

A ROADMAP TO A SUSTAINABILITY ACTION PLAN FOR THE WEST VANCOUVER POLICE DEPARTMENT

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Executive Summary

The West Vancouver Police Department (WVPD) has acknowledged that climate change is irrefutable and ready to take responsibility to reduce its negative environmental impact. In line with its commitment to becoming a more sustainable police department and being a pioneer in the industry in the future, WVPD aims to develop a sustainability action plan, including steps to understand best practices and the current state of its sustainability efforts and explore areas of opportunities for improvement. As a result, the roadmap to the sustainability action plan includes 4 phases:

1. Carry out desk research on police departments locally and internationally that have sustainability action plans in place, identify key police departments that can be the epitome of sustainability efforts and offer greater applicability to the WVPD in terms of having similar size, scale and institutional capacity
2. Determine and make a list of key operational areas of these comparable sustainability efforts to apply to the WVPD, evaluate and assess the WVPD's current level of sustainability capacity
3. Conduct an audit of reporting data (emissions, waste, procurement) to understand what data is available and what additional data would be required to track progress and establish a baseline for future reporting; conduct seven in-person interviews with the WVPD staff to get an in-depth understanding of current sustainability efforts and practices
4. Develop a roadmap informing next steps and best practices to guide the WVPD's sustainability activities and procedures, including recommendations for actions, implementation schedule, and measuring success

Recommended Actions

1. Drive a Green Fleet to Reduce GHG emissions	2. Maximize Recycle to Minimize Waste	3. Create Green Procurement Program
1.1 Electrify 40% of non-patrol vehicles whilst meeting the needs of policing operations	2.1 Introduce a circular economy to the WVPD	3.1 Design and implement green procurement policy into the purchasing decisions of all departments
1.2 Increase EV charging stations at the operation building	2.2 Get partnerships to donate uniforms and decrease single-use plastics at the WVPD	3.2 Put in place effective and robust scrutiny of the supply chain while transitioning to a more sustainable supply chain
1.3 Apply environmentally friendly standards while leasing vehicles for policing operations	2.3 Harmonize labeling across the WVPD to enable proper waste segregation	3.3 Explore opportunities to purchase more sustainable goods and services from producers where feasible.
1.4 Increase use of carpooling and bike sharing practices	2.4 Increase the use of internal communication channels to increase awareness and ongoing engagement	3.4 Explore opportunities to reduce buying and promote reusing products at the WVPD
1.5 Explore alternative fuel blends that meet the fuel standards of the police fleet	2.5 Provide sustainability training for the staff to increase awareness and maximize recycled products	3.5 Apply a circular economic approach to the procurement decisions
1.6 Apply technologies and applications to reduce the need for engine idling and modernize the fuel tracking system	2.6 Explore opportunities to digitize record keeping	3.6 Estimate and outline carbon footprints of products and services
1.7 Give appropriate training to police officers to promote efficient driving behavior	2.7 Create a green mentoring program to foster discussions between staff at the WVPD	
1.8 Keep up with the latest advancements in the area of electric vehicles		

While conducting these phases, the roadmap aims to compile and synthesize best practices from police departments and determine their adaptability to the WVPD without comprising safety and security. After identifying best practices, analyzing the current state of sustainability practices, and conducting interviews with the staff, a total of 21 actions in 3 areas (emissions, waste, procurement) are created with an implementation timeline.

It is foreseen that climate change and its devastating effects on earth are real. This relatively new topic of sustainability in policing industry will continue to attract significant attention, requiring the WVPD to prepare detailed strategies for each main area. That's why this roadmap helps the WVPD understand what data is available and what additional data would be required to track progress on sustainability practices and establish a baseline for future strategies.

Introduction and Background

The West Vancouver Police Department is the municipal police force of the District of West Vancouver and serves a culturally diverse community with approximately 50,000 population. Today, the WVDP has 100+ staff, made up of 79 sworn police members, and 22 civilian staff in order to prevent crime, and enhance the safety and well-being of the community it serves.

The WVDP has acknowledged that climate change is inevitable and policing industry fell behind in incorporating sustainability practices. In that sense, the policing industry has largely escaped the scrutiny of its lack of sustainable practices and negative environmental impacts. Nevertheless, the WVDP believes that many aspects of policing are ripe for incorporating and implementing sustainable practices and is ready to do its part to help mitigate the impact of climate change.

The mission of the WVDP is to achieve excellence in response and investigation for a safe West Vancouver. In conjunction with its mission, the WVDP announced the 2022- 2025 Strategic Plan and set four goals. One of them, Goal 4, is to contribute to the community's social wellbeing. The Strategic Plan determines *decreases in vehicle emissions* as one strategic action to achieve this goal.

In line with Goal 4, the WVDP wants to increase its sustainability efforts and reduce its impact on climate change. Currently, the sustainability efforts of the WVDP are not organized or clearly defined. The WVDP has a few sustainability practices in place, including a recycling and food waste program, and it is slowly transitioning to hybrid vehicles and considering some fully electric options. The WVDP would benefit from some needed structure and management of ongoing and new sustainability work in the world. Currently, the WVDP does not know how to develop sustainability-driven projects properly, nor do they see the sustainability work being done within the policing industry.

