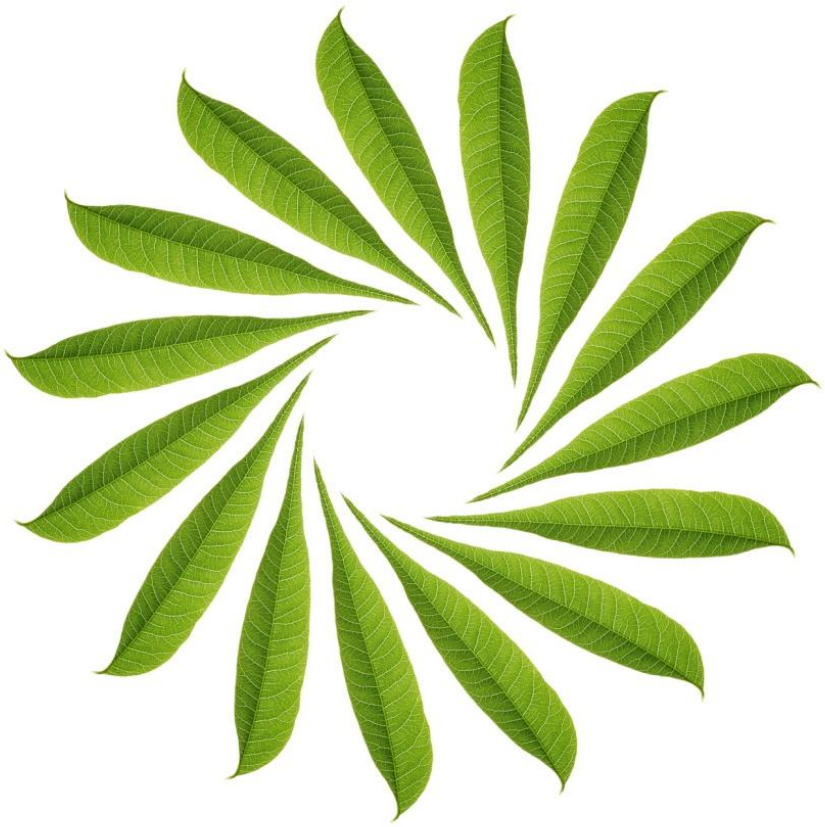
Waste Management | Sustainability Services

Waste to Resource Assessment - Summary



Prepared for: University of Victoria

University of Victoria
3800 Finnerty Road, Victoria, BC
March 24, 2014

WASTE MANAGEMENT

THINK GREEN®

Executive Summary

Overview

On March 24, 2014, Sustainability Services initiated a Waste to Resource™ assessment for University of Victoria. During the waste assessment visual inspections of waste generation points throughout the facility resulted in the discovery of additional recycling opportunities. The physical sort took place from March 24 to March 28 at the main campus located at 3800 Finnerty Road in Victoria, BC.

During this assessment, in order to characterize the material stream, samples were collected from 42 source areas throughout the facility over a 24-hour period. The materials were divided into categories and weights of each material were recorded.

Photograph 1 – Physical Audit Location

Assessment Information

Table 1 – Facility Information

Item	Comments
Facility Name	University of Victoria
Description	A research-intensive university located 5.71 km northeast of downtown Victoria, British Columbia. The university's annual enrollment is about 20,000 students.
Address	3800 Finnerty Road, Victoria , BC
Contact Name	Nadia Ariff
Contact Number	250 853 3160

Assessment Findings and Goal Alignment

Goals, Objectives, and Other Factors

The following is a list of company goals, objectives, or other factors considered during this assessment.

- **Apply findings from the waste audit to reduce waste, maximize collection of recycling materials and optimize waste management efficiencies**
- **Streamline and standardize handling routines of materials throughout the facility**
- **Monitor waste generation and recovery levels on a regular basis**
- **Reduce waste spend and increase diversion rate of materials**
- **Provide ongoing employee training and education**
- **Identify areas of new or enhanced recycling**

Summary of Findings

The facility generated 1,948.97 tonnes of combined waste and recyclables last year. The current diversion rate in your facility is 68%.

In 2011, the facility generated 1,614.44 tonnes of combined waste and recyclables resulting in a diversion rate 58%.

It is estimated that 614.91 tonnes of waste and 1,334.06 tonnes of recyclables will be generated from your facility in the current year. Compared to 2011, the facility generated 681.78 tonnes of waste and 932.66 tonnes of recycling. Although the facility is currently generating more material (with possible improvements in data collection), the material sent to landfill has decreased by approximately 66 tonnes.

The facility saw an increase of 10% in their overall diversion between 2011 to the date of the audit, due to the improvements and efforts to the recycling program.

Table 2 – Material Generation 2011 vs. 2014

	2011	2014
WASTE (Kgs)	681, 780	614, 910
RECYCLING (Kgs)	932, 660	1, 334, 060
TOTAL MATERIAL (Kgs)	1, 614, 440	1, 948, 970
DIVERSION RATE	58%	68%

Material Composition Breakdown

Waste Material Comparison by Category

This section displays a breakdown of material categories as identified through the waste audit process.

