

# MEMORANDUM

**To:** Jarred MacLean, UVIC Facilities Management Recycling Manager

**From:** Nadia Rebeca Rojas Sanchez, Audrik Carpio

**cc:** Monika Smith

**Date:** October 5, 2024

**Re:** Proposal to examine the feasibility of creating a rewards system for reusable bottles

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The aim of this proposal is to assess the feasibility of implementing a rewards system to encourage reusable water bottles, thereby decreasing the reliance on single-use plastics among students and faculty.

## Client Background

Ranking second in Canada and fourth worldwide for its efforts to promote sustainable cities and communities [1], the University of Victoria has established a solid reputation as an environmental leader. A key figure in designing waste reduction plans that complement UVic's sustainability principles is Jarred MacLean, the Facilities Management Recycling Manager.

UVic achieved notable progress in waste management between 2009 and 2018, increasing its landfill diversion rate from 58% to 74% by means of efficient recycling and composting programs [2]. Nonetheless, in order to meet the university's current diversion rate goal of 81%, MacLean highlights the necessity of ongoing efforts, particularly in addressing plastic waste [3]. According to [4], plastics account for more than 18% of UVic landfill waste, with half of these materials being recyclable. Due to continuous changes in the global plastic recycling market, this number is expected to increase significantly. Nonetheless, the impending closure of Hartland Landfill in 2040 heightens UVic's need to embrace sustainable waste reduction initiatives. Failing to take decisive action could jeopardize not only the university's mission to become a zero-waste campus, but also its reputation as a sustainability leader.

## 1. Problem definition

The following sections present an overview of UVic's recycling needs, outlining the desired outcomes and constraints in implementing an effective solution.

**1.1. Need Statement:** Despite the university's numerous efforts to promote sustainability, plastics continue to be the main source of waste on campus. The convenience of disposable bottles leads many students and staff to rely on them, contributing to 18% of the total landfill waste. Although this material is recyclable, poor practices prevent a large amount from being properly processed. Additionally, as Hartland Landfill is expected to close by 2040, the university's financial difficulties of managing plastic waste will intensify. Thus, the community at UVic needs a sense of motivation and responsibility to address their environmental impact.

**1.2. Goal Statement:** The goal is to explore the feasibility of an appealing system that encourages sustainable habits among students and staff.

**1.3. Objectives**

Once in place, an effective design solution is expected to achieve the following objectives:

- Propel the university toward achieving an 81% landfill diversion rate as outlined in the latest Strategic Plan [3]
- Advance the university's mission to become a zero-waste institution
- Mitigate plastic waste at its source
- Optimize waste sorting processes
- Cultivate a lasting culture of proper recycling practices
- Enhance community engagement in sustainability initiatives
- Minimize waste management costs

**1.4. Constraints:** The proposed solution must adhere to the following criteria: a spending limit of \$100,000, a five-year payback period, and a two-year implementation timeline. Additionally, it must comply with UVic's safety and regulatory standards to prevent legal situations.

**1.5. Benefits:** An effective solution could significantly improve UVic's landfill diversion rate while reducing plastic waste at its source. Furthermore, in keeping with the university's sustainability goals [5], it should reduce waste management expenses and build a more

environmentally conscious community by inspiring students and staff to take ownership of their impact. This collaboration would not only help the university achieve its mission of becoming a zero-waste institution, but it would also serve as a reference for other organizations. Thus, extending the influence of UVic's green initiatives beyond the campus. Consequently, by implementing the proposed solution, the University of Victoria would lead by example in addressing the global plastic waste crisis.

## 2. Plan of Action

The upcoming sections examine the plan to assess the feasibility of implementing a points-based rewards system, linked to the university's OneCard, that encourages reusable water bottles and promotes proper recycling habits.

### 2.1. Technical Plan

To identify effective strategies for mitigating plastic waste at the University of Victoria, our study will address the following questions:

⇒ **Root causes and consequences of the problem:**

- What percentage of plastic bottles are recycled correctly?
- What types of events or situations contribute to the increased use of plastic bottles on campus?
- What is the average number of plastic bottles discarded weekly on campus?
- Are students aware of the cost of the plastic bottle deposit in BC?
- Are there barriers that prevent students and staff from recycling plastic bottles correctly? (e.g., lack of knowledge about which materials are recyclable or the accessibility of recycling bins?)
- What expenses does the university face in waste management?
- What is the environmental impact associated with a plastic bottle?