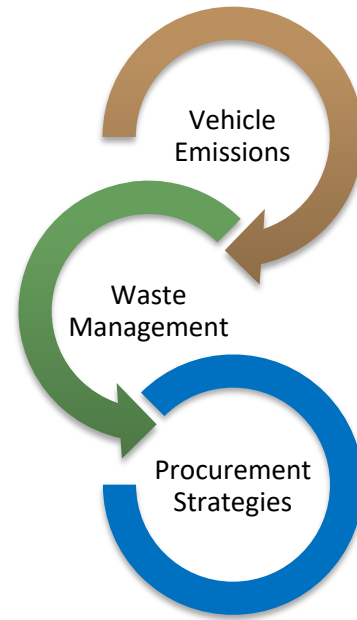
Thus, this draft roadmap to the Sustainability Action Plan aims to address these and other knowledge gaps within the WVPD on sustainability. Also, it hopes to improve the WVPD's institutional knowledge in the environmental sustainability field and make the WVPD one of the leading policing agencies with its green operations.

The roadmap has 3 key areas of focus:

1. Vehicle Emissions
2. Waste Management
3. Procurement Strategies

To address the key areas, the roadmap determined 3 policy strategies accordingly:

1. Drive a Green Fleet
2. Maximize Recycled to Minimize Waste
3. Create Green Procurement Program



Best Sustainability Practices at a Glance

In recent years, an increasing amount of literature has observed the ambitious commitments of governments, civil society organizations, universities and other organizations worldwide to mitigate the effects of climate change. Although they have different levels of sustainable business practices and implementation timelines, the importance of environmental sustainability and action plans have formed the central focus of various organizations over the past decade.

Although the literature review shows us that the sustainable practices in the policing industry are not well-established but it seems promising to see that a few police departments have a sustainability action plan at the municipal, provincial and federal levels. In this literature scan, specific attention is paid to identify key police departments in Canada and around the world that can be the epitome of sustainability efforts and offer greater applicability to the WVPD in terms of having similar size, scale and institutional capacity.

The key areas relevant to operations of policing industry are chosen from a vast array of sustainability initiatives worldwide. Thus, those policies and strategies about emissions, waste, and procurement are key areas to explore best sustainability practices in policing industry. Finally, although the topic of climate change adoption practices is not chosen as the main area in the first place, it is still included here as climate change directly lays down a serious challenge to police operations.

Vehicle Emissions

The literature review on vehicle emission reduction strategies has highlighted several common activities and practices in Canada and worldwide. According to the literature review, the sustainability practices of greening the police fleet are gathered under two main headings: fueling and electrifying the fleet.

In Canada, The Vancouver Police Department (2018) determined greening the police fleet as one of the key areas of focus for the organization in its environmental sustainability plan and adopted strategies for reducing the carbon footprint of fuels. By adhering to the current environmental sustainability plan, the VPD has explored cut-back options for traditional fuels and seeks to shift to more eco-friendly fuel options like biodiesel and ethanol. Building upon these replacement efforts to reduce its carbon footprint, the VPD has also used new technologies and idle right systems to reduce fuel consumption. Similar to the VPD, Toronto Police Service has also installed idle reduction technologies on nearly 430 vehicles and replaced the fleet of V8 with V6s to make their fleet greener (City of Toronto, 2021).

In summary, for fueling and utilizing the fleet, the installation of Idle Right or telematics products seems to be common practice in Canada to manage fuel consumption and monitor driver behaviors.

For electrifying the fleet, numerous police departments in Canada have started purchasing hybrid and full-electricity cars from different manufacturers in transition to electrifying the fleet in line with their commitments to reduce vehicle emissions. An example of EV Purchasing decisions of police agencies in Canada for electrifying their fleet is presented in Table 1 below.

Table 1. Examples from Police Agencies Electric Vehicle (EV) Purchasing Decisions in Canada

Agency	Fully EV Models	Hybrid or Plug-in Hybrid Models
Vancouver Police Department	Mitsubishi iMiev, Ford Focus Electric, and Nissan Leaf	Toyota Prius Cs, Ford Fusion, Ford C-Max Energi
Toronto Police Service	n/a	Ford Interceptor Utility
North Vancouver RCMP	n/a	Volkswagon E-Golf, Ford Fusion
Westminster Police Department	n/a	Ford Explorer
Bridgewater Police Department	Tesla Model 3	n/a

Note. This table is self-created; the information is derived from the website of police departments and other online sources.

The VPD has developed its charger infrastructure over the years to enable them to replace some of its gasoline-powered vehicles with hybrid and fully electric ones. Based on current research, 38 hybrid and 22 fully electric vehicles make up 27% of the VPD fleet (Pablo, 2021). Toronto Police Service also has rolled out similar initiatives for electrifying patrol vehicles, such as testing hybrid Ford cars to evaluate their fuel efficiency and overall performance on the road. In addition to these police departments, other police departments in Canada have committed to reducing their negative environmental impact. For example, in 2020, the North Vancouver RCMP purchased one fully electric (Volkswagen E-Golf) and one plug-in hybrid car (Ford Fusion) as the first step of their green fleet initiative

(Devries, 2020). Another example is the Westminster Police Department, which recently ordered its first hybrid patrol vehicle (Ford Explorer) to show its efforts to go green. (The Behind the Badge Staff, 2021).