Please note: for the purpose of this audit the Contaminated – Non-Recyclables category listed within the Other Material category included but was not limited to materials such as polyfoam containers, foil bags, some soft plastics, waxed paper, mixed material containers and otherwise recyclable materials contaminated with liquids or organic waste.

Table 3 – Waste Material Comparison by Category 2014

Waste Category	Total Audited Waste (kg)	Material Composition (%)	Annual Projected Volume (kg)
Other Material (incl. Non- Recyclables)	1,015.63	38.5%	236,954
Organics	692.40	26.3%	161,542
Papers	660.02	25.0%	153,988
Plastics	181.70	6.9%	42,392
Metals	24.53	0.9%	5,723
Textiles	23.82	0.9%	5,557
Glass	20.81	0.8%	4,855
Wood	9.80	0.4%	2,286
Electronic Waste	4.31	0.2%	1,006
Rubber	2.60	0.1%	607
Total	**2,635.62**	**100.0%**	**614,910**

Table 4 – Waste Material Comparison by Category 2011

Waste Category	Total Audited Waste (kg)	Material Composition (%)	Annual Projected Volume (kg)
Total Residual	1129.2	33.9%	231,418
Total Papers	796.9	24.0%	163,317
Total Organics	711.2	21.4%	145,750
Total Plastics	412.2	12.4%	84,482
Total Glass	119.5	3.6%	24,497
Total Metals	92.6	2.8%	18,974
Total Wood	48.4	1.5%	9,919
Total Textiles	16.7	0.5%	3,422
Total	**3,326.9**	**100.0%**	**681,780**

Other Material

Other Material (Non- Recyclables) materials sent to landfill accounted for 38.5% of your total waste; nearly 236.95 tonnes of Other Material (Non- Recyclables) will be sent to landfill annually. This is compared to 231.41 tonnes of 'Residual' waste identified in the 2011 audit which represented 33.9% of audit waste at the time.

Specifically the Contaminated/ Non-Recyclables category represented 32.3% of all materials identified in the 2014 audited sample. For the purpose of this audit the Contaminated – Non-Recyclables category included but was not limited to materials such as polyfoam containers, foil bags, some soft plastics, waxed paper, mixed material containers and otherwise recyclable materials contaminated with liquids or organic waste.

Organics

University of Victoria generates a significant volume of organic and compostable waste, organic materials sent to landfill accounted for 26.3% of your total waste; nearly 161.54 tonnes of Organics will be sent to landfill annually. Notably, Organics made up 21% of the waste sent to landfill in 2011.

Post-consumer food waste, coffee grounds, plants/ flowers, liquids and compostable containers/ tableware were all identified in the assessment and contributed to the Organics category. All of these materials mentioned could be diverted from landfill through the organics collection program implemented at the facility.

Additionally paper toweling and paper cups are acceptable materials and may also be captured through the campus' organic program. When included with food waste and coffee ground these two materials represented a combined 46.7% of all audited landfill materials. Annually 91,566 kilograms of paper towels were disposed into landfill, making it the most significant paper material contributing 14.9% of all material sent to landfill.

Papers

Paper materials sent to landfill accounted for 25% of your total waste; nearly 153.99 tonnes of paper will be sent to landfill annually. Specifically, paper cups and paper towels account for 20% of the waste sent to landfill, this is compared to 17% in 2011 for these two materials.

The most predominant paper material found in the landfill waste stream was paper towel representing 14.9% of the entire landfill waste stream (or 59.5% of all paper material identified).

Recyclable plastics, tin and glass represent 8.6% of the total waste landfilled in 2014; this is compared to 12% in 2011.

Plastics

Key plastics in the assessment included Polystyrene food packaging which represented 29% of all plastics audited or 2% of all materials overall. LDPE which is most commonly found in plastic bags or packaging and represented 1.3% of all plastics identified overall. While PETE represented 24.3% of all plastics in the waste stream.

Metals

Metals materials sent to landfill accounted for 0.9% of your total waste; nearly 5.72 tonnes of Metals will be sent to landfill annually.

The most common metal material in the audited sample was Aluminum foil representing 65.5% of all metal materials audited. Aluminum F&B cans, aluminum foil and steel cans are all recyclable materials, clearly labeled and easily accessible recycling receptacles are key to ensure that employees, students and visitors can participate.

Textiles

Textiles materials sent to landfill accounted for 0.9% of your total waste; nearly 5.56 tonnes of Textiles will be sent to landfill annually.

This primarily includes assorted clothing; no program currently exists to recycle these items in most areas of the campus.

Glass

Glass materials sent to landfill accounted for 0.8% of your total waste; nearly 4.86 tonnes of Glass material will be sent to landfill annually. Glass materials identified in the landfill sample primarily consisted of non- alcoholic beverage containers, although a large jug and wine bottle were also identified.

Recycling Opportunities

Recycling opportunities represent the largest potential cost savings and landfill diversion opportunity for University of Victoria. While recycling programs are currently in operation, the audit shows that they are not working at their optimal efficiency. It was determined in the 2014 audit, that 85% of the material generated at the facility is recyclable through current recycling programs. This represents a huge opportunity to increase your waste diversion and reduce associated waste removal costs.

