must address BWV usage to provide clear direction to frontline members. Articulation is essential to provide context to video evidence. Context is comprised of a combination of situational factors, officer perceptions and risk assessment. Perception, ability to predict an action, threat recognition and decision process will not show on video; yet these factors impact an officer's reaction capability. Human performance and timing must be understood to articulate an officer's actions and explain memory discrepancies. Updated training on camera limitations and articulation will be critical to describe officer perception and memory during post-incident investigations and court testimony. Policy and training will be required to assist members in their abilities to narrate video and articulate it under court scrutiny. Training should also ensure members understand BWV policy and how to apply it appropriately.

A transition period is necessary for new equipment and anything that may involve such as mounting options, wires, battery charging and overall operation of equipment. Infrastructure may differ between divisions and at the detachment level but must accommodate video transfer for members. Roles and responsibilities must be identified to avoid any assumptions. Most camera vendors offer specific camera model operation and video software usage in essentially a train the trainer format. A need to know may exist for viewing video recordings for training and perhaps



de-identifying data for training may mitigate this risk. Most members conduct their duties as though they are being recorded already as this is a reality with the prevalence of camera phones. However, members must ensure they are not placing themselves in danger during interactions by not applying an appropriate use of force.



6 Chapter: Conclusion

This study has included technical evaluations, a literature and case law review and several small pilots. Trials have assessed potential impact to member safety, tactical considerations and evidentiary value for court proceedings. BWV cameras are able to record police interactions with the public to an accurate degree. Software management can provide necessary audit trails to allow recordings to become evidence for court.

BWV cameras are a tool which can be leveraged by frontline uniform members to record supplementary evidence during public encounters to afford greater transparency and accountability. Primary evidence must always come from the officer.

Police encounters with the public are oftentimes conducted in highly dynamic and tense situations and video evidence can provide an accurate account of events. Discrepancies will exist between the actions shown in the video recording and the context which is comprised of an officer's perception and memory. Updated training and policy on camera limitations and articulation will be critical to describe officer perception and memory during post-incident investigations and court testimony. Communication strategies will further inform camera limitations and RCMP usage internally to RCMP employees as well as externally to Canadians.

There are significant factors that must be considered prior to implementing BWV, including cost of data storage and management, technical shortcomings of camera equipment, privacy considerations and the lack of case law in Canada regarding this technology.

Storage and retention of BWV evidence will involve high maintenance costs and require massive capacity solutions. Data storage is directly dependent on the number of video recordings produced, the length of time videos are kept and the location of data storage. This will include evidence management and storage which will be hosted by external vendors. Server infrastructure must be physically located in Canada for RCMP video recordings. The CIO is working towards an enterprise level storage solution for video that will include storage requirements for BWV recordings. They are in the research and business case development stage of this initiative. Fielding a national enterprise solution is still a long way from completion. The cost of implementing BWV camera technology varies depending on whether the RCMP stores video on servers locally at detachments or decides to implement cloud storage with a third party vendor. Expenditures for video storage requirements are approximations based on costs at the time of writing as both pricing and technology changes rapidly causing these estimates to be very fluid. A financial business case will be necessary to further quantify cost and determine overall savings for each storage enterprise option.



Several limited pilots collected data on specific variables including audio and video quality; video data file size, mounting compatibility in various positions and officer safety. Industry is not yet where we need it to be with police requirements of battery life, tamperproof audit trails and mounting capabilities. To date, no camera has been identified that meets all of the RCMP's requirements for its diverse operational policing environment. The cameras researched and tested identified limitations specifically with battery life and durability. Additionally, the cameras did not always adequately capture the incident due to mounting difficulties. As a result, on 2015-11-26 a request for information was published on the Public Works and Government Services Canada website to request industry feedback on BWV camera capability.

This feasibility study revealed evidence toward the suitability of BWV technology for RCMP frontline usage. Significant factors continue to exist such as: cost of data storage and the management of evidentiary data, technical shortcomings of camera equipment, privacy considerations and the lack of case law in Canada regarding this technology. However, these factors can be successfully addressed with policy guidance, training and sufficient data storage.

6.1 Assessment

Forecasting technical innovation and how trends will dissipate or expand is difficult particularly from a policing perspective. Strategically an educated approach must determine whether the overall benefits outweigh the risks and address potential liability of implementing BWV cameras. Police can effectively leverage BWC to illustrate improved accountability and transparency. A probable return on investment could improve officer and citizen behaviour. Members may become more professional during public interactions with the use of BWV cameras to document evidence of an encounter. BWV cameras improve police transparency which could result in increased public trust for the RCMP.

BWV is not a panacea. It is a good tool as it offers broad strokes of corroboration but it may not provide an unequivocal account of what happened. The camera may fail, capture a partial recording or only capture audio of an incident if it is not pointed in the direction of the event. Camera technology is evolving at a rapid pace and may improve to meet the needs of law enforcement usage. Video will not capture context and this must be articulated by an officer. Discrepancies will exist between an officer's notes and the video recording of an incident. Articulation will be critical to describe officer perception and memory during post-incident investigations and court testimony.

Expectations must be managed. Internally, it will be critical to train our members to understand BWV camera functionality as another tool on their belt and identify limitations in that it cannot capture context. Training and policy will assist in maintaining tactics and improve articulation. Externally, a communications strategy may enhance public comprehension of BWV



cameras use in the execution of police duties conducted in highly dynamic and tense situations. Additionally, education of the courts during trial will be necessary to illustrate that primary evidence must come from officer testimony and video is secondary evidence capture. Key to this education process will be having clear policy and training guidance available for members to explain their decisions to the courts. Finally, oversight bodies must be educated on the limitations of video.