Although it is not common practice to use fully electric cars for frontline policing, there are some operational testing of hybrid frontline cars by police departments in Canada. For example, the police department of Bridgewater in Nova Scotia has ordered Tesla Model 3 to use as a police patrol car. Also, some police departments in Montreal have engaged in similar lines of work and began to test Ford Mustang Mach-Es in their policing operations as part of an ongoing efforts to reduce the organization's carbon footprint (Novak, 2022).

In parallel with the green fleet initiatives in Canada, the policing industries in the world have similar attempts and strategies to electrify their fleets. In that sense, the ambitious work of the New York Police Department can be a good example. In 2021, they ordered an additional 184 Ford Mustang Mach-E and 200 Tesla Model 3 for the frontlines in achieving their target of transitioning to a green fleet by 2035 (Lambert, 2021).

Moreover, in line with their cities' green fleet action plan, Los Angeles and Seattle Police Departments have contracted with other vehicle manufacturers to add customized full-electricity cars such as BMW i3s and Nissan Leaf into their fleets. Besides the green fleet initiatives in the United States, Britain and Scotland also have four police departments that may be considered the epitome of British sustainability practices. For example, Police Scotland prepared a strategic plan to address its EV fleet transition. According to this plan, Police Scotland (2021) has set ambitious targets to replace their old petrol and diesel pool cars with Ultra-low-emission vehicles (ULEV) by 2030. To achieve its ambitious targets, Police Scotland plans to implement a salary sacrifice scheme program at the department to motivate the staff to buy ULEVs. Similarly, Essex Police has recently tested a BMW i3s for light-duty purposes. Still, unlike Police Scotland, they recommend a set of collaborations

with the fire rescue services to share EV charger infrastructures in the country (Police, Fire and Crime Commissioner for Essex, 2021).

Although fuel consumptions and fleet electrifications are common sustainability practices in policing industry, other critical practices are also helping the policing industry reduce its vehicle emissions. For instance, many police departments in Canada and worldwide have encouraged their staff to use alternative eco-friendly transportation options such as cycling or carpooling.

Also, several good practices exist to reduce vehicle emissions in other industries. These practices may offer a greater inspiration for the WVPD to improve its environmental sustainability practices although they differ from the WVPD in terms of size and institutional capacity. For example, under its energy and environment strategy, the Minister of National Defence (2020) shared information about its efforts to explore opportunities to green its light-duty fleet to achieve its target to reduce vehicle emissions by 40% until 2025. For Example, the Defence has tested a hydrogen fuel cell electric vehicle to incorporate it into their light-duty electric fleet, equivalent to 33% of the overall fleet. They also conducted feasibility studies to install EV chargers at their buildings to meet the rising demands while transitioning to electric cars. In a similar case in the United States, U.S. Army has employed some strategies since 2005 to achieve non-tactical fleet (NTC) electrification in the field. In line with its ambitious plan, they have already purchased more than 3000 hybrid cars between 2018 and 2020 (Department of the Army, 2022).

Waste Management

Based on the literature review, recycling and waste management in policing industry seem to be a bit more challenging. The main reason is that policing industry has used many specific equipment and products in their everyday operations that are non-recyclable or cannot be reused due to security reasons.

Besides, there are no common practices related to waste management in policing industry other than waste sorting. For example, the VPD, Delta, Abbotsford, Victoria and Calgary Police departments implemented different recycling and sustainable waste management programs for different types of waste such as annual auctions for unclaimed properties, and recycling programs for electronic waste and scrap metals, and donating the non-contaminated textile products for reusing. Also, disposal practices of the e-waste generated from cell phones, laptops, and police radios are different. They are either shredded after the hard drives and memories are removed, recycled, or incinerated. Finally, the VPD and Calgary Police Departments help their residents safely recycle and dispose of ammunition and other explosives.

Also, it is interesting to observe that there are no common practices in managing the waste of police uniforms either. For example, Delta and Abbotsford Police Departments donated old police uniforms to the NGOs after patches were removed, while others were just throw-away or incinerated. Yet, the VPD intends to find new options to implement a uniform recycling program to reduce police uniform waste.

Although there is a lack of common practices to support sustainable waste management in the policy industry, there are still good practices to encourage recycling and reduce overall waste generation. For example, the VPD puts five separate bins for the waste from office operations. The staff is also encouraged to bring their cups and to use biodegradable plastic when needed. Moreover, Canada's Department of Defence (2020) has set targets for creating a baseline for diverting recyclable plastic from landfills and reducing single-use plastics in their everyday operations where possible.

Similar to initiatives in Canada, at the international level, common practices in policing industry have evolved around shifting to the circular economy approach. Contrary to the consumer economic approach, the circular economy emphasizes reuse, remaking and repair to maximize the life cycle of existing products and promote waste reduction and

recycling. Police departments in the United Kingdom and Scotland can be excellent examples of these initiatives. They have set ambitious goals to reduce landfill waste by encouraging donations, reusing and recycling.

