

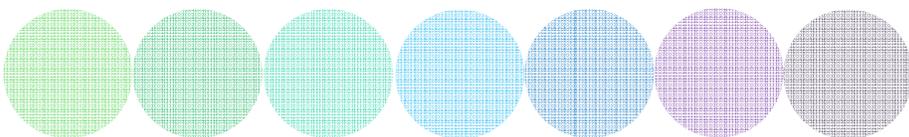


Property and Forensic
Storage Services

Greening Waste Management at the Vancouver Police Department's Property Office



Christa Brown, Greenest City Scholar 2014
Vancouver Police Department
2014/08/18



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EXECUTIVE SUMMARY

The Vancouver Police Department (VPD) has made a commitment to becoming a law enforcement leader in environmental sustainability. It intends to do this by focusing on reducing, reusing, recycling and using innovative methods to better utilize resources. Through the City of Vancouver's Greenest City Scholars program, the VPD began a project looking at the ways in which they could green the waste management practices of the Property Office, the unit responsible for storing all property that comes into police custody. Currently the majority of unclaimed property that is not deemed of sufficient value to sell at auction is routinely disposed of through incineration.

In an effort to green Property Office's disposal practices, this report was compiled with the objective of comparing the current practices of the VPD property office with the disposal practices of other police agencies, as well as best practices in solid waste management. The report then makes recommendations on the opportunities that exist to move away from incineration of unclaimed property and towards options that allow for reuse and recycling.

From a limited survey of other Canadian police agencies, it was found that most face the same challenge of trying to ensure safety, security, and privacy are maintained, while also striving to find environmentally sensitive property disposal methods. This challenge has been the main obstacle keeping the VPD Property Office from introducing practices more in line with solid waste management best practices, which aim to reduce, reuse, and recycle as much as possible in order to keep valuable material

resources out of the incinerator and landfill and available for use in the economy.

Along with taking advantage of some services available under the existing Corporate Zero Waste program, a survey of local businesses found that additional opportunities do exist for the diversion of property for reuse or recycling that should meet the VPD's standards for ensuring safety, security, and privacy. Some of these opportunities, such as donating used clothing, shoes, and other textiles for reuse should be relatively straightforward to implement, while others, such as the recycling of electronics with memory, will be somewhat more challenging and will require more time and effort on behalf of the VPD to put into place.

Taking operational constraints into consideration, it is therefore recommended that a phased approach to implementation is followed whereby the easiest solutions are adopted first. More complex diversion efforts, such as computers and cell phones, will require an assessment of the level of risk acceptable to the VPD in terms of protecting private or sensitive information before deciding upon the most appropriate diversion method.

Implementation will require arranging the appropriate services, as well as managing the change in a way that gets staff on board with the new processes. Also important to the successful implementation is setting up a system for measuring, evaluating, and reporting on the success of the project.

By following the recommendations set out in this report, the Property Office should be well on its way to becoming a law enforcement leader in the disposal of unclaimed property.

REPORT PURPOSE, BACKGROUND, AND METHODOLOGY

PURPOSE

This report provides an overview of the Vancouver Police Department's (VPD) disposal practices for unclaimed property and compares them with those of other Canadian police agencies and solid waste management best practices. The VPD Property Office receives, stores, and eventually disposes of all property that comes into police custody, including found property, seized property, items held for safekeeping, and evidence. Currently, much of what cannot be returned to its rightful owner or sold at auction is disposed of through incineration at the regional Waste-to-Energy facility in Burnaby, BC. The purpose of this report is to make recommendations for reducing the amount of property that is disposed of through incineration. It also provides suggestions on how to implement the recommended changes and for measuring, evaluating, and reporting out on measurable success.

This report was produced by a Masters student at the University of British Columbia (UBC) as part of the Greenest City Scholars Program, a collaborative research partnership between UBC and the City of Vancouver that supports the City of Vancouver's *Greenest City 2020 Action Plan*.

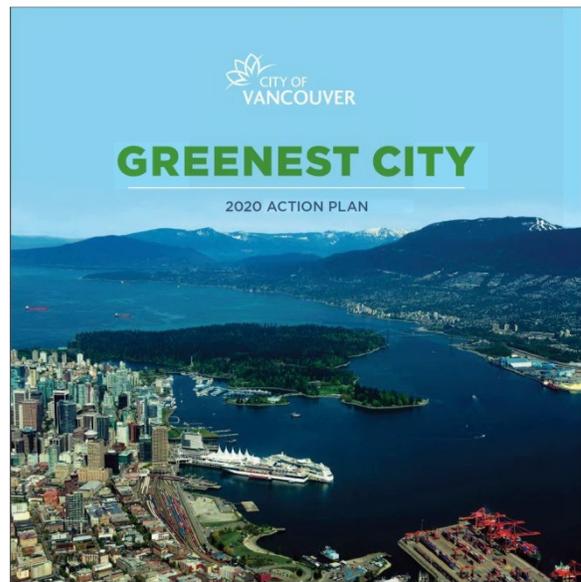
BACKGROUND

The following sections provide the context behind the creation of this report. It includes the current City, Department, and Regional policies that call for increased diversion of reusable or recyclable materials away from the landfill and incinerator as well as the

International Association for Property Evidence (IAPE) professional standard that states that recycling of component materials is the preferred method of disposal.

Greenest City Action Plan

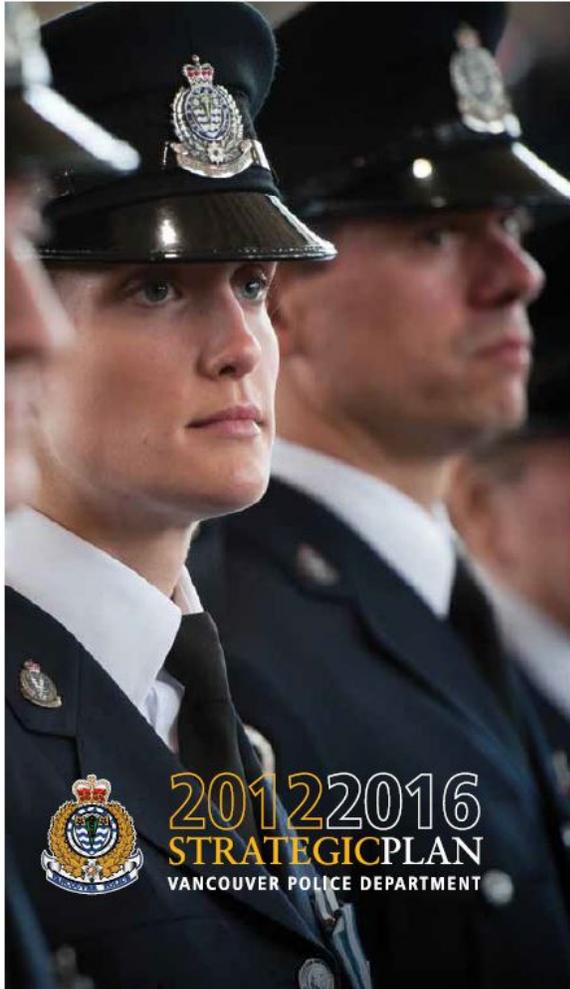
The *Greenest City 2020 Action Plan* is a document comprised of ten goals that guides the City of Vancouver's actions towards becoming the greenest city in the world by 2020. Goal 5 of the *Action Plan* is 'create zero waste' and has a target of reducing the solid waste going to either the landfill or incinerator by 50% from 2008 levels (City of Vancouver, 2012).



In support of the *Greenest City Action Plan* the City of Vancouver, including the Vancouver Police Department, is greening its own operations and has begun to implement a Corporate Zero Waste program that supports the Zero Waste goal. This report is intended to assist in extending the Corporate Zero Waste program to the unique operations of the VPD Property Office in order to find workable solutions that will prevent reusable and

recyclable items from entering the waste stream.

VPD Strategic Plan and Code Green Action Plan

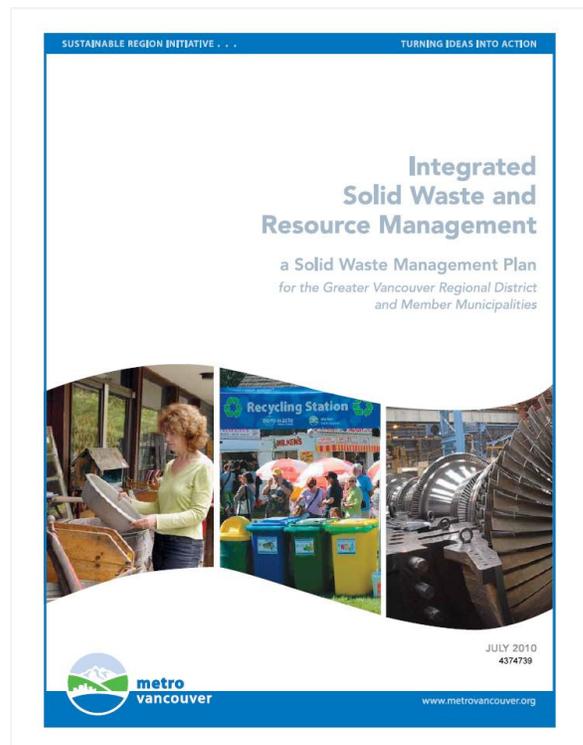


In its 2012-2016 Strategic Plan, the Vancouver Police Department has committed to being a law enforcement leader in environmental sustainability. Past efforts have focused on reducing the environmental impact of fleet and facilities. Through its 'Code Green' program, the VPD will continue to work towards minimizing its carbon footprint by focusing on reducing, reusing, recycling and using innovative methods to better utilize resources (Vancouver Police Department, 2012).

Code Green Strategies include:

- Reducing energy consumption
- Working collaboratively on joint ventures with the City's Sustainability Framework, including carbon neutral policies and practices
- Reducing waste
- Promoting a 'green' culture within the VPD
- Reducing vehicle emissions

Metro Vancouver's Integrated Solid Waste and Resource Management Plan



One of Metro Vancouver's core service areas is solid waste management. The region's Integrated Solid Waste and Resource Management Plan identifies four goals:

- Minimize waste generation
- Maximize reuse, recycling and material recovery
- Recover energy from the waste stream after material recycling

- Dispose of all remaining waste in landfill, after material recycling and energy recover (Metro Vancouver, 2010).

In order to maximize reuse, recycling, and material recovery, Metro Vancouver has banned or prohibited from disposal facilities items for which there are already easily accessible recycling programs set up or that are hazardous to waste collection workers, the public, and the environment (Metro Vancouver, 2014). Examples of items banned or prohibited include: corrugated cardboard, recyclable paper, batteries, electronics and electrical products, and metal household or commercial appliances (see Appendix A for a full list).

City of Vancouver’s Solid Waste By-Law

The City of Vancouver’s Solid Waste By-Law outlines items that are restricted or prohibited from garbage containers and the Vancouver Landfill and Transfer Station (see Appendix B for full list). Items that are restricted are those that are accepted for recycling through the blue box program and items that are prohibited are those that fall under the Product Stewardship Program (City of Vancouver, 2014).

International Association for Property Evidence (IAPE), Inc. Professional Standards

The IAPE Standard for disposition states that items that cannot be released to owner, sold at auction, or diverted for reuse, should be destroyed. Destruction is defined as “the act of breaking apart, melting, crushing, or making an item of property unusable prior to discarding” (IAPE, 2012, p.72). The standard states that recycling of component materials (batteries, metals, plastics, glass, paper, and electronics) is the preferred method of disposal.

METHODOLOGY

Research question

This research seeks to answer the following question:

What alternative methods to incineration exist for disposing of unclaimed property that align with the Greenest City Action Plan Zero Waste goal, are operationally feasible, and ensure safety, security, and privacy are maintained?