⇒ **Proposed solution:**

- What percentage of UVic students use their OneCard for on-campus food purchases?
- What percentage of drinks offered by food vendors on campus are served in plastic cups?
- What budgetary considerations need to be taken into account for establishing and maintaining the rewards system?
- What specific incentives would be most effective in motivating students to choose reusable bottles over disposable ones?

⇒ **Benefits:**

- How much could the price of a beverage decrease when excluding the cost of the plastic container?
- What long-term cost savings can the university expect from the reduction of plastic bottle waste, especially in waste management and recycling costs?
- Could the rewards program pave the way for eliminating plastic bottle sales on campus entirely? If so, what steps would be involved?

⇒ **Challenges:**

- What health and safety protocols should the university establish for serving drinks in personal containers?
- Are there any existing contracts with suppliers that might limit the university's ability to reduce plastic bottles purchase?
- How will the university deal with potential costs related to implementing the initiative?

The following methods will be used to collect the necessary information to address our questions:

1. **Collect data regarding plastic waste and recycling costs** from
  - UVic Sustainability Office
  - UVic Facilities Management
  - STARS report and waste audits
2. **Examine existing reward-based technologies** to find cost-effective and user-friendly systems that align with UVic's budget and needs
3. **Visit UVic's main building** to assess the accessibility of recycling and drink refill stations, as well as to determine if additional stations should be installed
4. **Examine the costs associated with bottled drinks** by reaching out to Food Services Manager Brad Mielke and Purchasing Agent Phil Bramhill
5. **Consult with UVic Online Services Director**, Garry Sagert, the potential for the One Card system to incorporate a points-rewards feature
6. **Conduct a campus survey** to identify student and staff attitudes toward plastic bottle use and potential interest in a rewards system

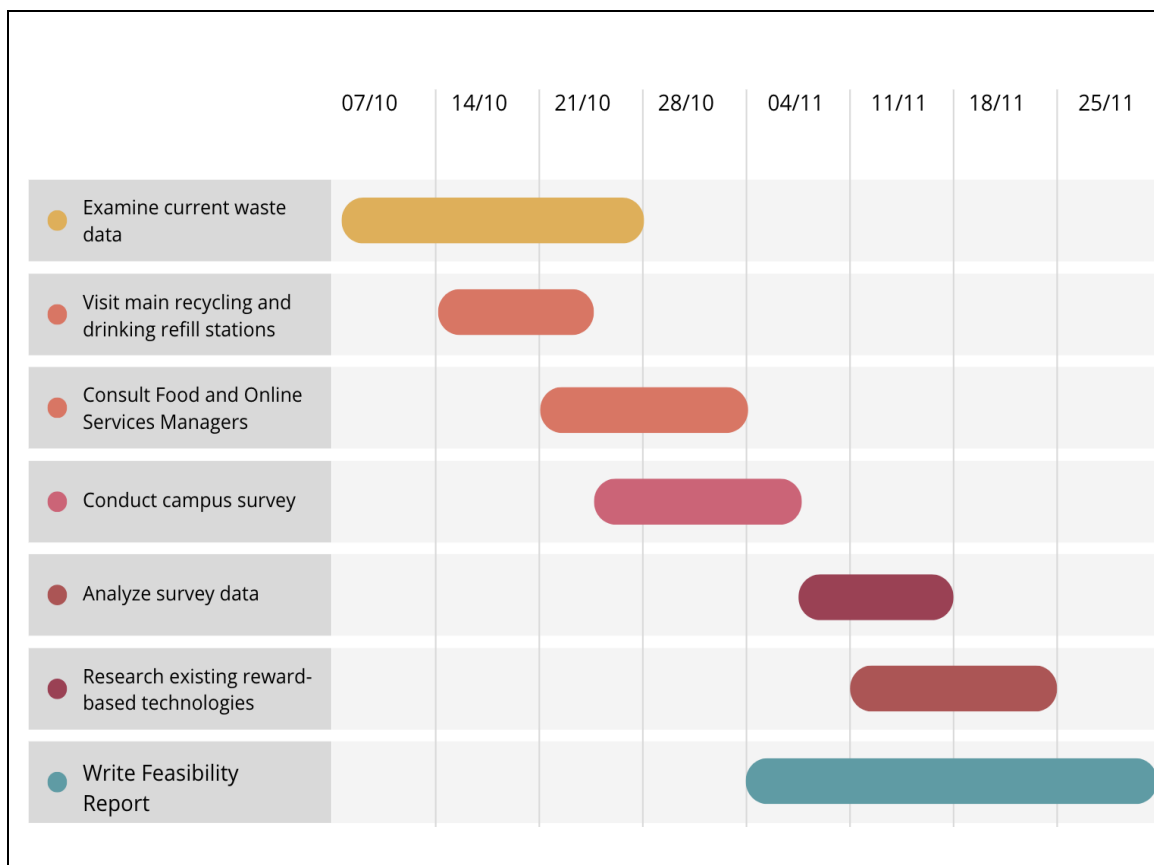
## 2.2. Management Plan

The upcoming segment offers a detailed timeline, associated costs, and the team's credentials to complete the proposed research.

