



PROVISION COALITION

MAKING FOOD SUSTAINABLY

Food Loss + Waste Reduction & Toolkit Application

Case Study Series



With an emphasis on quality products and excellent service, Speedo Foods & Flavours Inc. (Speedo) delivers exciting flavour designs to the baking

industry. During their expansion to a new production facility, Speedo felt that it was the right time to find ways to reduce food waste costs and their associated solid waste disposal fees. They partnered with Provision Coalition and Enviro-Stewards to assist in delivering an onsite Food Loss + Waste (FLW) assessment that leveraged Provision's online [\(FLW\) Toolkit](#).

The [FLW Toolkit](#)¹ assists food and beverage manufacturers in quantifying avoidable food waste and developing cost effective reduction strategies which can be implemented and measured. It calculates the return on investment in economic, social, and environmental terms to help companies prepare a well-rounded business case. This Toolkit is available at no cost to all food and beverage manufacturers through Provision's online Sustainability Management System. Speedo's assessment identified four opportunities for food loss + waste reduction.

KEY FINDINGS

- An opportunity to reduce 11,489 kg of food loss + waste valued at \$18,569 per year with a payback of less than two years. This includes the value of environmental resource reductions, ingredient costs, as well as inputs at processing.
- Potential annual savings of 300 kWh of electricity, 442 m³ of natural gas, 16 m³ of water, and 16 tonnes of CO₂e²

¹ This Toolkit was developed by Enviro-Stewards and 2cg.

² CO₂e includes emissions from raw materials, production and disposal. Assumptions were made when calculating the emissions from raw materials.



About Speedo

Speedo Foods & Flavours Inc. produces a wide variety of food complements for the baking, beverage, confectionery and dairy industries, including natural and artificial flavourings, pastry fillings, glazes, icings, syrups and beverage bases. A small company with 15 employees, Speedo was originally based out of the Greater Toronto Area. However, they recently moved their two production facilities to a new, larger facility in Cambridge, Ontario to keep up with demand. Speedo also provides solutions for their customers through made-to-order product development.

Food & beverage manufacturers can apply the step-by-step process followed for the FLW assessment at no cost using the [FLW Toolkit](#).

The Food Loss + Waste Assessment Process

Following the methods used in the [FLW Toolkit](#), the food waste assessment began with a full tour of the new processing plant and former fillings facility, from receiving ingredients to final product packaging. The quantity and value of food waste was then determined for each of the production processes followed by a “5 Why” approach to identify root causes of each waste. Possible solutions for each food waste stream were considered, and an implementation plan was developed for selected measures. The business case for each solution was then presented to Speedo.

Food Loss + Waste Assessment & Conservation Opportunities

The utilization of Provision’s [FLW toolkit](#) coupled with the facility assessment identified four opportunities, totaling 11,489 kg of ingredients annually, which are currently being diverted to landfill or discharged to sanitary sewers. In addition to saving the raw ingredient costs, addressing these issues would reduce the amount of BOD sewage charge fees, and improve product quality control, health & safety and environmental impact.

KETTLE & LINE RINSE RECOVERY

In between batches, the kettle and transfer lines are rinsed with water and sent down the drain to maintain quality standards. Capturing the rinse water and using it in the next compatible batch would recover 70% of this product, totaling 8,981 kg, valued at \$14,515, with a payback period of 2.5 months. The annual environmental savings would be 346 m³ of natural gas, 234 kWh of electricity, 14 tonnes of CO₂e, and 13 m³ of water.

INSTALL MORE EFFICIENT SPRAY BALLS IN KETTLE

The spray balls in the kettle help to remove product from the sides and reduce waste, but are not using the latest technology. Replacing the existing spray balls with more efficient, rotary spray heads would reduce product loss by 10%, totaling 1,283 kg of product annually, valued at \$2,074, with a payback period of 10 months. The annual environmental savings would be 49 m³ of natural gas, 33 kWh of electricity, 2 tonnes of CO₂e, and 2 m³ of water.