Methods

The methods utilized to answer the research question included:

- A literature review of solid waste management best practices;
- An informal survey of several other police agencies geared at understanding current practices within the Canadian context;
- Informal interviews with staff from the Property Office, the Building Operations Supervisor, and Corporate Zero Waste Officer; and,
- An online search for alternative disposal methods and follow up with potential service providers.

Limitations

The results of this research are limited by two main factors. The lack of a formal waste audit was probably the most challenging limitation. The decision was made not to conduct a formal waste audit for a few reasons. The large volume of waste generated (approximately 3.5 tonnes every four to six weeks) would make a formal audit very time consuming and labour intensive, especially given limited resources and the short timeframe of the overall project (mid-

June to mid-August). In addition, due to the nature of the waste that sometimes includes items such as drug paraphernalia or contaminated items, there were concerns over the safety of conducting an audit. A third factor is the inconsistency from month to month in the contents of the property to be disposed of, making it difficult to generalize findings from a waste audit to the overall composition of the waste in the longer term.

A second limitation was the small sample size for the survey of other police agencies

regarding their current practices. Knowing how other police agencies are disposing of unclaimed property is useful for understand how the Vancouver Police Department compares and also for gathering ideas about processes the VPD could consider implementing in the future. However, it was necessary to strike a balance between time spent contacting other agencies versus focusing on other aspects of the project, such as understanding best practices and sourcing service providers for alternative disposal methods.

BACKGROUND ON INCINERATION

“Incineration has appeal among policymakers because it gives the perception of making waste disappear, and can produce heat and electricity for other economic uses. This view is deceptive: incineration may well destroy recognizable items, but not their material basis. Waste never ‘disappears’: every atom entering the system must leave the system in some form: ash, gas, heavy metals and toxic compounds created through burning (e.g., dioxins and furans).” (Lee et al., 2013)

Incineration is a solid waste treatment process that involves the oxidation of materials at a high temperature (between 750 and 1000 degrees Celsius). Byproducts of incineration include ash, air emissions, heat, and energy. All combustion processes result in the production of gases and particulates that require pollution control strategies to meet air quality standards (Vergara, 2012).

Incineration facilities are designed for the efficient, controlled combustion of solid waste over a short period of time. They reduce the volume of waste, can destroy harmful chemicals and pathogens, and can be used to produce energy. Modern incinerators are equipped with various air pollutant control devices to treat and minimize harmful emissions generated from burning waste (Vergara, 2012).

Emissions from incineration depend on a number of factors: the type of waste, the type

of incinerator, and the conditions under which waste is burned (Vergara, 2012). Despite pollution control measures, even modern mass-burn incinerators can release toxic pollutants through stack gases and residues. Examples include dioxins, furans, volatile metals, hydrochloric acid, chlorinated benzenes, sulfur dioxide, and nitrogen oxides (Pembina Institute et al., 2007). Incineration also results in greenhouse gas (GHG) emissions that contribute to climate change. According to Lee et al. (2013), incineration produces more GHG emissions per unit of energy produced than any fossil fuel, including coal.

Recycling waste into the same products results in a much greater energy gain than incineration due to the avoidance of the energy intensive extraction and processing of primary resources. A Canadian study showed that recycling paper can save 2.4 to 7 times the energy gained from combustion and recycling plastics saves 10 to 26 times the energy gained from combustion (Pembina Institute et al., 2007).

After the incineration process, bottom ash and fly ash remain, and combined can represent between 22 to 45% of the original weight of the waste (Lee et al., 2013). Bottom ash (Figure 1) makes up about 90% of the total ash and fly ash contains most of the toxicity. These byproducts require special landfilling to minimize the risk of contamination of soils or waters (Vergara, 2012).



Figure 1: Bottom ash at the Vancouver landfill

CURRENT PRACTICES AT VPD PROPERTY OFFICE

The VPD Property Office receives, stores, returns to owner, or eventually disposes of all property that comes into police custody. This includes evidence, found property, seized items, and items held temporarily for safekeeping. Over time, property and evidence needs to be purged in order to ensure the efficient operations of the storage facility and to avoid having to acquire additional space for storage.

One of the greatest challenges the Property Office must deal with is having no control over the quantity, contents, and condition of the items that come into police custody. The Property Office ends up with a wide variety and large quantity of items for which they are responsible for disposing of. Most of these items can be organized into several broad classifications including, but not limited to: bicycles, cell phones, computers and laptops,

other electronics, narcotics, clothing and bedding, bags and luggage, weapons, sporting equipment, and miscellaneous personal items.

The City of Vancouver *Unclaimed Property By-law* governs the disposal of unclaimed property (Appendix C). According to the *By-law* when the police obtain possession of property where the owner cannot be determined and the property is not of saleable value, that property may be destroyed or disposed of in "such manner as the Chief Constable may direct" (City of Vancouver, 1993).

Each of the categories of property (evidence, found, seized, and safekeeping) is treated differently when it comes time for disposal (Table 1). However, the preferred option when unable to return property to the owner or finder (unclaimed property), is to sell it at auction. The remaining property that is deemed of insufficient value to sell, with few exceptions, is disposed of through incineration.

Table 1: Categories of Property and Disposal Methods

Category	Retention Period	Disposal Methods
Evidence	<ul style="list-style-type: none"> Concluded cases – until 30 day appeal period has elapsed Open cases – indefinitely unless member notifies to return to owner (RTO) or dispose Homicide and sexual assault cases or in special cases identified by lead officer – 99 years 	<ul style="list-style-type: none"> Return to owner, if advised to do so May be sold at auction, if of value and depending on the nature of the evidence Incineration
Seized Property	<ul style="list-style-type: none"> After advised by court or officer and until 30 day appeal period has elapsed 	<ul style="list-style-type: none"> Return to owner, if advised to do so Sold at auction, if of value Incineration
Found Property	30 days	<ul style="list-style-type: none"> Return to owner or finder Sold at auction, if of value Incineration
Property held for Safekeeping	90 days	<ul style="list-style-type: none"> Return to owner Sold at auction, if of value Incineration

Incineration has been utilized as the primary means of disposal of unclaimed property not saleable at auction, because it is a relatively cheap disposal method that ensures complete destruction of items that may contain personal or sensitive information. In addition to the property itself, items such as envelopes, cardboard boxes, plastic bags, etc., used for the storage of evidence and property, are also routinely disposed of through incineration.

Impact

The impact of disposing of this property through incineration is difficult to quantify. The waste is extremely heterogeneous in nature, with both volumes and contents varying from month to month. On average, based on 2014 data, about 3,300 kgs or 3.3 tonnes is sent to the incinerator every month to six weeks (Table 2). Of note is that a considerable amount of this waste is either recyclable, is banned by Metro Vancouver from the waste stream, or are items for which extended producer responsibility (EPR) programs exist (Table 3).

One of the most obvious consequences of disposing of property in this manner is that once these items are incinerated at the Waste-to-Energy facility, the items themselves and the

resources they are made from are no longer available to be utilized again (with the exception of some metals that can be recovered using magnets). As was discussed previously in the Background on Incineration section, the energy required to extract and process new resources to create new products far outweighs the energy required to recycle products, even when factoring in the energy generated through the incineration process. Of particular concern are items that are known to contain toxic or harmful substances, for example, e-waste (computers, cell phones, and other electronics) and plastics (Figure 2). The impacts of sending these items for incineration will be discussed in further detail in later sections of this report.



Figure 2: Soft plastics in a burn bin at the VPD

Table 2: Waste Incinerated by VPD Property Office - 2014

Date	Net Weight (kg)	Rate (\$/1000kg)	Cost
17-Jan-14	3460	108	\$ 373.68
06-Mar-14	3700	108	\$ 399.60
17-Apr-14	3230	108	\$ 348.84
03-Jun-14	3870	108	\$ 417.96
03-Jul-14	2480	108	\$ 267.84
14-Aug-14	3030	108	\$ 327.24
RUNNING TOTAL:	19770		\$ 2,135.16
AVERAGE PER BURN:	3295		\$ 355.86
PROJECTED TOTAL FOR 2014:	29655		\$ 3,202.74

Table 3: Categories of items being sent for incineration
Paper, envelopes, and cardboard ^{1 2}
Personal items – photos, diaries, papers ¹
Documents – court documents, witness statements ^{1 2}
Soft plastics – wrap, plastic bags ¹
Textiles – clothing, bedding
Bags and luggage
Sporting equipment
Computers, laptops, and cell phones ^{2 3}
Other electronics – power tools, small kitchen appliances, stereos ^{2 3}
Gun cases
Non-firearm weapons – knives, swords, batons
Non-liquid drugs and drug paraphernalia
VPD Uniforms (picked up from VPD Stores on route to the incinerator)

¹ Recyclable

² Banned from waste stream by the City of Vancouver and/or Metro Vancouver

³ Extended Producer Responsibility (EPR) program exists

Barriers to different disposal methods

There are a number of barriers or constraints that currently prevent utilizing alternate methods to dispose of property at the end of the retention period. These can be summarized as follows:

- Infrastructure – there is currently no diversion system in place (bins, contractors, pick-up, etc.)
- Logistics – challenges exist for making donations of used goods to charitable organizations
- Space – there is limited workspace available for multiple extra collection bins
- Cost – there is a belief that it is cheaper to incinerate than to recycle or dispose in other ways
- Time/resources – it is easier and quicker to dump everything in the burn bins than to separate it

- Safety – some items hold drug paraphernalia or may be contaminated (e.g. bodily fluids, pests)
- Security – need to ensure weapons and VPD uniforms do not end up in the hands of criminals
- Privacy – destruction of certain items is required in order to protect personal information

Current diversion efforts

Corporate Zero Waste Program

The Property Office participates in the Corporate Zero Waste Program with separate bins for organics, soft plastics, mixed paper, mixed containers, and the landfill. Within the office, the program currently targets the waste generated from office operations and kitchen waste.

Annual VPD Auction

The Property Office holds an annual auction where unclaimed property deemed to be of

value is sold to the public. Depending on volumes, the Property Office may also hold one or two additional bicycle auctions throughout the year in order to free up space in the warehouse. The auctions proceeds are deposited in the City of Vancouver’s general revenue account to be utilized for City programs and services (Table 4).

Cardboard recycling

Beginning earlier in 2014, arrangements were made with Urban Impact, the Corporate Zero Waste program service provider, for the collection of cardboard. A cardboard bin is located on site and Urban Impact is called to pick it up when it is nearly full (Figure 3).



Figure 3: Cardboard recycling bin

Scrap metal recycling

Scrap metal is collected and periodically taken to Richmond Steel Recycling for recycling. The proceeds from the sale of the scrap metal are deposited in the City of Vancouver’s general revenue account.

Table 4: Revenue Generated at VPD Auction - 2011-2014

Year	General Lots *	Jewelry Lots	Bike Lots	Total Lots	Revenue
2014	320	51	347	718	\$ 118,500
2013	448	38	301	787	\$ 112,726
2012	432	65	401	898	\$ 193,297
2011	200	41	333	574	\$ 99,847
FOUR YEAR TOTAL:	1400	195	1382	2977	\$ 524,370
AVERAGE PER YEAR:	350	49	346	744	\$ 131,093

* Lot – The item(s) being sold in an auction. Sometimes a group of items is sold as one single lot.

WHAT OTHER POLICE AGENCIES ARE DOING

An informal survey was conducted of eight Canadian police agencies in order to gain a better understanding of their current practices in relation to disposing of unclaimed property and police uniforms at the end of their life. The agencies contacted were those where it was relatively easy to identify through an internet search the office responsible for unclaimed property disposal. Through this survey responses were obtained from agencies representing other major Canadian metropolitan areas (Toronto, Ottawa, London, Calgary, and Edmonton), as well as agencies located in relatively close proximity to the Vancouver Police Department (Delta, Abbotsford, and Victoria).