For example, Scotland Police, South Yorkshire Police and West Midlands Police have explored ways to adopt the circular economy in the police department. Recognizing the importance of staff engagement in this process, Scotland Police involved their staff in streamlining the recycling and waste policy. Also, South Yorkshire Police has similar attempts to drive more appropriate waste segregation behaviors among its staff. As a first step to realizing this aim, the department designed informative content about the importance of recycling to the environment through the intranet.

Procurement Strategies

The review of the literature reveals that incorporating green criteria into procurement decisions is common practice across policing industry in Canada. This enables the police industry to purchase environmentally friendly and fair-trade products and reduce their negative environmental impact. For example, the VPD (2018) has developed a framework to buy products from third parties with environmental certification. Recognizing that purchasing uniforms is a larger part of procurement decisions, the VPD has also implemented a procurement decision in which they had to contract with fair trade certified companies to purchase police uniforms.

Another example is Toronto Police Service which is preparing a procurement procedure to factor a life cycle approach into procurement decisions. Aligned with its policy, Toronto Police Service will strive to purchase the materials and products that meet environmental criteria and efficiently use and reuse them to reduce waste and negative environmental impact (Toronto Police Services Board, n.d.).

In addition to municipal and provincial police departments, The Royal Canadian Mounted Police (RCMP) at the federal level reports its continuing efforts to meet the *Policy on Green Procurement goals*. For instance, RCMP (2022) set the target of including the environmental clauses in its 85% of full solicitations and giving appropriate staff training to encourage sustainable procurement practices. In a similar line of work, the Defence has continuously reviewed its Green Procurement Directives to ensure that purchasing decisions are environmentally-friendly and have a low environmental impact. For example, the Defence has recently engaged in consultations with third-party suppliers to shift to sustainable packaging every day of their operations by 2023.

Lastly, the literature review finds similar sustainability practices in procurement decisions of the policing industry at the international level. Examples include Police Scotland (2021) and U.S Army (2022), which establish targets for regularly scrutinizing procurement decisions to ensure the whole purchasing process is aligned with sustainable procurement criteria and has a low environmental impact.

A Note on Climate Change Adaptation

The literature review shows that climate change severely challenges everyday police operations and the safety of police officers. As a result of climate change, the police, as the first responder, are at risk of working under extreme weather conditions, including severe heatwaves, floods and ice storms. And the literature reviews also demonstrate that the policing industry, in general, is not fully resilient. Thus, some of the police departments and armies in the world developed some practices that accounted for climate change adoption and saw it as another important area to consider when designing the environmental sustainability plan for their organizations. The Defence is one of these industries that acknowledges the effects of climate change on its operations and is ready to take some important steps to increase its adaptive capacity to climate change. One of the best practices in that sense is to conduct the risk assessment and embed proper practices and

training into the training curriculum of police officers or military personnel to ensure they become more resilient against climate change. For instance, the U.S Army has already integrated an introductory course about the Army's environmental impact, energy efficiency and climate change into their training modules. Also, they collaborated with Canada and Norway on conducting a series of cold-weather training and exercises.

Table 2. A Summary of Best Practices in Policing Industry in Canada and Around the World

		Local			International				
Categories	Sub-Categories	VPD	TPS	RCMP	NYP	LAPD	SPD	EPD	PSS
Vehicle Emissions	Electrifying the fleet	√	√	√	√	√	√	√	√
	Fueling and utilizing the feet	√	√		√	√	√	√	√
Waste Generation	Recycling except for uniforms	√	√	√	√	√	√	√	√
	Establish a waste baseline	√	√					√	√
Procurement Strategies	Green Procurement criteria	√	√	√					√
	Life cycle Assessment	√		√	√	√			

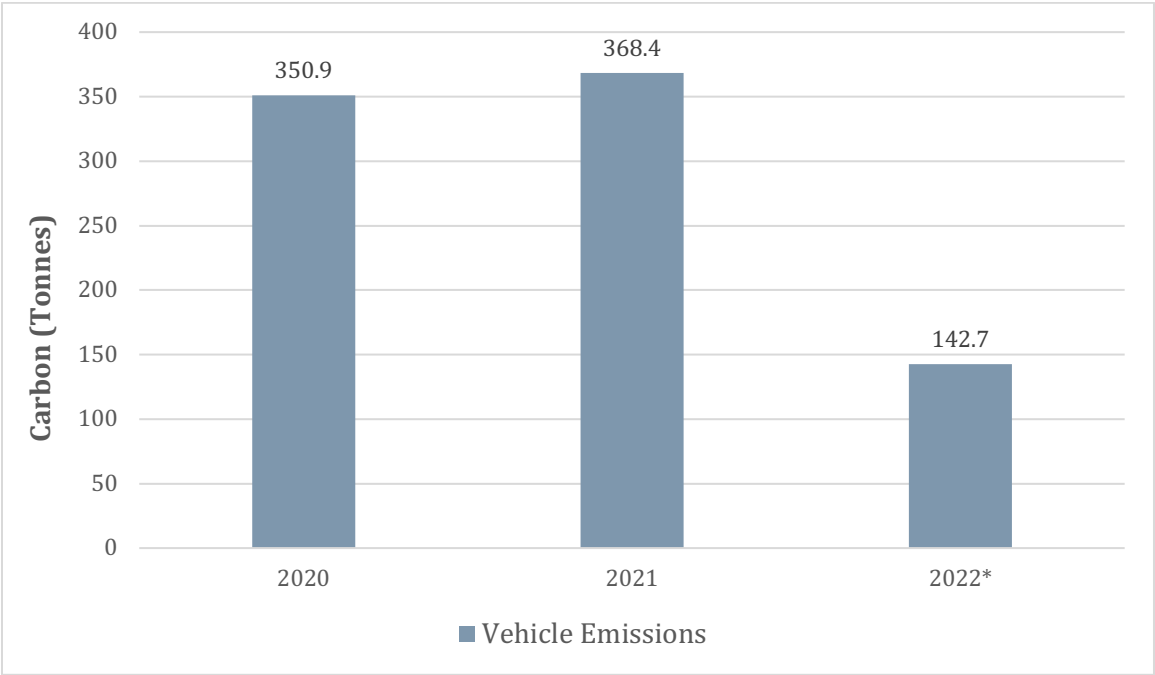
Note: √ shows the availability of sustainability practices in the policing industry