The Pareto Principle – The Law of the Vital Few

80% of savings are typically associated with only 20% of the processes that produce waste. Focusing on these large contributors of waste will provide the highest and fastest potential paybacks.

Food Loss + Waste is a Global Issue

There are large environmental costs associated with food loss and waste, as 4% of the total carbon pollutants in Canada are generated by organic material in landfills. Many jurisdictions (including Ontario) have banned or are exploring a disposal ban for organic waste. Therefore, Canadian food and beverage manufacturers must continue to optimize operations thus reducing organic waste, costs and improving their overall environmental impact.

Environmental Resource Conservation Opportunities

-  Emissions from two passenger vehicles driving from Toronto to Thunder Bay
-  Electricity saved from switching 10 incandescent lamps to LEDs
-  Energy to power 3.4 homes for one year
-  Water to fill 131 bathtubs

INSTALL A PIGGING SYSTEM

Installing a pigging system is an alternative solution to the issue of product loss during the rinsing process. A pigging system would have a greater impact than recovering the kettle and line rinse, but at a greater capital cost. It could potentially recover 90% of product remaining in the transfer lines, equivalent to 4,545 kg or \$7,345. This solution would enable tracking of product movements, sequencing of similar SKU's and also improves the Clean-in-Place (CIP) process.

TAKING SMALLER QUALITY CONTROL SAMPLES

Currently, 500 mL samples are taken from each batch for quality control purposes. At no capital cost, reducing the sample size to 250 mL would generate a savings of 215 kg of product, valued at \$348 annually. The annual environmental savings would be 6 kWh of electricity and 8 m³ of natural gas. The GHG and water savings would be insignificant.

“It was great to critically look at what we’re doing and where to reduce food loss and waste. The FLW Toolkit was very interesting and informative”

ANGELA BELL / PRESIDENT & CEO

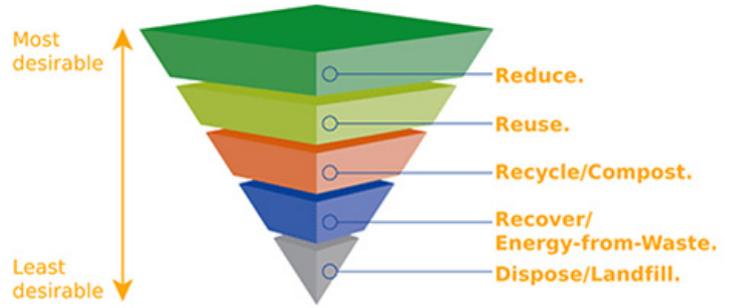


Fig. 1.1 Reduction in food waste at its source will result in the lowest amount of required disposal and associated costs. Source: PIWHA

Value Chain: Recognizing the Full Value of Food Waste

The assumed cost of food waste is often only associated with the removal and destruction of waste, and therefore the true cost of waste is greatly underestimated. Retail grade products inherently have the highest possible value as the greatest amount of investment has been added to them in the form of ingredients, cost of labour, cost of utilities, cost of packaging, marketing, and distribution. Therefore, food waste must be calculated as the cost of disposal plus the total value that was added to a product before disposal (refer to Figure 1.1).

Since redirecting waste to higher valued diversions does not capture much of the lost revenue of the ingredients and processing invested in the product, real change and savings are only achieved when waste is identified and reduced altogether.

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Provision Coalition is Canada's premier food and beverage manufacturer sustainability organization. At Provision, the latest sustainability advances, resources and solutions are shared with food and beverage businesses across the country. With the organization's 16 provincial and national agri-food association members, Provision has committed to reducing the food and beverage manufacturing sector's environmental footprint, improving employment culture and strengthening business competitiveness. To learn more visit www.provisioncoalition.com.

FOR MORE INFORMATION CONTACT

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Check out other case studies in our FLW series including [Campbell Company of Canada](#), where \$706,000 in savings opportunities were identified, [Byblos Bakery](#), where \$207,000 in resource savings were identified and [Calgary Italian Bakery, Ltd.](#), with \$194,000 of identified opportunities.

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