UNCLAIMED PROPERTY

The methods of disposing of unclaimed property vary between the eight police agencies and also by the category of item being disposed. The range of disposal methods includes: auction (traditional and online), donation, reuse within agency, recycling, disposal through a third party, garbage, and incineration. For those agencies that place unclaimed property in the garbage, it is unknown whether that waste ends up in a landfill or at an incinerator and whether or not energy is recovered in the waste disposal process.

The categories of unclaimed property included in the survey were derived from the Analysis of Burn Waste conducted by Erin Rennie, the Greenest City Scholar with the VPD in 2013 (see Appendix D). These are items that if determined they are of little value to sell at auction or they pose a concern due to privacy

or safety are routinely incinerated by the VPD. The categories are:

- Clothing and bedding
- Bags and luggage
- Sporting Equipment
- Personal items (e.g. photos, diaries, papers)
- Electronics – with personal data (e.g. cell phones, laptops, computers)
- Other electronics – no personal data
- Small household appliances
- Drugs – non-liquid
- Gun Cases
- Weapons – non-firearm (e.g. knives and batons)

A summary of the different disposal methods by item category and police agency can be found in Table 5.

The results of this survey demonstrate a couple of points. Firstly, that police agencies generally face many of the same challenges when seeking appropriate disposal methods for unclaimed property. Keeping items off the street that are dangerous, illegal, or could pose a threat to human health or safety is not just a concern, it is a primary mandate of most law enforcement agencies. Also, protecting private information of citizens is paramount, especially with the threat of identity theft and the rise of mobile electronic devices that store increasing amounts of personal information, passwords, and location information.

Secondly, the ways that police agencies overcome these obstacles is varied with some placing more emphasis on methods such as donation and recycling that at least temporarily keep these items out of the landfill or incinerator, while others opt for final destruction or disposal. No police agency

Table 5: Summary of Other Police Agencies Disposal Practices

Item	Agency							
	Delta Police Department	Abbotsford Police Dept	Victoria Police Department	Edmonton Police Service	Calgary Police Service	London Police Service	Ottawa Police Service	Toronto Police Service
Electronics - personal data	Cell phones, laptops - shred; Computer towers - IT dept clears, then recycle	Cell phones, old smart phones - recycle; Batteries - recycle; Laptops, computers, smart phones, SIM cards, gaming devices - incinerate	Cell phones - shred; Laptops and computers - remove hard drives and destroy, then disposed of through HAZPRO	Cell phones - shred; Laptops and computers - remove hard drives then auction or shred; Hard drives - recycle; Tech Crimes recycle some parts	Tech unit for disassemble and recycle	Cell phones - IT reuses for parts, unless poor condition - garbage; Computers - IT wipes/removes hard drives, then recycle or auction	Remove SIM cards, batteries and hard drives then metal shredding	Dofasco removes and destroys hard drives; Exterior cases - dispose through CADS electronic disposal
Other electronics	Depending on condition - auction or garbage	New or of value - auction; Otherwise - donate or recycle	3rd party disposal - HAZPRO	Auction	Auction or recycle	Auction or recycle	Metal shredding	Auction or CADS electronic disposal
Small household appliances	Depending on condition - auction or garbage	New or of value - auction; Otherwise - donate or recycle	3rd party disposal - HAZPRO	Auction or garbage	Auction or garbage	Auction or garbage; If used for drug production - incinerate	Metal shredding	Auction or CADS electronic disposal
Personal items	Shred then recycle	Incinerate	Shred	Shred	Shred	Shred	Shred	Shred through Wasteco
Clothing & Bedding	New - donate; Used - garbage	Good condition - donate; dirty or contaminated - incinerate	New and used - garbage; Biohazard - dispose through hospital	New - auction; Used - garbage	New - auction; Used, depending on condition - donate or garbage; Biohazard - incinerate	New - auction; Used, depending on condition - donate or garbage	3rd party disposal - Stericycle	New - auction; Used - garbage; Biohazard - dispose through Stericycle

Bags & Luggage	Depending on condition - auction or garbage	New or of value - auction; Otherwise - donate	Garbage	New - auction; Otherwise - garbage	Auction or garbage	Auction or garbage	Garbage	New - auction; Contaminated - dispose through Stericycle; Otherwise - garbage
Sporting equipment	Depending on condition - auction or garbage	New or of value - auction; Otherwise - donate	Depending on condition - auction or HAZPRO	Auction	Auction or garbage	Auction or garbage	Metal shredding	Auction, garbage, or scrap metal (Dofasco or CADS)
Gun Cases	Depending on condition - auction or garbage	Returned with guns or reused internally for storage; If disposed - incinerate	3rd party disposal - HAZPRO (sorts for recycling, garbage, etc.)	Auction	Garbage	Auction or garbage	Smelt with firearms	Metal - destroy with firearms through Dofasco; Plastic - destroy then garbage or recycle
Weapons - non-firearm	Shred at Richmond Steel Recycling	Small knives and sharps - Stericycle; Large knives, swords, and batons - contain and destroy at metal recycling facility	Knives, sharps - shred along with firearms	Destroy in muncher, then recycle scrap metal	Destroy in muncher, then dispose through metal foundry	Knives and swords - melt with firearms; Other weapons - garbage	Metal shredding	Destroy with firearms (Dofasco)
Drugs - non-liquid	Incinerate	Incinerate	Incinerate	Incinerate	Incinerate	Incinerate; Marihuana - bury in landfill	Incinerate	Destroy through Stericycle

surveyed appeared to have found a ‘green’ solution for every category, with every agency relying on incineration or garbage for at least some items in at least one category.

A few of the people I contacted from these various agencies expressed interest in the results of this research as they are also hoping to overcome some of the current obstacles to reusing or recycling more unclaimed property rather than sending it for final disposal.

POLICE UNIFORMS

Although disposal of VPD police uniforms is not directly the responsibility of the Property Office, it has been the practice that they are picked up from Police Stores on route to the incinerator in

Burnaby for disposal along with the unclaimed property. For this reason, they were included in the scope of this project for alternative disposal methods and the question was posed to the same eight police agencies regarding their methods of disposal. Six of the eight agencies (Delta, Abbotsford, Victoria, Edmonton, Calgary, and Ottawa) provided a response to this survey question.

There are four basic ways that these six agencies dispose of police uniforms at the end of their life: remove crests and donate the clothing to charity; remove crests and dispose of in garbage; shred; and incinerate. The responses of the six agencies are summarized in Table 6.

Delta Police Department	Abbotsford Police Dept	Victoria Police Department	Edmonton Police Service	Calgary Police Service	Ottawa Police Service
Crests removed then donated to developing countries for reuse	Local charity removes patches; patches returned to APD for incineration; clothing donated	Incinerated	Shredded	Shredded	Garbage after shoulder flashes and any police markings removed

SOLID WASTE MANAGEMENT BEST PRACTICES

SUSTAINABLE SOLID WASTE MANAGEMENT

History of waste management practices

Within developed countries, solid waste historically was disposed of in open spaces (termed landfills or dumps) and often burned to recover space, however, this practice generally ended in the 1970s when new environmental laws came into effect (Reyes, 2012). Landfill construction and operation and is now highly regulated, as is the technology and limitations placed on incineration facilities. Even with this increased regulation, landfills (Figure 4) and incineration facilities do not represent best practices for solid waste management, but rather an improvement over the open landfilling and burning practices of the past, which had much worse environmental and human health implications (Reyes, 2012).



Figure 4: Vancouver landfill active face

Landfills have only a limited lifespan due to space constraints. They produce methane, a greenhouse gas much more powerful than carbon dioxide, and other harmful gases such as hydrogen sulfide. Landfills require collection and treatment of leachate, which is the rainwater that accumulates in the landfill, and

for this reason require monitoring for environmental compliance for decades after their closure. Even still materials, such as plastics, may not break down for hundreds of years (Reyes, 2012).

Incineration was discussed in some detail in the previous section Background on Incineration, but in summary it: destroys useful materials that then must be replaced through energy intensive primary resource extraction and processing; releases greenhouse gas emissions that contribute to climate change; and results in the creation of waste products – ash, gas, heavy metals and toxic compounds – that can have implications for environmental and human health (Lee et al., 2013).

More recently, there has been a move towards what is termed Integrated Solid Waste Management (ISWM). Along with landfilling and incineration, ISWM introduces recycling and composting as other strategies in the management of solid waste. The goal is to significantly reduce the amount of waste that is sent to a landfill or incinerator (Reyes, 2012).

Moving from waste disposal to the Three Rs and beyond



An important concept that has supported the goal of reducing waste sent to a landfill or incinerator is the Three Rs. The first R stands

for Reduce, which means limiting the amount of waste that is produced in the first place. This is accomplished through changing consumption patterns and redesigning products. For example, switching to reusable rather than disposable products, reducing packaging, and improving the durability of products (Davidson, 2011).

The second R is Reuse. This refers to extending the useful life of used products by reusing them more than once in their same form for the same purpose (Davidson, 2011). According to Lee et al. (2013), reduction of waste through redesign, source reduction, repair and maintenance, and reuse of products should be the most important objective – in other words, concentrating on the first two Rs – because it reduces greenhouse gas emission and the energy needed to produce new materials.

Recycle is the third R. Recycling aims to divert waste through the collection of certain designated materials (glass, metal, paper, cardboard, and plastic) that are then processed into new materials and products. Recycling is the third R, because unlike reduction or reuse it requires energy and the input of some new materials (Davidson, 2011).

What the concept of the Three Rs and the transition to ISWM represent is a shift in thinking about solid waste management – it's a shift from managing wastes to recovering resources (Lee et al., 2013). Instead of solid waste management being a linear cradle-to-grave waste disposal problem, it becomes a circular cradle-to-cradle matter of handling materials (Reyes, 2012).

This shift towards sustainable solid waste management has many positive effects. It helps deal with the burden on landfills by reducing

the amount of waste sent there, thus prolonging their lifespan. It can reduce greenhouse gas emissions and other harmful pollutants emitted by landfills and incinerators, as well as keep valuable material resources available for reuse in the economy. Last, but not least, it can have positive effects on local economic development through the creation of green jobs (Lee et al., 2013; Reyes, 2012).

“If 10,000 tons of computers are processed to recycle their components, 300 jobs can be generated, while the disposal of these 10,000 tons of computer refuse in a landfill produces just one additional job.” (Reyes, 2012)

Zero Waste as a philosophy and a goal

Building on the concepts of ISWM, the Three Rs, and other sustainable solid waste management philosophies, the concept of Zero Waste has emerged as the ultimate goal. Zero Waste incorporates the idea of shifting from a cradle-to-grave to a cradle-to-cradle system where waste is no longer seen as an external by-product of a one-way linear system, but rather as a resource in a closed-loop system (Figure 5). Furthermore, with Zero Waste the idea is that human systems should emulate the rest of nature and only produce wastes that can be recycled into new resources leaving no remaining wastes that are hazardous or require landfilling (Krausz, 2012).

Defined literally, Zero Waste refers to the complete elimination of all waste, however, all living organisms create waste as part of their normal processes. Therefore the concept of

Zero Waste is often used to express the goal of significantly reducing waste from current levels (Krausz, 2012).