Review of Current State of Sustainability Practices in the WVPD

Vehicle Emissions

Carbon print estimates are used to calculate the CO₂ emissions of police vehicles per year. As shown in Table 3 below, the vehicle emission of the WVPD in 2021 increased by 17.5 t compared to the 2020 baseline (District of West Vancouver, personal communication, June 17, 2022). For the current year of 2022, the WVPD fleet has 142.7 t CO₂ emissions so far. Although it is difficult to determine the exact carbon ton of 2022 at this time, it can be anticipated that vehicle emissions may reduce when the first EV started using in the fleet this year.

Table 3. The WVPD Vehicles Carbon Footprint



*Until June 2022

Currently, in transitioning to a green fleet, the WVPD has 5 non-plug-in hybrids and 4 e-bikes and ordered 2 full EVs, also considering initiating a rideshare commute program for

civilian staff. However, there are no current practices at that moment for diversifying the fuel of vehicles and transitioning to more eco-friendly fuel options.

Recycling and Waste Generation

Waste is generated as a result of policing operations of the WVPD. Due to the nature of policing industry, most items are single-used and not recyclable. Nevertheless, there are already sustainability practices, most of them personal initiatives, in place at the WVPD when reusing equipment if they are in good shape. For example, the equipment of retired police officers is reused again in policing operations in order to reduce waste generation (Purchasing and Supplies Coordinator, personal communication, June 17, 2022). Also, some IT equipment, cell phones and computers are sent to either auction or donation after the sensitive data are securely wiped. The equipment that finished its lifecycle sends either for recycling or destroyed depending on the IT equipment (IT Manager, personal communication, June 17, 2022).

In paper consumption, the WVPD is transitioning to digital evidence and signatures and using digitalized documents for administrative purposes. Printers automatically default to greyscale and double-sided. However, all police records should still be printed on paper. The reason is that the court decides how to keep the records based on certain sets of rules and regulations. For example, some evidence needs to be physically presented to the judge or witnesses. Thus, there is little area left for paperless operations (Purchasing and Supplies Coordinator, personal communication, June 17, 2022).

For police uniforms, it is possible to reuse police uniforms due to wear and tear. To reduce uniform waste and find an alternative to incineration, the WVPD is thinking of some solutions to donate uniforms in good shape to democratic developing countries after patches are removed (Inspector, personal communication, June 17, 2022). Lastly, for the destruction of firearms, metals, weapons and badges, the WVPD is working with Richmond Steel.

In terms of observing recycling and waste reduction behaviors of police officers at the WVPD, it is possible to say that instead of using single-use plastics, mugs are used to reduce the waste in the kitchen area. Although there are separate bins for landfill, organic compostable, mixed paper and plastics, recycling behaviors there are not at the desired level. The observational study reveals that recycling labeling at the WVPD is confusing and inconsistent. As a result, labels did not give the staff quality information to make informed recycling decisions at the operation building. Often staff can be misled by current recycling labels provided by the District of West Vancouver.

Thus, harmonizing labels with adding visually appealing designs is needed to improve recycling behavior and motivate the staff to recycle more at the WVPD. Also, additional action is required for the waste collectors' companies as they throw garbage and recycling into the same compartment of their truck.

Procurement Strategies

The WVPD has purchased goods and services from over 45 suppliers but no action has been taken to assess to what degree the suppliers of the WVPD are sustainable. The assessment is conducted according to the information retrieved from suppliers' websites that shows their sustainability and fair-trade business practices and certifications. Although the email communication is conducted with 45 suppliers to get more information about their sustainability practices, the response rate is relatively low. Thus, the assessment has limited scope and only includes the suppliers of police apparel concerning sustainability practices: the police apparel, engraved plates, and kitchen and office suppliers.

Police Apparel and Engraved Plates

The police apparel includes clothing, headwear, footwear, belts, eye protection and gloves. Research finds that 5 out of 12 main manufacturers have some of the procedures they use to cut down on their carbon footprint in their operational activities. Generally speaking,

the suppliers produce police uniforms in the USA and Canada and already have sustainability practices.