The following tables outline the materials captured through the facilities recycling program. The largest increase in recycling volumes was seen in the organics program, from 419.68 tonnes to 784.04 tonnes of material captured in 2014. Other significant impacts on the increase on diversion may relate to the addition of capture programs for E-waste, Mattresses, Drywall, Light Tubes and Batteries.

Table 5 – Recycling Material Comparison 2014

Recycled Materials	Annual Projected Volume (kg)	% of Recycle Materials
Organics	784,040	58.8%
Mixed Paper Totes	223,400	16.7%
Cardboard	85,980	6.4%
Metal	69,170	5.2%
Mixed Beverage Containers Totes	54,420	4.1%
Wood	50,250	3.8%
E-Waste	45,410	3.4%
Building/Reno Material	15,620	1.2%
Mattresses	2,010	0.2%
Drywall	1,340	0.1%
Light Tubes	1,290	0.1%
Batteries	1,130	0.1%
Total	**1,334,060**	**100.0%**

Table 6 – Recycling Material Comparison 2011

Recycled Materials	Annual Projected Volume (kg)	% of Material Recycled
Total Organics	419,680	45.0%
Mixed Paper Totes	203,400	21.8%
Total Corrugated Cardboard (OCC)	123,880	13.3%
Metal	69,460	7.4%
Wood	49,900	5.4%
Mixed Beverage Containers Totes	49,820	5.3%
Concrete	10,540	1.1%
Drywall	4,300	0.5%
Furniture	1,680	0.2%
Total	**932,660**	**100.0%**

Recommendations Overview

Several options have been identified that can help University of Victoria make its operations more sustainable. Each option should be carefully reviewed for operational, financial, social, and strategic fit.

Increase Awareness of Current Recycling Programs

Other Material
Where possible, stakeholders at the campus should look to reduce the amount of these materials brought into the campus through environmentally conscience purchasing decisions.

Organics
To run an effective program, it is recommended that receptacles be placed in back of house food prep areas as well as the front of house consumer areas to target these materials. Employees who work in these areas should be made aware of the program requirements through signage and targeted education to ensure that the program will be successful.

Another option is to place receptacles in the washroom areas throughout the facility specifically for the capture of paper towels.

Paper
Paper towel can be reduced in the waste stream, primarily by providing hand dryers in washrooms. UVIC should review hand dryer options - the payback of capital costs are often seen in reasonable time frames through reduced landfill costs and the reduction in costs of purchasing new towel products.

Plastic
The majority of the plastic materials can be captured for recycling under the current program. Education and promotion is key for students and employees in the facility, so that they are aware of all recyclable materials as some may be less familiar to users.

Metals
Aluminum F&B cans, aluminum foil and steel cans are all recyclable materials, clearly labeled and easily accessible recycling receptacles are key to ensure that employees, students and visitors can participate.

Textiles
Opportunities exist on campus to donate clothing to those in need. Clothing donation boxes associated with the Canadian Diabetes Association – Clothesline Drop box are located in the Residence Area and in the Family Housing area.

Student & Employee Education

There are two critical factors to necessary to ensure that diversion programs are effective. These factors are education and engagement. It is vital to educate everyone on the use and importance of waste diversion. When diversion programs have been effectively implemented, most will utilize the programs. Engagement is the next critical success factor. Motivated people are more likely to participate in diversion programs than those who are uninterested.

Another part of education is visibility. A bin assessment should occur to ensure recycling stations are present and are appropriately labelled.

Incorporate Sustainable School Activities and Events

The following are some examples of campus wide activities involving students, which may improve engagement in environmental programs:

- A student run Environmental Committee and Campus Green Team can take the lead and provide energy and ideas to the campus.
- Waste Free Lunches - Events or specific days can be arranged for students and staff to bring their own lunches in reusable containers.
- Recyclemania - Recyclemania is program is designed to engage students and promote recycling at Colleges and Universities.
- Green Sporting Events - The University may set up green events during well-attended sporting events.

Additional Site Specific Recommendations

The following notes additional items identified during the assessment for further review:

I. Batteries were found in the samples from several generation points, UVIC should look to expand the availability of these receptacles when possible.

II. Work with the custodial staff to ensure that resources are fully used before being replaced, identified in the audit sample were unused toilet paper rolls and hand soap dispenser.

III. The university should use purchasing policy's and vendor/ service provider contracts, to encourage (or mandate when possible) vendors to always provide compostable and recyclable options

IV. UVIC should continue to provide receptacles in areas where they are needed such as in exterior locations based on visual inspections. As well, it is important to maintain constancy in station or receptacle design and in signage.

A good waste diversion program is one that provides the user with an easy understood system for managing their waste materials. A great waste diversion program is one that provides them with the same easy to use system but also helps the user by providing pictorial signage to direct their disposal choice. The best waste diversion program provides all the benefits of a great program and makes the necessary adjustments to continual improve upon the current diversion activities.