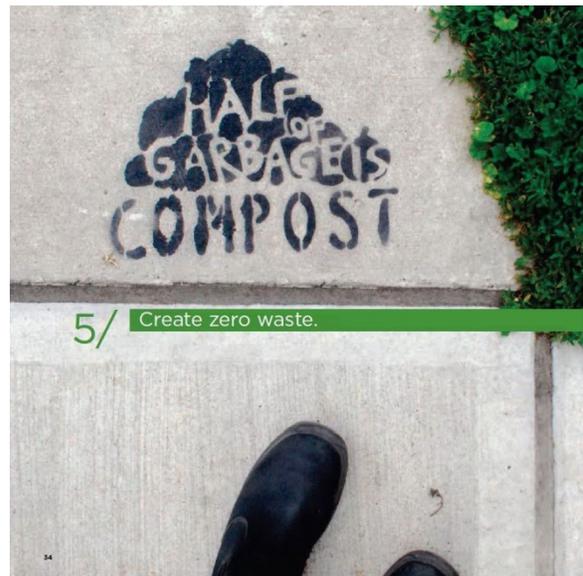
Figure 5: Zero Waste philosophy (Lee et al., 2013)

With Zero Waste, more emphasis is placed on materials reduction, redesign, and reuse, before recycling and composting, in order to reduce the volume of materials and the amount of energy required from processes of extraction through to disposal. One of the ways this is accomplished through policy is with product stewardship or extended producer responsibility (EPR) programs that oblige producers to deal with the waste created at the end of their product’s useful life (Lee et al., 2013). With ERP, the costs associated with providing recycling programs for certain products are passed onto manufacturers, importers, and consumers, rather than becoming the responsibility of municipal or regional governments.

Greenest City 2020 Action Plan

The City of Vancouver’s Greenest City Action Plan has adopted Zero Waste as a policy goal.

Goal 5 in the Action Plan is to ‘Create zero waste’, however, in practice this appears to mean significantly reducing waste from current levels, at least in the short term, rather than eliminating waste altogether. The target that the City has set is to ‘reduce solid waste going to the landfill or incinerator by 50% from 2008 levels’ and by 2012 a 12% reduction from 480,000 to 424,000 tonnes was already realized (City of Vancouver, 2014).



Echoing much of the literature on sustainable solid waste management, the Greenest City Action Plan outlines the logic behind adopting Zero Waste as a Policy goal:

- Transportation, landfilling, and incineration of waste produces GHG emissions
- Sending recyclables to incinerator destroys valuable resources and means more resources need to be mined to create new products, which damages ecosystems
- Diversion of waste can lead to the creation of green jobs

- Zero waste contributes to addressing the climate crisis and other environmental challenges

Key strategies outlined in the Action Plan include making reducing and reusing a priority, and keeping recyclables out of landfills and incinerators (City of Vancouver, 2012).

Waste Management Hierarchy

The waste management hierarchy provides a visual representation of the waste management concepts espoused by sustainable solid waste management, ISWM, the Three Rs, and Zero Waste (Figure 6). Also termed a pollution prevention hierarchy or waste value chain, the figure varies in detail from source to source, but its purpose is to show that prevention of waste is the highest goal in solid waste management, followed by diversion through reuse and recycling, and finally disposal, with methods that recover energy preferred to those without.

The top of the hierarchy, and highest goal, is waste reduction, because it reduces the demand for both raw materials and energy. Moving down the hierarchy, waste reuse and recycling allow for the recovery and reuse of materials, thereby decreasing the demand for new raw materials to be extracted. When prevention or diversion cannot be achieved, the final option is disposal, with those options allowing for energy recovery (incineration and landfill with methane gas capture) being preferable to those without. When moving down the hierarchy, the value of resources decreases and the capacity needs for disposal increase, which is where the term waste value chain originates. By disposing of waste through incineration or landfilling, not only are we increasing the need for infrastructure (incineration facilities or land) to handle the

waste, we are losing valuable resources that otherwise could be utilized within the economy.

SUSTAINABLE SOLID WASTE MANAGEMENT AT THE VPD PROPERTY OFFICE

In moving forward with greening the waste management practices of the VPD Property Office, the waste management hierarchy provides an excellent guiding framework. Currently, most unclaimed property that is not saleable at auction is treated as waste and is disposed of through incineration at the Waste-to-Energy facility in Burnaby. The goal is to begin to move up the waste management hierarchy whenever operationally feasible. As discussed previously, it is very difficult to influence the amount of unclaimed property that requires disposal, as well as its composition, since much of what makes its way into police custody is dependent on the actions of people outside the direct influence of the VPD. Efforts are made to return property to the owner, but unfortunately this is not always feasible, as in the case of certain evidence or if the owner can't be found or doesn't come in to claim it once notified. For this reason, the focus of most of the actions the Property Office can take will be on diversion through reuse and recycling. Much property is already sold at auction, which is the preferred method of reuse, since it allows for items to be reused in their current state and also generates some revenue for the City. Further opportunities for reuse and recycling, arranged by the major categories of items currently being sent for incineration, will be explored in the following section on diversion options. In some cases, for example where issues of public health and safety cannot be easily overcome, incineration with energy recovery will remain the best option for disposal at this time.

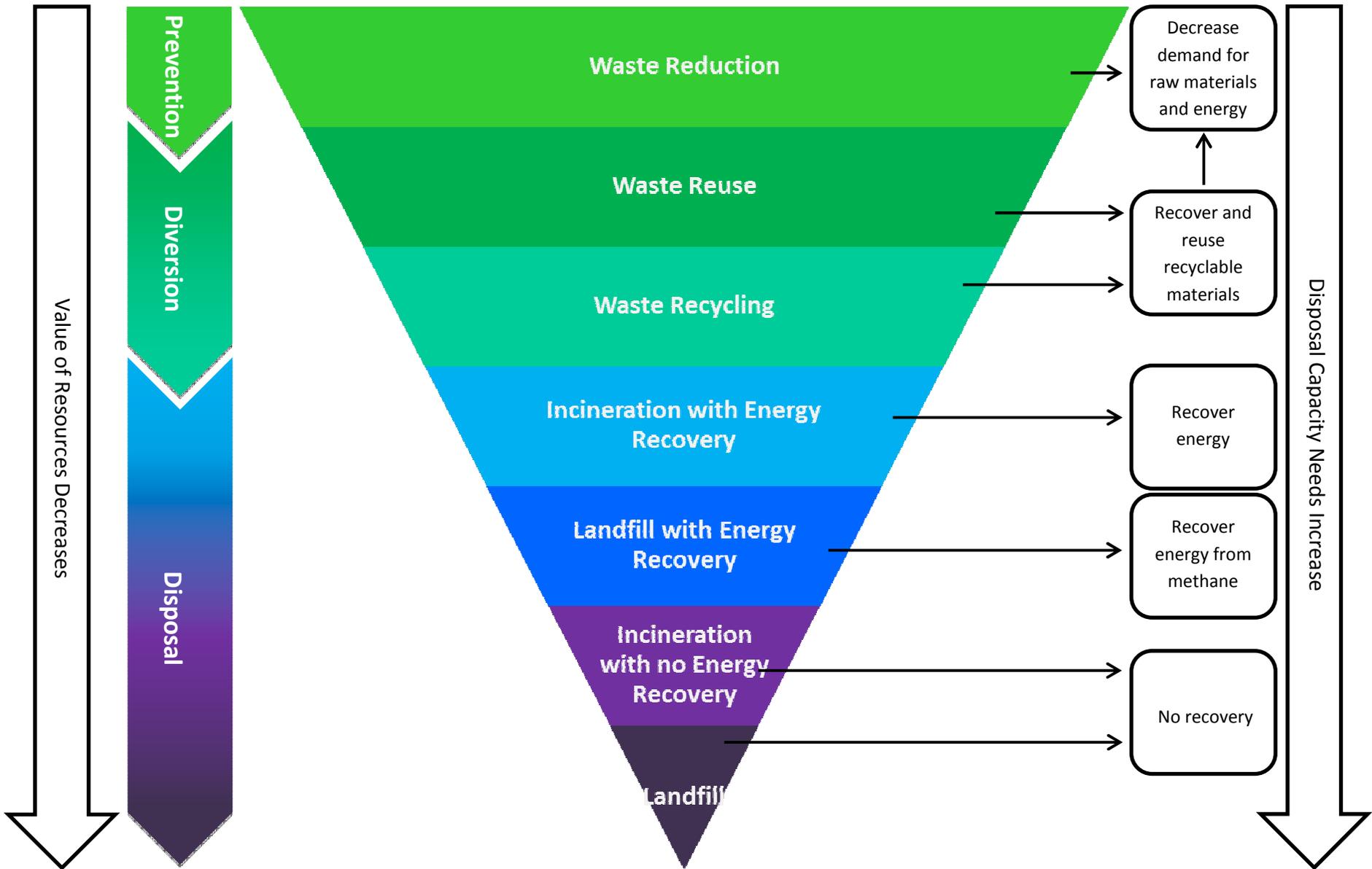


Figure 6: The Waste Management Hierarchy. Adapted from “The Waste Value Chain,” by Ontario Ministry of the Environment. 2008. Toward a zero waste future: Review of Ontario's *Waste Diversion Act, 2002*: Discussion paper for public consultation.

DIVERSION OPTIONS

Paper and Cardboard



Paper is made from two main resources, wood and water, and its manufacture also requires large inputs of energy. Certain chemicals used in the production of paper are toxic. Recycling paper can significantly reduce the demand for virgin fiber from trees (de Trafford, 2012). Most paper products and cardboard are recyclable and for this reason both the City of Vancouver and Metro Vancouver have banned these materials from the waste stream (See Appendices A and B).

The Property Office uses cardboard boxes and paper envelopes for storage of items. While the cardboard is recycled after use, the paper envelopes are generally dumped in the 'burn bins' along with the property being disposed of.

Recommended Diversion Options:

REDUCE

- To reduce the amount of cardboard used, reusable totes could be purchased to replace the cardboard boxes currently used for storing property.

RECYCLE

- Utilize the existing Corporate Zero Waste mixed paper bin to recycle paper products that do not contain confidential or sensitive information.
- Arrange secure on-site paper shredding service for paper that may contain confidential or sensitive information. Bins to be provided by service provider.

Soft Plastics



Soft plastics are made from petroleum, a non-renewable resource. For this reason, when incinerated at a waste-to-energy facility, plastics produce almost as much energy as fuel oil, however, the considerable amount of energy initially needed for the extraction and processing of the petroleum into plastic is lost. To create new plastic, more petroleum must be mined and processed. In addition, the incineration of plastics can result in potential hazardous emissions including hydrogen chloride, dioxin, cadmium, and fine particulate matter (Rustagi, Pradhan, & Singh, 2011).

Plastic bags are increasingly being used to store property instead of paper envelopes to protect items in case the sprinkler system is triggered. Similar to paper envelopes, this plastic often ends up in the 'burn bins' along with the property being disposed of.

Recommended Diversion Options:

REUSE

- If operationally feasible, implement reusable plastic bags for storage, rather than single use.

RECYCLE

- Utilize the existing Corporate Zero Waste soft plastics bin to recycle plastic bags and other soft plastics.

E-Waste – Computers, Laptops, and Cell Phones



With electronics that store information, such as computers, laptops, cell phones, and smart phones, fears over data security and potential liability stemming from a breach often outweigh concerns over the environmental consequences of disposal methods. The composition of e-waste is heterogeneous and depends on the type of product, with some containing over 30 different substances, such as glass, plastics, ferrous metals, base metals (copper and aluminum), toxic heavy metals (mercury, lead, and chromium), precious metals (gold, silver, and platinum), and more. E-waste also often contains special technology metals (cobalt,

gallium, tantalum, or indium), many of which the raw resources are only found in a few countries (Oswald & Reller, 2011). Due to the prevalence of both toxic and valuable materials in e-waste, reuse and recycling become important strategies for keeping these substances out of the environment and in the materials economy. From an energy perspective, recycling metals requires much less energy than mining primary metals from ore.

“The concentration of gold in printed circuit boards amounts to around 250 grams per ton in PCs and to 980 grams per ton in mobile phones, whereas the gold concentration in virgin ore usually does not exceed ten grams per ton.”