### 2.2.1. Timeline:

*Table 1* below presents a Gantt chart with key tasks to complete the research study, starting from October 7 to the submission deadline on November 28.

*Table 1: Timeline for completing study*



### 2.2.2. Budget:

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Table 2 below provides a detailed breakdown of costs involved in the study, resulting in a total amount of \$2,180.00

*Table 2: Research cost breakdown*

Task	Item Cost	Number of hours	Total cost
Collect and analyze reports and audits	\$15/hr	20 hrs	\$300.00
Site visit	\$20/hr	5 hrs	\$100.00
Interview faculty staff	\$30/hr	20 hrs	\$600.00
Design and conduct campus survey	\$15/hr	10 hrs	\$150.00
Analyze survey data	\$20/hr	10 hrs	\$200.00
Research existing technologies	\$12/hr	5 hrs	\$60.00
Write Report	\$25/hr	30 hrs	\$750.00
Present Research Study	\$20/hr	1 hr	\$20.00
		<b>TOTAL</b>	<b>\$2,180.00</b>

### 2.2.3. Credentials:

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Our team is fully qualified to complete this study. Our expertise includes:

- **Strong analytical skills**, enabling us to collect data accurately from research and staff interviews
- **Proficiency in data analysis** developed through our computer science studies, allowing us to derive meaningful insights from survey responses

- **Experienced with research processes**, including data collection, and report writing, which ensures thorough and well-structured findings
- **Collaborative team skills**, as we have successfully worked on previous projects, showcasing effective communication to achieve common goals

### 3. Conclusion

Plastic waste is a global issue that demands immediate action. At the University of Victoria, addressing this challenge is crucial for fulfilling the objectives outlined in [5]. Currently, there is a need of an effective program aimed at reducing single-use plastic bottles on campus. The proposed study aims to assess the feasibility of implementing a rewards system to promote reusable water bottles and improve recycling habits.

To accomplish this, our methodology involves collecting data from various sources, including university's managers and directors, conducting campus-wide surveys, and assessing the accessibility of recycling and drink refill stations. The study is planned to unfold from October 7 to November 28. Our team, composed of computer science students skilled in data analysis, software development, and research methodologies, is well-prepared to conduct this study effectively.

Advancing with our research offers numerous benefits to UVic: it can significantly reduce plastic waste at its source, improve landfill diversion rates, and cultivate a culture of sustainability among students and staff. Finally, this initiative can set an example for other organizations to follow. We strongly encourage the university to support this research. Our team is the right choice to lead this initiative, bringing both passion and expertise to the table. Failing to act promptly will not only intensify waste management costs but also threaten the university's reputation as an environmentally responsible institution. Let us work together to turn this challenge into an opportunity for making a lasting impact.



## 4. References

- [1] "UVic a national leader in climate and sustainability," *UVic News*, June 12, 2024. [Online]. Available: [https://www.uvic.ca/news/topics/2024+the-global-impact-rankings+media-release#:~:text=UVic%20is%20ranked%20second%20in,and%20communities%20\(SDG%2011\).](https://www.uvic.ca/news/topics/2024+the-global-impact-rankings+media-release#:~:text=UVic%20is%20ranked%20second%20in,and%20communities%20(SDG%2011).) [Accessed Sept. 26, 2024].
- [2] J. MacLean, "Request for Proposals FM/WR 0520" University of Victoria, Victoria, B.C., 2024.
- [3] University of Victoria, "Distinctly UVic A strategy for the University of Victoria" [Online]. Available: <https://www.uvic.ca/strategic-plan/assets/docs/uvic-strategic-plan-2023.pdf>
- [4] University of Victoria, "Waste to Resource Assessment™ Report" [Online]. Available: <https://www.uvic.ca/facilities/assets/docs/UVic-waste-assessment-report.pdf>
- [5] University of Victoria, "Climate and Sustainability Action Plan 2030" [Online]. Available: <https://www.uvic.ca/assets/docs/csap2030-actions.pdf>