What stands out in the audit of apparel suppliers is that the clothing manufacturers have put a considerable amount of importance on fabric selection to improve the longevity and durability of uniforms they produce. The primary rationale behind this decision is to make good quality uniforms that deliver many years of service to their customers. Once the uniforms last longer, the supplier aims to reduce resource consumption and carbon footprint.

For example, one of the manufacturers regularly inspected their suppliers to meet the standard of the ISO 140001, meaning that suppliers already have an effective waste management system and sustainable production strategies to mitigate their environmental effects. Notably, the suppliers work with leather suppliers certified under the Leather Working Group (LWG), enabling the source of their purchases. In addition to these sustainability practices, the first manufacturer often uses cardboard cartons and recycles them when they are no longer in use. They are also planning to explore using recycled fabrics to produce police uniforms.

Another manufacturer producing headwear has used recycled fabrics and trims. The supplier offers eco-friendly fabric options such as Eco-twill and Organic cotton. Also, they offer recycled plastic peak inserts. Additionally, in terms of adapting more energy-saving options at their factory, the supplier converted the entire factory to energy-efficient lighting and energy-efficient motors for sewing machines. Under waste management, they minimized the use of packaging materials, polybags, paperless office practices, and order sheets. Finally, to promote the reduction of water produced in the manufacturing processes, instead of discarding off cuts or extra material, they provide opportunities for it to be used by other manufacturers or on smaller runs which eliminates much of the waste a garment factory would usually produce.

Furthermore, the manufacturers producing jackets and footwear aim to create the most refined and durable products possible to halve our environmental footprint. However, they use few eco-friendly materials and there is no evidence to argue that they have initiatives to reduce the amount of water and textile waste generated in the manufacturing process.

Finally, the manufacturer of engraved plates does not use any recycled or reused materials in the production of plates but accepts used products from their clients and breaks them down for reuse.

Kitchen and Office Suppliers

A closer inspection of the kitchen supplier shows that the supplier already has a sustainability plan and identified key performance indicators and internal targets. For example, the supplier incorporates business conduct policy into everyday business practices so that they aim to achieve to operate ethically and transparently. Similarly, office suppliers based in Vancouver are committed to reducing their environmental footprint and developed a blue box delivery system that promotes the delivery of products in large plastic reusable boxes once a week in Vancouver. In this system, no additional package is used and the bin is left with the customer to collect recyclables. Also, they accept and recycle used toner cartridges, pens and markers, and batteries, so they recover precious metals from used batteries.

According to these data, we can infer that kitchen and officer suppliers have solid sustainability practices in place that enable them to create a closed-loop with minimal packaging waste and a reduction in carbon emissions.

Interviews with the WVPD Staff

A total of 7 In-person interviews with the WVPD staff are designed to get an in-depth understanding of current sustainability efforts and practices from the staff's viewpoint. The

staff is asked to indicate their views on 3 main areas of this study: Vehicle Emissions, Waste Management and Recycling and Procurement Strategies.

Opinions on the pros and cons of electrifying the police fleet differed on whether the police fleet should fully use electric cars. Concerns regarding charging requirements were more widespread as some interviewees claim that finding recharging facilities in the city can be a problem for patrol vehicles. Patrol cars run almost 24 hours a day and have heavy equipment consuming much battery power. Assuming that the same patrol car will be shared with different officers, some interviewees think that they may be unable to recharge them often enough and hybrid cars can be more suitable for patrol vehicles.

While others considered that EVs are perfectly suitable for all types of fleets at the police department as they consume less power while idling and are a cost-effective option in the long-term considering high gasoline prices and maintenance savings.

Hence, it could conceivably be hypothesized that the overall view of the staff on the transition to electrifying the fleet is very positive despite its ups and downs. A few interviewed suggested that employing a ride-sharing program or shuttle service may enhance the WVPD's efforts to be more sustainable organization.