(Oswald & Reller, 2011)

Due to concerns over data security, currently all computers, laptops, cell phones and smart phones are being disposed of through incineration to ensure destruction of data. A major constraint to overcome in order to begin reusing or recycling at least some of the components is having the human resources with the appropriate expertise to remove components that store data. In addition, even with the removal of hard drives, concerns remain that data could still be recovered from some of these devices. Ideally, this technology, which requires a high energy investment to produce, could be reused. However, tradeoffs may have to be made between the benefits to be attained through reuse and recycling, the cost of ensuring adequate levels of data security are maintained, and the risks associated with an item not entirely cleared of data ending up in the hands of someone able to access it.

Recommended Diversion Options:

REUSE

- Any components without memory, such as monitors and printers that are not deemed of sufficient value to sell at auction – donate for refurbishing and reuse
- Reuse as much as possible within the VPD Tech Crimes Unit

RECYCLE

- Utilize a secure mobile shredding company to destroy cell phones, smart phones, and hard drives on site – ensure service provider recycles shredded waste and does not incinerate
- Recycle unusable computers and laptops with hard drives removed through EPR program for electronics – available through Urban Impact, the Corporate Zero Waste Program service provider

E-Waste – Other Electronics



E-waste is the term used to collectively refer to the waste from electrical and electronic equipment or appliances. Basically any product that has a plug or battery can be considered e-waste when it reaches the end of its useful life, either because it is broken or has become obsolete. The previous section dealt with e-waste that can contain personal information –

computers, laptops, cell phones, etc. – while this section deals with the remaining electrical and electronic equipment where protection of personal data is not a concern.

All e-waste can contain potentially hazardous components that may pose a risk to human health and the environment if not disposed of properly, for example heavy metals and flame retardants. Batteries in portable devices may contain mercury, cadmium, lead, lithium, nickel cadmium, or nickel metal hydride (Tsydenova and Bengtsson, (2011).

Within the Property Office, electrical and electronic items that are not deemed of sufficient value to sell at auction are currently sent for incineration.

Recommended Diversion Options:

RECYCLE

- Items that are not in working condition can be recycled through EPR program for electronics through the Corporate Zero Waste Program
- Batteries from electronic devices can be recycled through Call2Recycle

Textiles – Clothing, Linen, and Bedding



“The textile industry is an energy intensive industry that requires large amounts of water, hazardous chemicals, such as pesticides and dyes, and petroleum-based materials for production. The greatest environmental impact of the textile industry is pollution, particularly water pollution. With many of the garments we purchase being manufactured overseas, it is difficult to know if strict environmental regulations are being followed. These are just some of the reasons that reusing and recycling textiles is more desirable than producing textiles from virgin materials.” (Recycling Council of British Columbia, 2010)

Although clothing and other textiles are common in the reuse market, the Property Office has resigned to sending most of these items for incineration after relationships with charity organizations that previously accepted them as donations broke down for various reasons.

Recommended Diversion Options:

REUSE

- Donate used clothing to Trans-Continental Textile Recycling Ltd (TCTR), a local company that collects used clothing and distributes it for reuse in developing countries

- TCTR will also take used shoes, even if they aren't a matching pair

RECYCLE

- Used cotton and cotton blend clothing and textiles donated to TCTR that are deemed unusable are recycled into wiping rags that are utilized by a variety of industries
- Other materials are sorted into grades and through a process of “pulling” are remade into thread and reused to make new clothing and textiles that are used as stuffing, insulation, and soundproofing

INCINERATE

- Any clothing or other textiles that are known to be contaminated should continue to be sent for incineration to ensure safe disposal

Bags and Luggage



The Property Office receives a large number of bags, backpacks, and luggage, many of which are not reunited with the owner and therefore eventually need to be disposed of. Recycling opportunities for these items unfortunately are still lacking. Currently the best option to keep these items from incineration is donating them for reuse if they are not deemed of value to sell at auction.

Recommended Diversion Options:

REUSE

- Donate used bags, purses, and backpacks in useable condition to Trans-Continental Textile Recycling Ltd (TCTR)
- TCTR does not accept luggage and suitcases at this time

INCINERATE

- Any bags or luggage that are known to be contaminated should continue to be sent for incineration to ensure safe disposal

Sporting Equipment



Sporting equipment is another category of products that still lack adequate recycling options. Donation for reuse continues to be the most viable option for equipment that is usable, but deemed of insufficient value to sell at auction.

Recommended Diversion Options:

REUSE

- Donate sporting equipment in useable condition to Trans-Continental Textile Recycling Ltd (TCTR)

RECYCLE

- Recycle any unusable metal sporting equipment with the rest of the scrap metal at Richmond Steel Recycling

INCINERATE

- Continue to incinerate any unusable sporting equipment for which recycling options do not exist

Personal Items



The range of miscellaneous personal items that may come into police custody is almost limitless. This makes this an extremely difficult category of property to dispose of. The key to reducing the volume of personal items that are sent for incineration will be separation. Often personal items are contained within bags, purses, and backpacks. Diverting reusable or recyclable items will require emptying bags and sorting the contents into existing reuse or recycling streams.

Recommended Diversion Options:

REUSE

- Clothing and other textiles, shoes, bags, purses, backpacks, and sporting equipment that is deemed not of sufficient value to sell at auction can be donated for reuse to Trans-Continental Textile Recycling Ltd as described in the previous sections

RECYCLE

- Utilize the Corporate Zero Waste mixed paper, soft plastics, and mixed containers bins where applicable
- For any papers that contain personal or sensitive information, utilize secure on-site paper shredding service

INCINERATE

- Continue to incinerate any unusable personal items for which recycling options do not exist

Gun Cases



Recommended Diversion Options:

REUSE

- Some other police agencies sell gun cases at auction (see Table 5) – if this is considered unacceptable from a policy perspective, reuse internally where possible

RECYCLE

- Metal gun cases – either crush with firearms or recycle with scrap metal
- Plastic gun cases – destroy and then recycle the plastic

INCINERATE

- When reuse or recycling are not feasible, continue to incinerate

Non-Firearm Weapons



Non-firearm weapons include things such as knives, swords, and batons. They may be metal, wood, or some other material and may contain multiple materials.

Recommended Diversion Options:

RECYCLE

- Consider purchasing alligator shears (sometimes referred to as a ‘gun-muncher’) that could be used to destroy both firearms

and non-firearm metal weapons, such as knives and swords that can then be sold for recycling as scrap metal

- Alternatively, metal weapons can be destroyed through crushing in an old car along with firearms with metal recycled
- Clean, unpainted and untreated wood can be recycled at the City of Vancouver landfill in Delta

INCINERATE

- Continue to incinerate any non-firearm weapons for which recycling options do not exist

VPD Uniforms



Police uniforms are reused within the Department, but eventually when they are no longer useable, they are destroyed through incineration. The VPD Stores is responsible for the disposal of police uniforms, with two large bins (approximately 4' x 4' x 4') being disposed of every month, consisting of pants, shirts, jackets, body armor, and shoes. In practice, the Property Office has picked up the uniforms for disposal from VPD Stores on route to the incineration facility in Burnaby with the unclaimed property being disposed of. Plain or civilian clothes used by undercover officers are not sent for incineration, but are donated to the jails for inmates to use upon release.

Recommended Diversion Options:

REDUCE

- If not already, consider purchasing uniforms with recycled content
- One option is cotton/polyester blend shirts and pants in the Conqueror EcoSeries by Leventhal Ltd - the polyester is made from recycled yarns that are eco-responsible and third party certified for recycled content (<http://leventhaltd.com/>)

REUSE

- Consider donating any parts of the uniform that are not branded/do not have crests, such as pants and shoes, for reuse

RECYCLE

- Utilize a textile recycler for any parts of the uniform that are branded/do have crests – uniforms are shredded at a facility in Vancouver and then shredded materials are sent to a fiber reclamation facility where they are broken down and recycled into new materials from new clothing to automotive and furniture stuffing or other similar products
- Another option is to enter into a relationship with a not-for-profit society to have the crests removed from shirts and jackets so that they can be donated for reuse with crests being returned to the VPD for disposal – this is the option utilized by the Delta and Abbotsford Police Departments

IMPLEMENTATION

Implementing changes in disposal practices for unclaimed property will involve two key elements. First, arranging the appropriate services and having the proper setup for diversion will be essential to ensure successful implementation. Equally important is managing the change in a way that gets staff on board with the new processes. In the sections that follow, factors common to successful change management will briefly be discussed and a recommended plan for implementation and a communications strategy will be presented.

CHANGE MANAGEMENT

“In the final analysis, change is successful when it becomes institutionalised and part of ‘the way we do things around here,’ and like other processes, benefits from ongoing monitoring to ensure continuous improvement and relevance.”
(Queensland Government, n.d.)

Regardless of whether change is initiated internally or externally, whether it is a large change or small, it involves embracing new mindsets, processes, and behaviour within an organization. Change management is the process of planning and structuring change in a way that helps align the organization with the change being implemented. The goal of change management is to get buy-in from those affected by the change and to bring individual behaviour and skills in line with the change. How change is presented can influence an individual’s capacity to change. If change is misunderstood or resisted, the capacity to

adapt to the change can diminish, while if the benefits of the change are well understood, individuals are more likely to participate in the change and help see it successfully carried out (Queensland Government, n.d.).

There are a number of factors that support successful change management:

- **Planning** involves developing and documenting the objectives to be achieved and the means to achieve it.
- Having **defined governance** means establishing suitable organizational structures, roles, and responsibilities that support the change effort.
- A **committed leadership** leads by example and guides organizational behaviour and is frequently cited as the most important contributor to successful change efforts.
- **Informed stakeholders** – those that are directly involved and affected by the change – are encouraged to participate through communication that is open and consultative and that creates awareness and understanding of the benefits of the change. They are the ones that will implement change if they are properly engaged and motivated.
- Having an **aligned workforce** means the human impacts of the change have been identified and plans have been developed to align the workforce in a way that supports the change. This means the competencies of the organization’s current workforce have been determined and that gaps between these competencies and the future needs for resources or specific skills have been identified and addressed (Queensland Government, n.d.).

RECOMMENDED IMPLEMENTATION PLAN

The end goal of the implementation plan is to green the waste management practices of the VPD Property Office by reducing the amount of unclaimed property that is disposed of through incineration. This supports the VPD's Strategic Plan goal to become a law enforcement leader in environmental sustainability.

Taking operational feasibility into consideration, along with the need to maintain safety, security, and privacy, a phased approach to implementing changes in disposal methods for unclaimed property is recommended. The Property Office can start with the 'low-hanging fruit' – the easily achievable changes that will be quick to implement and will still have a positive impact on the amount of waste being diverted from incineration. Once these changes have been successfully introduced, other more complex diversion efforts can be tackled.

The recommended implementation plan is therefore organized into short-, medium-, and long-term actions that can be undertaken to move the Property Office from its current practice of incinerating the majority of unclaimed property that is not saleable at auction, to diverting for recycling or reuse a much higher proportion of these items. Table 7 provides a summary of the plan.

Short-term (1 – 3 months)

Action Item 1: Recycle all paper (with no confidential or sensitive information) and soft plastics utilizing the existing Corporate Zero Waste bins

- Bins already exist in the disposal area for mixed paper and soft plastics (Figure 7). All that is required is sorting these materials into the appropriate bins.