The feasibility study provided evidence toward law enforcement use of BWV technology with an advisory that this technology is currently at early stages and is continually evolving. Independently funded research was conducted by DRDC to conclude that *"the evaluations showed that BWV cameras are technically capable of the required collection of video during realistic scenarios, but are currently subject to significant limitations of camera mounting, video quality, and user interface."*²⁹ Operational field trials found that cameras had difficulty with battery life, durability and mounting which did not meet requirements. Camera technology requires software to digitally manage recordings which also resulted in technical difficulties for members in the field. An enterprise solution may resolve similar challenges going forward. Volumetric calculations based on assumptions for retention schedules and current technologies are extremely large and result in the ten million dollar range for the initial equipment purchase in addition to the ongoing maintenance and data storage cost per year.

6.1.1 Benefits

- Improved transparency and accountability for police leading to increased public trust and improved public confidence in police.
- Evidence gathering ability is increased.
- Improved prosecutions of investigations such as domestic assault.
- Encourage improved police and public behaviour.
- Encourage early guilty pleas.
- Improve future quality of service.
- Reduce the number of frivolous public complaints or false allegations against police.

6.1.2 Risks/Drawbacks

- Appropriate storage must be established for video recording data. A requirement for storage is directly dependent on implementation of BWV camera technology.

²⁹ Espenant, Mark; Murwanashyaka, Jean Nepo; De Gagné, Mathieu; & Wollbaum, April. Defence Research and Development Canada. (October 2015) *Scoping, Technical, and Operational Evaluation of Body Worn Video*. Scientific Report DRDC-RDDC-2015-R204. CSSP-2014-TI-2031 Final Report. Regina, Saskatchewan & Ottawa, Ontario: DRDC-CSS.

- Cost is a major factor as management and storage of video recordings comes with significant expense.
- Privacy concerns exist
- Courts may become too dependent on video evidence rather than officer testimony.
- Possibility of trend to continue where charges are thrown out due to lack of video evidence in court.
- Unrealistic expectations (BWV cameras are not a panacea)
- Vulnerability of public analysis of video for police actions as this leaves it open to interpretation (DRDC).
- Cameras have limitations.
- BWV offers broad strokes of corroboration. Discrepancies will exist between an officer's notes and the video recording of an incident. Articulation will be critical to describe officer perception and memory during post-incident investigations and court testimony.
- Identifying a camera that meets all requirements with respect to battery life and durability has been the main issue to date.
- Camera device is subject to viruses and malware which can infect our network systems and compromise privacy through inadvertent release of footage.
- Further considerations include, the camera does not follow an officer's eye; some danger cues may not be captured on video; a camera may see better than the officer in low light; the camera only records in 2-D, which is not equal to the human eye; and the camera lens may be blocked during a recording.

6.2 Options

A. **Status quo** - continue frontline policing without implementing body cameras.

Benefit is no cost incurred as a result of not implementing a BWC program. Risk is that RCMP may be seen negatively for not adopting new technology to increase transparency and accountability. Also, several coroner inquests received by the RCMP recommended use of body worn video.

B. **Force wide implementation** - full RCMP deployment of a BWV camera program.

Benefits include: improved transparency and accountability for police leading to increased public trust and public confidence in police; evidence gathering ability is increased; victimless prosecutions of investigations such as domestic assault; encourage improved police and public behaviour; encourage early guilty pleas; improve future quality of service; reduce the number of frivolous public complaints or false allegations against police.

Risks include: a requirement for storage is directly dependent on implementation of BWV camera technology; cost is a major factor with initial and on-going significant initial and ongoing expenses; privacy concerns exist; courts may become too dependent on video evidence rather than officer testimony; financial loss, injury to reputation or competitive disadvantage to those subjects implicated by BWV footage; & unrealistic expectations exist as BWV cameras have limitations.

C. Limited permanent implementation in a division - offer BWV cameras to be available to divisions as an approved item.

Benefit is this will allow contract provinces to decide whether or not they want to fund specific deployments of this technology. It provides an opportunity to permanently deploy BWV cameras in a controlled approach. For example, a small, medium and large detachment deployment in one division would provide operational data necessary to support a larger deployment within the division over time. The primary risk is that legal challenges could arise regarding why cameras were available in certain jurisdictions and not others. Further, if the technology was available then why was this incident not recorded?

6.3 Recommendation

Recommendation is option C: Limited permanent implementation in a division as the most viable option. Factors supporting this recommendation include cost, privacy, storage and legal elements.

Assessment of BWV is based on projections from RCMP trials and data collected from other police agencies in North America and abroad (U.K.). Permanent limited implementation in an RCMP Division will satisfy the public's demand for accountability while remaining fiscally responsible until the predictions for storage, cost and reliability can be confirmed. Interim policy can be adapted in a division with limited exposure to the courts during criminal trials to improve a larger deployment at a later time. This limited implementation approach decreases the risk of creating bad case law with respect to law enforcement use of this technology in Canada. Several provincial governments have established Steering Committees on BWV cameras involving Crown Prosecutors, Executive Officers and Chiefs from police agencies to create standards and recommend operating procedures. Limited implementation in a division would evaluate camera technology and effectiveness in this dynamic and rapidly evolving sector. Battery life, storage and durability can be addressed in a wide variety of applications given the three detachment sizes and applied to future implementations.

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