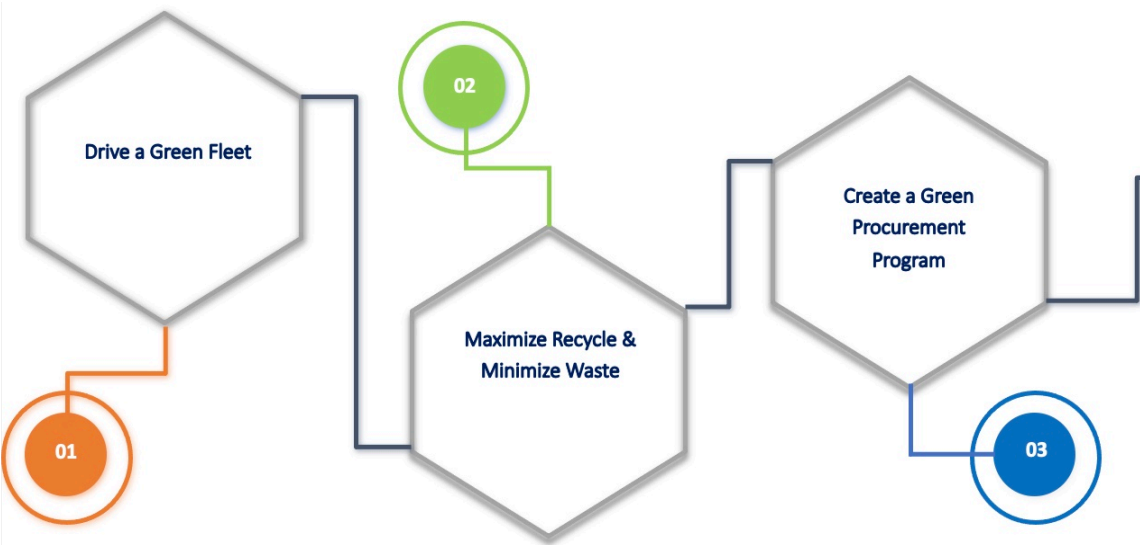
For waste management and recycling, a common view amongst interviewees was that recycling practices should be improved at the WVPD. For example, some interviewees argued that K-cups go in the garbage bin, although the plastics used to make K-cups can be recycled after those leftover coffee grounds go into the compost bin. At the same time, others argue that waste is not properly sorted and the implementation of comprehensive recycling programs is needed in the police department.

With procurement practices, the majority of participants agreed with the statement that the police department should apply more ethical procurement practices in order to reduce its carbon footprint. Some suggestions were to replace single-use plastic items with reusable ones to buy more locally-produced products where possible.

Therefore, it seems that a sense amongst interviewees that climate change is inevitable and the WVPD should expand its operational objectives and strategies to reduce its negative environmental impact.

Recommended Actions

Based on the analysis of best practices of the industry, current sustainability practices and staff interviews conducted at the WVPD, the recommended actions are determined and grouped under three strategies below. Every action is designed to have a timeline and possible indicators to measure success.



While the short term covers the next 1-2 years, the medium term covers 2-3 years, and the long term covers more than 3 years.

1. Drive a Green Fleet to Reduce GHG emissions

Action	Timeline	Indicators
1.1 Electrify 40% of non-patrol vehicles whilst meeting the needs of policing operations	Mid Term	Number of purchased EV or hybrid cars
1.2 Increase EV charging stations at the operation building	Mid Term	Number of EV charging stations at the WVPD
1.3 Apply environmentally friendly standards while leasing vehicles for policing operations	Short Term	Creation of green procedures for leasing the vehicles for the WVPD
1.4 Increase use of carpooling and bike sharing practices	Short Term	Number of carpool matches, number of bikes used by employees
1.5 Explore alternative fuel blends that meet the fuel standards of the police fleet	Long Term	Number of alternative fuel vehicle testing
1.6 Apply technologies and applications to reduce the need for engine idling and modernize the fuel tracking system	Medium Term	Number of cars equipped with appropriate technologies (IdleRight, telematics), fuel consumption
1.7 Give appropriate trainings to police officers to promote efficient driving behavior	Short Term	Number of training given by HR department
1.8 Keep up with the latest advancements in the area of electric vehicles	Short Term	Number of page views related to EV technologies, number of information sessions

2. Maximize Recycle to Minimize Waste

Action	Timeline	Indicators
2.1 Introduce a circular economy to the WVPD	Long Term	A feasibility study on reused and recycled items
2.2 Get partnerships to donate uniforms and decrease single-use plastics at the WVPD	Short Term	Number of donated uniforms per year, number of single-use plastics
2.3 Harmonize labeling across the WVPD to enable proper waste segregation	Short Term	An audit of waste performance, number of visually appealing materials
2.4 Increase the use of internal communication channels to increase awareness and ongoing engagement	Short term	Number of contents and visuals on the intranet that covers recycling and proper waste management
2.5 Provide sustainability training for the staff to increase awareness and maximize recycled products	Medium Term	Number of trainings, number of lunch and learn initiatives
2.6 Explore opportunities to digitize record keeping	Medium Term	Number of digital evidence, the total number of print-outs
2.7 Create a green mentoring program to foster discussions between staff at the WVPD	Medium Term	Number of mentors, mentees, number of discussions on sustainability

3. Create Green Procurement Program

Action	Timeline	Indicators
3.1 Design and implement green procurement policy into the purchasing decisions of all departments	Long Term	Number of purchasing decisions aligned with the green procurement policy
3.2 Put in place effective and robust scrutiny of the supply chain while transitioning to a more sustainable supply chain	Mid Term	Number of suppliers who have sustainability credentials, number of audits of supply chain per year
3.3 Explore opportunities to purchase more sustainable goods and services from producers where feasible.	Short Term	Number of purchased sustainable goods and services
3.4 Explore opportunities to reduce buying and promote reusing products at the WVPD	Short Term	Number of used products
3.5 Apply a circular economic approach to the procurement decisions	Long Term	number of purchasing decisions aligned with a circular economic approach
3.6 Estimate and outline carbon footprints of products and services	Mid Term	A Feasibility study on estimating key environmental impacts of goods and services

Implementation Schedule

The implementation schedule is a calendar that defines and shows the timing of implementation of a total of 21 actions.