Figure 7: Corporate Zero Waste bins

- These bins are emptied twice per week. If necessary contact the Building Operation Supervisor, Ricardo Perez to arrange for larger bins, additional bins, or more frequent pick:

TTC Office: 604-673-8120

Cell: 604-690-5178

Ricardo.Perez@vancouver.ca

Action Item 2: Recycle electronics (without memory) not in working condition and batteries through Corporate Zero Waste program

- The Corporate Zero Waste program already provides electronics and battery recycling programs.
- Electronics (without memory) will require a bin for collection and signage.
- Batteries will need to be removed from electronic devices and can be recycled through a company called Call2Recycle.
- Work with the Building Operation Supervisor, Ricardo Perez to set up bins, signage, and pick-up:

TTC Office: 604-673-8120

Cell: 604-690-5178

Ricardo.Perez@vancouver.ca

Action Item 3: Organize secure mobile paper shredding service to recycle all paper that contains confidential or sensitive information

- Urban Impact, the service provider for the Corporate Zero Waste Program and existing cardboard recycling offers secure mobile paper shredding and recycling of confidential or sensitive documents for a fee.
- Contact Mike Sales, Sales Manager at Urban Impact to arrange a contract for secure mobile paper shredding, including bins and pick-up options:
Mike.Sales@urbanimpact.com
urbanimpact.com

Action Item 4: Recycle metal non-firearm weapons and metal replica handguns, BB guns, pellet guns, etc.

- Begin destroying and recycling metal non-firearm weapons, such as knives and swords, and any metal replica guns, BB guns, pellet guns, etc. by crushing in an old car along with the firearms.
- Alternatively, weigh the costs and benefits of purchasing alligator shears (also referred to as a 'gun muncher') to destroy all metal firearms, non-firearm weapons, and replica firearms. Alligator shears cost in the range of \$13,000 – 25,000 depending on the model required. Scrap metal can then be sold to help offset the costs of the equipment. For more information on purchasing alligator shears contact David Zelunka at Gensco Equipment:
Office: 416-465-7521
info@genscoequip.com
genscoequip.com

Action Item 5: Recycle metal gun cases

- Destroy metal gun cases with firearms or divert for scrap metal recycling.

Action Item 6: Donate for reuse all used (non-contaminated) clothing, shoes, belts, bags, purses, backpacks, towels, linens, and sporting equipment

- Separate all used clothing, shoes (even unmatched pairs), belts, bags, purses, backpacks, towels, linens, and sporting equipment for donation to Trans-Continental Textile Recycling (TCTR) (Figure 8) for reuse or recycling.
- Broken sporting equipment, visibly dirty clothing, and suitcases not accepted.
- TCTR sorts these items and either sends for them for reuse in developing countries, makes them into rags used by various businesses, or sends them for recycling into other textiles.
- TCTR will provide pick-up service at no cost as long as the donation is large enough – they use a 3-tonne truck and would prefer it to be 1/3 to 1/2 full.
- Contact Jim Maedel to arrange:
Office: 604-592-2845
Cell: 604-351-1309
jim@transtextile.com
transtextile.com



Figure 8: Trans-Continental Textile Recycling

Action Item 7: Organize textile shredding and recycling service for VPD Uniforms

- There are two textile recycling companies in Vancouver that can provide a textile shredding and recycling service for VPD Uniforms.
- Trans-Continental Textile Recycling (TCTR)
 - Shredding costs \$0.50/pound.
 - Items without identifying crests or other markings, depending on condition, could be reused – TCTR would pay \$0.10/pound, which would offset the cost of shredding.
 - A contract can be set up to guarantee no part of the uniform would end up in the local market – items with no identifying logos would be sent overseas and anything with logos shredded onsite.
 - The material from the shredded uniforms would be sent to mills in Italy or Pakistan to be broken down and re-woven back into new textiles or clothing.
 - To ensure chain of custody, TCTR would allow onsite supervision of shredding by VPD officers or staff.
 - A demonstration shredding can be arranged to ensure it meets the VPD's destruction standards.
 - Contact Jim Maedel for further information:
Office: 604-592-2845
Cell: 604-351-1309
jim@transtextile.com
transtextile.com
- debrand Services Inc.
 - Uniform shredding costs \$1.06 to \$1.50/pound depending on level of security required.
 - May need higher security for items with identifying crests or other markings, which would require changing the blades on their machines and a slower destruction process – they could do a test batch to see if it is necessary.
 - Items without identifying crests or other markings could be shredded with regular blades.
 - To ensure chain of custody, debrand would allow onsite supervision of shredding by VPD officers or staff.
 - Pick-up for up to 6 pallets can be arranged for a cost of \$100.
 - Stockpile at least a couple hundred pounds (2 – 3 pallets) before arranging pick-up.
 - Shredded materials are sent to a fiber reclamation plant in Arizona that turns the material into automotive or furniture stuffing and other similar products.
 - Contact Pete Scott for further information:
Office: 604-638-8998
Cell: 604-802-0236
pete@debrand.ca
debrand.ca
- After determining the VPD's needs for security of uniform shredding, choose a service provider and contact to set up a contract.

Action Item 8: Begin measuring, evaluating, and reporting on success of diversion efforts

- More detailed recommendations for measuring, evaluating, and reporting on the success on diversion efforts is detailed in a later section, however it is recommended that gathering metrics on different waste streams begin as soon as possible in order to show the change over time that occurs with the introduction of each diversion effort, as well as to make any necessary adjustments to ensure success.

Medium-term (3 – 6 months)

Action Item 9: Consider options for recycling or reuse of laptops, computers, cell phones, smart phones, and other electronics with memory

- Organize a meeting with the Tech Crime Unit to better understand the options for different data destruction methods for each type of device (i.e. removing computer hard drives and degaussing versus destroying by shredding) as well as the residual data security risks associated with each.
- Consider options and weigh tradeoffs of different methods for reusing or recycling these electronics with memory and determine how much risk is acceptable in order to achieve greener disposal methods.
- Complete destruction seems to be the only way to ensure absolutely no data is recoverable off of devices with memory. Some options to consider, depending on the acceptable level of risk are:

- Reusing phones and computers or their components within the Tech Crime Unit.
- Destroying all cell and smart phones by shredding and then recycling.
- Partnering with the IT department to have them remove hard drives or train Property Office staff to remove hard drives and then selling or donating usable components and destroying hard drives and then recycling.
- Partnering with the IT department to have them remove hard drives or train Property Office staff to remove hard drives and then recycling all components except hard drives and destroying hard drives and then recycling.
- Deleting data, but not physically removing hard drives and sending computers and laptops for recycling.
- Other considerations include:
 - How did the device come into police custody? The level of acceptable risk with found property may be deemed to be different than with evidence, for example.
 - What options are available to ensure chain of custody prior to destruction with different service providers? Onsite mobile electronics shredding may be preferable over sending equipment offsite for recycling, for example.

- How many devices are regularly being sent for destruction? This may affect whether equipment should be purchased to destroy electronics onsite, versus contracting destruction to a service provider.
- Mobile (onsite) shredding of hard drives and cell phones can be arranged through Urban Impact, the VPD's current Corporate Zero Waste service provider.
 - Shredding is booked on a quarterly basis and onsite shredding allows for auditing the process to ensure everything is destroyed.
 - Currently (at the request of their other clients) the shredded material is sent to the waste-to-energy facility for complete destruction – ***if recycling of shredded material cannot be arranged this is not a recommended option.***
 - Contact Mike Sales for further information:
Mike.Sales@urbanimpact.com
urbanimpact.com
- Other potential service providers for onsite hard drive shredding include:
 - vancouverharddriveshredding.ca
 - bcrms.com
 - supersave.ca
- Information on purchasing equipment to destroy hard drives on site can be found here:
 - datadev.com
 - machine-solution.com

- A final option is to contract a third party that can tailor a package for electronics disposal that ensures chain of custody and data security is maintained. One potential option is eCycle Solutions. For more information:
 - ecyclesolutions.com

Action Item 10: Consider purchasing reusable totes to replace cardboard boxes for storage of property



- Utilizing reusable totes to replace cardboard boxes can cut down on the amount of cardboard waste generated.
- Possible suppliers include:
 - uline.ca
 - thunderbirdplastics.calls.net
 - flexcontainer.com
 - cproducts.net

Long-term (6 months and beyond)

Action Item 11: Consider purchasing sustainably made police uniforms

- If not already, consider purchasing police uniforms with recycled content.
- Leventhal Ltd makes the Conqueror EcoSeries – cotton/polyester blend shirts and pants – the polyester is made from recycled yarns that are third party certified for recycled content. For more information:
 - leventhaltd.com

Action Item 12: Consider moving to an online auction

- Many police departments in Canada, the United States, and beyond have moved to online police auctions.
- Two potential benefits of an online police auction include accessing a broader range of potential buyers than may attend a traditional in-person auction and a reduction in the stockpiling of property, since the auction process is ongoing 24 hours per day, 7 days per week.
- In terms of the goal of reducing property sent for incineration, another potential benefit of an online auction is that some lower value items for which there are currently no viable donation or recycling opportunities may be able to be sold. Several examples of successful online reuse sites already exist, such as Craigslist and eBay. Buyers can be informed that an item they are purchasing is in 'as is' condition, as is done on the Police Auctions Canada site, where used luggage, purses, clothing, books, and even smart phones are sold.
- Examples of online police auction sites include:
 - policeauctionscanada.com
 - propertyroom.com
 - bumblebeeauctions.co.uk

Action Item 13: Conduct a waste audit

- After the recommended diversion options detailed above have been implemented, conduct a waste audit of the remaining unclaimed property that is still being sent for incineration.
- Check that the processes that have been put in place are working successfully by taking note of whether any items that should be recycled (paper, cardboard, soft plastics, metal, electronics, clothing and other textiles, etc.) are still being sent for incineration. If so, determine how much and why. If staff members are not making use of the new diversion streams, look at ways to increase compliance.
- Determine what other major categories of waste are still routinely sent for incineration.

Action Item 14: Search for additional opportunities to divert the remaining waste for reuse or recycling

- The waste audit will aid in determining the major categories of waste still being incinerated. Search for opportunities to begin diverting more of this waste.
- Utilize the Recycling Corporation of British Columbia's Recyclopedia search engine as a starting point: rcbc.ca/recyclopedia/search
- Local plastic recycling companies may be able to take miscellaneous plastics: blueplanetrecycling.ca westcoastplasticrecycling.com

Table 7: Summary of Action Items from Recommended Implementation Plan

Action Item #	What?	Who?	When?
1	Recycle all paper (with no confidential or sensitive information) and soft plastics utilizing the existing Corporate Zero Waste bins	Staff	1 – 3 months
2	Recycle electronics (without memory) not in working condition and batteries through Corporate Zero Waste program	Staff / Building Operation Supervisor	1 – 3 months
3	Organize secure mobile paper shredding service to recycle all paper that contains confidential or sensitive information	Property Office Manager	1 – 3 months
4	Recycle metal non-firearm weapons and metal replica handguns, BB guns, pellet guns, etc.	Staff	1 – 3 months
5	Recycle metal gun cases	Staff	1 – 3 months
6	Donate for reuse all used (non-contaminated) clothing, shoes, belts, bags, purses, backpacks, towels, linens, and sporting equipment	Property Office Manager	1 – 3 months
7	Organize textile shredding and recycling service for VPD Uniforms	VPD Stores	1 – 3 months
8	Begin measuring, evaluating, and reporting on success of diversion efforts	Property Office Manager	1 – 3 months
9	Consider options for recycling or reuse of laptops, computers, cell phones, smart phones, and other electronics with memory	Property Office Manager	3 – 6 months
10	Consider purchasing reusable totes to replace cardboard boxes for storage of property	Property Office Manager	3 – 6 months
11	Consider purchasing sustainably made police uniforms	VPD Stores	6 months +
12	Consider moving to an online auction	Property Office Manager	6 months +
13	Conduct a waste audit	Staff	6 months +
14	Search for additional opportunities to divert the remaining waste for reuse or recycling	Property Office Manager	6 months +

COMMUNICATIONS STRATEGY



The importance of communication in implementing a program of change management cannot be understated. Property Office staff are directly involved in and their work is affected by the changes that will be implemented. Without their buy-in, successful change will be difficult to achieve. It is important that staff understand the reasons the changes are happening as well as the benefits that the changes will achieve.