Actions	Mid-2022	2023	2024	2025	After 2025
1. Drive a Green Fleet to Reduce GHG emissions					
1.1 Electrify 40% of non-patrol vehicles whilst meeting the needs of policing operations whilst meeting the needs policing operations				Due 2025	
1.2 Increase EV charging stations at the operation building			Due 2024		
1.3 Apply environmentally friendly standards while leasing vehicles for policing operations		Due 2023			
1.4 Increase use of carpooling and bike sharing practices					Due 2025-2026
1.5 Explore alternative fuel blends that meet the fuel standards of the police fleet				Due 2025	
1.6 Apply technologies and applications to reduce the need for engine idling and modernize fuel tracking system		Due 2023			
1.7 Give appropriate trainings to police officers to promote efficient driving behavior		Due 2023			
1.8 Keep up with the latest advancements in the area of electric vehicles					
2. Maximize Recycle to Minimize Waste					Due 2025-2026
2.1 Introduce a circular economy to the WVPD		Due 2023			
2.2 Get partnerships to donate uniforms and decrease single-use plastics at the WVPD		Due 2023			
2.3 Harmonize labeling across the WVPD to enable proper waste segregation		Due 2023			
2.4 Increase the use of internal communication channels to increase awareness and ongoing engagement					Due 2025-2026
2.5 Provide sustainability training for the staff to increase awareness and maximize recycled products		Due 2023			
2.6 Explore opportunities to digitize record keeping		Due 2023			
2.7 Create a green mentoring program to foster discussions between staff at the WVPD					
3. Create Green Procurement Program					Due 2025-2026
3.1 Design and implement green procurement policy into the purchasing decisions of all departments					
3.2 Put in the place effective and robust scrutiny of the supply chain while transitioning to a more sustainable supply chain			Due 2024		
3.3 Explore opportunities to purchase more sustainable goods and services from producers where feasible.		Due 2023			
3.4 Explore opportunities to reduce buying and promote reusing products at the WVPD		Due 2023			Due 2025-2026
3.5 Apply circular economic approach to the procurement decisions			Due 2024		
3.6 Estimate and outline carbon footprints of products and services					

Tracking and Monitoring

The first step in tracking the sustainability roadmap's progress is establishing clear deadlines for each action, especially for those actions requiring short-term implementation, a detailed timeline and task allocation from the beginning to stick to the implementation schedule.

Also, regular check-ins are important to track and monitor the roadmap's success. Each action has certain success indicators, enabling us to understand the extent to which each action is achieved and aligned with the main goals of the roadmap. In order to track the progress, establishing regular check-ins between departments and keeping communication way open is critical for the roadmap's success.

Once prioritizing the implementation of actions aligned with resources in hand, the next step is to communicate with stakeholders and share knowledge and experience in improving sustainability practices at the WVPD. This gives an excellent opportunity to get feedback for additional improvements, reassess activities and readjust expectations and timeline.

Finally, preparing project status reports and involving a project management team is beneficial for tracking and monitoring the progress of the WVPD.

Conclusion

The roadmap hopes to improve the WVPD's institutional knowledge in the environmental sustainability field and become the WVPD one of the leading policing agencies with its green operations. Although the literature review shows us that the sustainable practices in the policing industry are not well-established, it seems promising to see a few police departments having a sustainability action plan in place at the municipal, provincial and federal levels in Canada. While reviewing the current state of sustainability practices in the WVPD, the vehicle emission of the WVPD in 2021 increased by 17.5 t compared to the 2020 baseline. In order to reduce emissions, the WVPD 5 non-plug-in hybrids and 4 e-bikes and ordered 2 full EVs, also considering initiating a rideshare commute program for civilian staff. However, there are neither current practices at that moment for diversifying the fuel of vehicles and transitioning to more eco-friendly fuel options, nor do they use idle reduction technologies to maximize the efficiency of police vehicles.

Regarding recycling behaviors at the WVPD, although there are separate bins for landfill, organic compostable, mixed paper and containers for plastics, recycling behaviors are not at the desired level. The observational study reveals that recycling labeling at the WVPD is confusing and inconsistent. Thus, harmonizing labels with adding visually appealing designs is needed to improve recycling behavior and motivate the staff to recycle more at the WVPD.

With respect to procurement practices, assessment has limited scope. It only includes the suppliers of police apparel with regard to sustainability practices as the response rate from the supplier is relatively low. Nevertheless, the research reveals that apparel suppliers have some sustainability practices, but their degree varies.

Based on the analysis of best practices of the industry, current sustainability practices and staff interviews conducted at the WVPD, 21 recommended actions covering 3 main areas

are determined and their implementation schedule is prepared. Also, success indicators are defined for each action to measure the success of actions and monitor the process.

Lastly, the most significant limitation is that this study was prepared within 4 months by working 20 hours a week with limited data available to benchmark and audit sustainability practices in the policing industry. Crafting comprehensive sustainability action plans usually requires more time as it necessitates the coordination of different departments in the organization. That's why calling this study a roadmap seems more appropriate, as it offers guidance to create a detailed strategic action plan in the future. Thus, considerably more work on the audit of supply chain and building emissions will need to be done in the future to make more informed sustainability decisions for the VWPD.

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