Different people learn differently – visually, aurally, or through written material – so it is important to use multiple approaches for communicating the changes to take place. It will be beneficial to share key aspects about the changes through both an email and a staff meeting, and reinforce the message with signage posted in the work area.

Key messages to be communicated include:

Why the changes are being implemented:

- City of Vancouver *Greenest City 2020 Action Plan* Zero Waste goal
- VPD Strategic Plan goal to become a law enforcement leader in environmental sustainability

What the expected benefits are:

- Keeps valuable material resources available for reuse, rather than having to extract and process new resources which has high energy requirements
- Reduces potential pollution from incineration of toxic materials
- Reduces the release of climate changing greenhouse gas emissions

What changes are being implemented:

- Separating reusable and recyclable items out before property disposal
- Introduction of multiple diversion programs for different categories of property – i.e. confidential papers; clothing, shoes, and other textiles; electronics; batteries; etc.

When the changes will be implemented:

- Beginning in the next month and continuing over the next year

How the changes will affect work expectations:

- Staff are expected to separate reusable and recyclable items before disposing of remaining property in burn bins
- Staff will need to become familiar with the different diversion efforts to ensure the maximum amount of property is kept from incineration

How can staff contribute to the ongoing efforts to green waste management:

- Make suggestions about other opportunities for recycling
- Suggest ways to improve the efficiency of existing diversion efforts

How will success be measured and celebrated:

- To be determined along with staff

MEASURING, EVALUATING, AND REPORTING

Measuring

There are a number of factors that affect the amount of waste that is sent for incineration by the Property Office. Some of these will be under the direct influence of the Property Office like changing behaviour and processes to increase diversion efforts. Others, such as the amount of property that comes into police custody, are more difficult for Property Office staff to influence. Therefore, there will always be fluctuations in the amount of unclaimed property being disposed of through incineration that is not attributable to recycling or reuse diversion efforts. Despite this difficulty in accurately measuring the impact of diversion, tracking the overall trends over time will provide an indicator of the success of implementing different reuse and recycling efforts.

It is recommended that ongoing tracking of any metrics available pertaining to disposal be started as soon as possible. This should include tracking the weight and cost of incineration and the revenue generated at auction. In addition, it is recommended that the Property Office begin to compile data on the different diversion efforts they undertake. This could include the weight and value of scrap metal sold for recycling, the volume or weight of clothing diverted for reuse, or the number of electronic devices diverted for recycling.

Evaluating

Evaluating the success of the efforts to green the Property Office's waste management practices can be done in two primary ways. The first is by assessing the trends over time in the

data collected on incineration and the different diversion programs. If the trend is a decrease in property sent to the incinerator and an increase in property being reused or recycled, that is an indication that the changes are having positive results. Tracking the percentage decrease year over year of property sent for incineration would be a useful way to do this. Once a tracking system is in place, goals should be set for the percentage decrease to be attained over a set period of time, similar to the goal the City of Vancouver has set for reducing solid waste sent to the landfill or incinerator by 50% of 2008 levels by 2020.

A second way to evaluate success is by performing a waste audit after the majority of the recommendations in this report have been implemented. If the new processes are working, there should be a marked reduction in the amount of certain materials entering the burn stream. The waste audit should measure the amount of paper, soft plastics, clothing, electronics, and metal that has still made it into the bins destined for incineration. If the amount is high, this may be an indicator that the behaviour change necessary to ensure success has not happened. This could point to a lack of staff buy-in to the new processes or that the resources required to properly implement the new processes are lacking. It can be expected to take more time and effort to properly separate waste for diversion than it currently takes to toss an entire backpack or bag of evidence into a waste bin.

Reporting

It is important to recognize and celebrate success. Reporting out on the efforts being undertaken to reduce waste can have ripple effects within the VPD. When other units learn what the Property Office is doing to green the

disposal of unclaimed property, it may spark ideas of how they too can make more sustainable disposal choices. Sharing this information is an important component of changing the workplace culture to one where making environmentally sustainable choices becomes the norm.

A few possible venues for reporting out on measurable success include:

- The VPD Code Green website
- At VPD events – i.e. VPD Family Day
- As an update in the next VPD Strategic Plan
- City of Vancouver Greenest City Newsletter

Wherever possible, share success stories with other Property Offices around the country. Leading by example may spur similar efforts in other police departments.

Make sure to celebrate success internally within the Property Office. When hitting a milestone, such as a meeting a reduction goal that was set, celebrate by having a staff BBQ lunch. Encourage staff to take ownership over greening waste reduction so that they can be proud of their accomplishments in contributing to making the VPD a law enforcement leader in environmental sustainability.

CONCLUSION

Multiple plans and policies exist that support the Vancouver Police Department's goal to green the waste management practices of the Property Office. Like the VPD, other police agencies across the country face similar challenges in implementing more sustainable disposal practices for unclaimed property. Concerns over safety, security, and privacy, as well as operational needs often trump concerns over the sustainability of disposal practices. However, best practices in the field offer a new way of looking at waste – not as a by-product of in a linear system, but rather as a resource in a circular economy. Moving up the waste hierarchy (Figure x,) away from waste disposal options like incineration or landfilling and towards diversion (recycling and reuse) and prevention is the ultimate goal of a zero waste philosophy.

Many opportunities exist for the Property Office to green its waste management practices. Although there are challenges to overcome in ensuring safety, security, and privacy are maintained, they are not insurmountable. With a well implemented diversion strategy many of the categories of property that are currently disposed of through incineration can be diverted for more sustainable reuse or

recycling. A well implemented change management plan will encompass both supplying the appropriate equipment and infrastructure (e.g. collection bins, service contracts), as well as the appropriate communication and staff training to promote behaviour change. This should have a significant impact on the diversion rates the Property Office is able to realize.

Certain categories of property (e.g. electronics with memory) pose a greater challenge due to considerable concerns over the protection of personal information. For other items there are still limited reuse or recycling options available. Both of these difficulties are very likely to lessen over time as more individuals, businesses, and institutions become increasingly concerned with the environmental impact of their waste and better designed products and new recycling programs are developed to overcome these barriers. For this reason, it is important to view any diversion efforts adopted now as a first step in an ongoing process to reduce waste and improve the environmental sustainability of the Vancouver Police Department. With a continued focus on green initiatives, the VPD is well placed to become a law enforcement leader in environmental sustainability.

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APPENDIX A – GVSDD 2013 TIPPING FEE BYLAW: PROHIBITED AND BANNED MATERIALS

SCHEDULE "C"

PROHIBITED MATERIALS

- (a) Agricultural Waste;
- (b) Automobile parts and bodies;
- (c) Biomedical Waste;
- (d) Refuse that is on fire, smouldering, flammable or explosive;
- (e) Empty oil containers identified in "Schedule 2 — Residual Product Categories" to the *Recycling Regulation*;
- (f) Oil filters identified in "Schedule 2 — Residual Product Categories" to the *Recycling Regulation*;
- (g) Paint products identified in "Schedule 2 — Residual Product Categories" to the *Recycling Regulation*;
- (h) Pesticide products identified in "Schedule 2 — Residual Product Categories" to the *Recycling Regulation*;
- (i) Pharmaceutical products identified in "Schedule 2 — Residual Product Categories" to the *Recycling Regulation*;
- (j) Solvents and flammable liquids identified in "Schedule 2 — Residual Product Categories" to the *Recycling Regulation*;
- (k) Antifreeze and antifreeze containers identified in "Schedule 2 – Residual Product Categories" to the *Recycling Regulation*;
- (l) Electronic and electrical products identified in "Schedule 3 — Electronic and Electrical Product Category" to the *Recycling Regulation*;
- (m) Tires identified in "Schedule 4 — Tire Product Category" to the *Recycling Regulation*;
- (n) Hazardous Waste;
- (o) Inert fill material including soil, sod, gravel, concrete and asphalt exceeding 0.5 cubic metres per load;
- (p) Lead acid batteries;
- (q) Propane tanks;
- (r) Liquids;

- (s) Sludges;
- (t) Metal household or commercial appliances;
- (u) Dead animals;
- (v) Excrement;
- (w) 45 gallon or larger barrels or drums, whether full or empty;
- (x) Radioactive Waste;
- (y) Reactive Waste;
- (z) Any single object that:
 1. weighs more than 100 kilograms; or
 2. exceeds 3 500 centimetres squared in cross section at any point; or
 3. exceeds 2.5 metres in length, except at the Waste-to-Energy Facility where a single object must not exceed 1.0 metre in length.
- (aa) Clean Wood Waste or Treated Wood Waste exceeding 2.5 metres in length
- (bb) Fabricated objects exceeding 1.2 metres in width or thickness and 2.5 metres in length or 3 cubic metres in volume
- (cc) Gypsum commingled with other Municipal Solid Waste;
- (dd) Mattresses commingled with other Municipal Solid Waste;
- (ee) Refuse that would cause undue risk of injury or occupational disease to any person at the Disposal Site or that would otherwise contravene the *Occupational Health and Safety Regulation*;
- (ff) Any material in new or expanded product categories of the *Recycling Regulation* that come into effect while this By-law is in effect, and;
- (gg) Any other Refuse that the Manager considers unsuitable for handling at a Disposal Site.

BANNED RECYCLABLE MATERIALS

- (a) Beverage containers identified in "Schedule 1 — Beverage Container Product Category" to the *Recycling Regulation*;
- (b) Containers made of metal, glass or Banned Recyclable Plastic;
- (c) Corrugated Cardboard;
- (d) Recyclable Paper, and;
- (e) Green Waste.

APPENDIX B – CITY OF VANCOUVER SOLID WASTE BYLAW: RESTRICTED AND PROHIBITED MATERIALS

SCHEDULE F

MATERIALS RESTRICTED FROM GARBAGE CONTAINERS AND THE VANCOUVER LANDFILL AND TRANSFER STATION

1. Newsprint.
2. Flyers.
3. Corrugated cardboard.
4. Boxboard.
5. Magazines and catalogues.
6. Telephone directories.
7. Office and household paper (including junk mail, envelopes, writing paper, and computer paper).
8. Paper egg cartons, rolls, bags, gift wrap, and cards.
9. Glass bottles and jars.
10. Ferrous and non-ferrous metal cans and tins.
11. Rigid plastic containers identified by the SPI Code #1 (Polyethylene Terephthalate or PET) or SPI Code #2 (High Density Polyethylene or HDPE) or SPI Code #4 (Low Density Polyethylene or LDPE) or SPI Code #5 (Polypropylene or PP).
12. Aluminum trays and foil.
13. Yard waste.
14. Any other material deemed by the City Engineer to be recyclable.

SCHEDULE G
PRODUCT STEWARDSHIP PROGRAM MATERIALS

The materials included in the effective Product Stewardship Program product categories of the *Recycling Regulation of the Environmental Management Act*, are prohibited from garbage containers, and from disposal as garbage at the Vancouver Landfill, and Vancouver South Transfer Station. The materials include:

1. Antifreeze and empty antifreeze containers.
2. Beverage containers with deposits.
3. Electronics, electrical products, and associated batteries, including:
 - a. Televisions, computers, computer peripherals, desktop printers.
 - b. Scanners, fax machines, copiers.
 - c. Telephones, cell phones and answering machines.
 - d. Audio visual equipment.
 - e. Lighting equipment, parts and bulbs.
 - f. Thermostats, smoke detectors, alarm systems and heating regulators.
 - g. Appliances, tools, toys, medical devices, leisure and sports equipment.
4. Gasoline.
5. Lead-acid batteries.
6. Oil, petroleum by-products, oil filters, and empty oil containers hydraulic, transmission and heat transfer fluids.
7. Paint and empty paint containers, solvents and flammable liquids.
8. Pesticides.
9. Pharmaceuticals/Medications.
10. Tires.
11. Any materials in new or expanded product categories that come into effect while this By-Law is in effect.

APPENDIX C – CITY OF VANCOUVER UNCLAIMED PROPERTY BYLAW

BY-LAW NO. 5078

A By-law to provide for the disposal
of unclaimed property in the possession
of the Police Force

[Consolidated for convenience only,
amended to include By-law No. 7134,
effective June 22, 1993]

The Council of the City of Vancouver in open meeting assembled enacts as follows:

1. This By-law may be cited as the "Unclaimed Property By-law".
2. In this By-law, unless the context otherwise requires:

"Chief Constable" means the member of the Vancouver Municipal Police Force exercising the authority of the Chief Constable or a person designated by the Chief Constable to carry out the powers and responsibilities imposed on the Chief Constable by this by-law;

"Director of Finance" means the employee of the City of Vancouver exercising the authority to the Director of Finance of the City;

"Police Force" means the Vancouver Municipal Police Force existing pursuant to the provisions of the *Police Act*.

(By-law 7026, September 1, 1992)
3. Where a member of the Police Force obtains possession of property the owner of which cannot be ascertained, and no order of a Court has been made with respect thereto, the property shall, except as provided in Section 4 hereof, be retained by the Police Force for a period of at least 6 months.
- 3A. Notwithstanding Section 3 the City may give possession of unclaimed property to any organization deemed by Council to be contributing to culture, health or welfare of the City on such terms and conditions as it considers appropriate.

(By-law 6380, August 9, 1988; By-law No. 7134, June 22, 1993)
4.
 - (a) Where a member of the Police Force obtains possession of a perishable article or property the custody of which involves unreasonable expense or inconvenience, the Police Force may sell the same at any time in such manner and upon such terms as the Chief Constable may direct.
 - (b) Where property is sold pursuant to sub-section (a) the proceeds of the sale, if any, shall be paid to the City of Vancouver.

- (c) Where the City receives the proceeds from the sale of property pursuant to sub-section (b) the proceeds shall, unless disposed of to the lawful owner, be retained by the City for the period of one (1) year.
 - (d) Where a member of the Police Force obtains possession of property, the owner of which cannot be ascertained, and the property is, in the opinion of the Chief Constable, of no saleable value, such property may be destroyed or disposed of in such manner as the Chief Constable may direct.
- 5. Where the Police Force has retained possession of property, to which Section 3 applies, for a period of 6 months, the same may be disposed of by the Police Force at any time in accordance with the following provisions:
 - (a) property to be disposed of shall be offered for sale at public auction and sold to the person bidding the largest amount and complying with the rules and conditions governing the auction;
 - (b) an auction held pursuant to this section shall be held at such time and in such place, as may be designated by the Chief Constable, by a licensed auctioneer appointed in writing by the Chief Constable;
 - (c) general notice of the time and place of such auction shall, where possible, be advertised once during each week, for three (3) successive calendar weeks before the date of the sale, in a daily newspaper published in the City. It shall not be necessary in such advertisement to specifically mention or describe any article or property to be offered for sale.

(By-law 6380, August 9, 1988)
- 6. Where no bid is received on any property offered for sale at an auction held pursuant to Section 5, such property may be destroyed or disposed of in such manner as the Chief Constable may direct.
- 7. A record shall be kept by the Chief Constable of the sale, destruction or other disposition of any property effected pursuant to this By-law. The record shall include a brief description of the property sold, where applicable, the date of sale, the purchase price and, where known, the name and address of the purchaser. This section shall not apply to the sale of property where the purchase price does not exceed One Hundred Dollars (\$100.00).
- 8. The proceeds of the sale of property disposed of in accordance with Section 5 shall be paid to the City of Vancouver.
- 9. (a) The proceeds of the sale of property disposed of in accordance with Section 5, and the proceeds of the sale of property pursuant to Section 4(b) which have been retained by the City for the period of one (1) year shall, subject to subsection (b), be paid into the general revenue of the City.

- (b) Out of the proceeds of the sale of any item of property received by the City the Direction of Finance shall, upon the recommendation of the Chief Constable, pay to the person by whom the property has been delivered into possession of the Police such sum as the Chief Constable shall advise is reasonable compensation to such person.
- 10. (a) Except as provided in sub-section (6), the provisions of this by-law do not apply to property which has been found by a person, other than a member of the Police Force, and has been given over to the Police Force on the condition or understanding that, if the owner of the property is not determined and located, the property will be returned to the finder. Such property may be returned to the finder at any time.
- (b) Where, with respect to property to which sub-section (a) applies, the finder cannot, after reasonable efforts, be located for the purpose of returning the property, the property may be disposed of as provided in Sections 4, 5 and 6. Possession by the Police Force of such property is deemed to have commenced when the property was first received by the Police Force.

(By-law 7026, September 1, 1992)

This By-law shall come into force and take effect on the date of the final passing hereof.

DONE AND PASSED in open Council this 10th day of May, 1977.

(Sgd.) _____ "J. Volrich"
Mayor

(Sgd.) _____ "D.H. Little"
City Clerk

#79937v1

Analysis of Burn Waste at VPD Property and Forensic Storage Section

Erin Rennie, Greenest City Scholar
August 8, 2013

Every six weeks the Vancouver Police Department Property Office takes approximately 3000kg of waste to be burned at the Covanta Energy-from-Waste Incinerator in Burnaby. This waste is made up of seized items used in police investigations (Figure 1).

Figure 1: Items Incinerated by VPD Property Office Burn Waste	
Paper	
Cardboard	
Soft plastics (wrap, bags, etc.)	
Drugs (non-liquid)	
Weapons (non-firearms) like knives and batons	
Clothing and bedding	
Bags/luggage	
Gun cases	
Drug paraphernalia	
Small electronics (ex: cell phones)	
Large electronics including (ex: computers, televisions, printers, and stereos)	
Sporting equipment (ex: hockey stick)	
Small kitchen appliances (ex: coffee grinder)	
Personal items (photos, diaries, papers)	
Documents (court documents, witness statements, etc.)	
VPD Uniforms (picked up from VPD Stores on the way to be burned)	

Although some items are sorted to be re-sold at the annual auction or recycled for scrap metal (Figure 2), most case evidence is incinerated despite the fact that about 60% of what the VPD sends to the incinerator is actually prohibited from being incinerated because it is recyclable.

Figure 2: Items currently being diverted from VPD Burn Waste	
Item	How it is diverted
Keys	Scrap metal recycler
License plates	Scrap metal recycler
Ammunition	RCMP Explosives Division program (a recycling program)
Fireworks	Vancouver Fire Department or RCMP (because of gunpowder)
Cellphones	Separated so that Forensics Unit can use components for their work and then burned
Cardboard	Reused by Property Office staff or flattened and taken to be recycled at a cardboard recycling facility on Annasis Island Bridge.

	(Property Office doesn't have a cardboard recycling dumpster and don't want one because of lack of space.)
Firearms	VPD Firearms Unit takes rare samples. Rest are destroyed in a wrecked car, and then recycled.
Jewelry	Sold at VPD Auction
Bikes	Sold at VPD Auction
Other Valuables (non-electronic)	Sold at VPD Auction

The burn waste includes VPD uniforms which can no longer be worn. Uniforms represent approximately 5% of the burn waste. Each shipment of waste costs the VPD approximately \$300-400.

A significant portion of the VPD burn waste could be diverted away from the incinerator. At the moment it is not due to a number of constraining factors including limited space and limited staff. In addition, there are some concerns about recycling or reusing evidence which may be contaminated by harmful substances such as fingerprinting chemicals, bodily fluid, pepper spray or firearms residue. All paper documents and electronics are sent to be incinerated because they may contain private information. Clothing used to be donated to a charity but that relationship dissolved and a new charity was never sought.

Covanta Energy-from-Waste is a large incineration facility in South Burnaby. Covanta cycles the energy from the burned waste back into the Burnaby energy grid. It also makes efforts to limit air pollution and particulate emitted by the facility. The process produces a highly-basic ash which must be carefully disposed of at the Vancouver Landfill as well as scrap metal which is recycled.

Although the VPD burn waste is not counted towards the Corporate Zero Waste Program waste diversion numbers, the VPD should work to reduce the amount of waste being sent to the incinerator. Despite being highly regulated, incinerators still produce solid waste (ash), air pollution (dioxins), and contribute to greenhouse gas emissions. To demonstrate commitment to sustainability the Vancouver Police Department must take steps to reduce the amount of waste being sent to the Covanta incinerator. Diverting some burn waste away from the burn bins and into the Corporate Zero Waste Program streams will have the added benefit of increasing the VPD's diversion rates.

Recommendations

It is recommended that a full audit be conducted of the VPD Burn Waste to assess the average weight of each category of waste sent to the incinerator each year. The analysis should include an assessment of the environmental impacts of this incineration impact as well as the true degree of risk posed by the presence of harmful substances on the burn waste items (gun powder, finger print powder). This audit can then be used as a baseline to measure the effectiveness of diversion efforts.

The VPD Property Office should be supported in their efforts to divert more waste away from the burn waste stream. They may require more staff to sort waste or financial assistance to pay for special

services such as a secure paper shredding pick-up service or a secure e-waste recycling service. In some cases (drugs for example) there will be no alternative but to send the items to the burn stream. However a great deal of burn waste can easily be recycled thereby reducing the VPD’s carbon footprint, boosting diversion rates, and making these materials available for use in the economy. Figure 3 shows some ways that items currently being sent to the burn waste stream could be diverted easily and cheaply to other recycling streams.

Figure 3: Options for Diverting Property Office Waste Away from Incinerator

Item	Recycling Option	Example
Paper and Envelopes	Secure Paper Shredding Service	Urban Impact Secure Shredding Service 1-855-211-9669 www.urbanimpact.com
Cardboard	Cardboard Recycling Dumpster	Urban Impact Bulk Cardboard Recycling 1-855-211-9669 www.urbanimpact.com
Soft plastics (wrap, bags, etc.)	Corporate Zero Waste Program (Yellow Bin)	Already available. Need to educate Property Office staff.
Clothing and bedding	Charity Clothing Pick-up Service	Developmental Disabilities Association Clothing4DDA@develop.bc.ca 1-800-654-1331
Household items (books, toys, sporting goods)	Charity Clothing Pick-up Service	Developmental Disabilities Association Clothing4DDA@develop.bc.ca 1-800-654-1331
Small electronics (ex: cell phones)	Secure e-waste Recycling Service	Vernon Technology Solutions 1-877-752-0916 www.vernontech.ca
Large electronics (ex: computers, televisions, printers, and stereos)	Secure e-waste Recycling Service	Urban Impact Electronic Waste Recycling 1-855-211-9669 www.urbanimpact.com
Personal items (photos, diaries, papers)	Secure Paper Shredding Service	Urban Impact Secure Shredding Service 1-855-211-9669 www.urbanimpact.com
Documents (court documents, witness statements, etc.)	Secure Paper Shredding Service	Urban Impact Secure Shredding Service 1-855-211-9669 www.urbanimpact.com
VPD Uniforms (picked up from VPD Stores on the way to be burned)	Secure Textiles Recycler	deBrand Services Inc. www.debrand.ca 604-638-8998

Property Office staff have expressed an interest in learning to destroy electronic hard drives so that computers, cellphones, and other e-wastes can be recycled. Hard Disk Crushers are available for purchase from Vernon Technology Solutions. These devices can be purchased at www.vernoncrusher.com. Property Office staff may also benefit from additional training in the secure disposal of electronic waste. By training staff and/or by hiring a secure e-waste recycling service, the VPD can significantly reduce the amount of e-waste being incinerated at the Covanta facility every six weeks, reducing emissions, pollution, and ensuring that these materials can be reused in the future.

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Contact:

Pam Derrett, Property Custodian
Property and Forensic Storage Section
604.717.2723 | pam.derrett@vpd.ca

Ian Wightman, Manager
Property and Forensic Storage Section
604-717-3092 | ian.wightman@vpd.ca