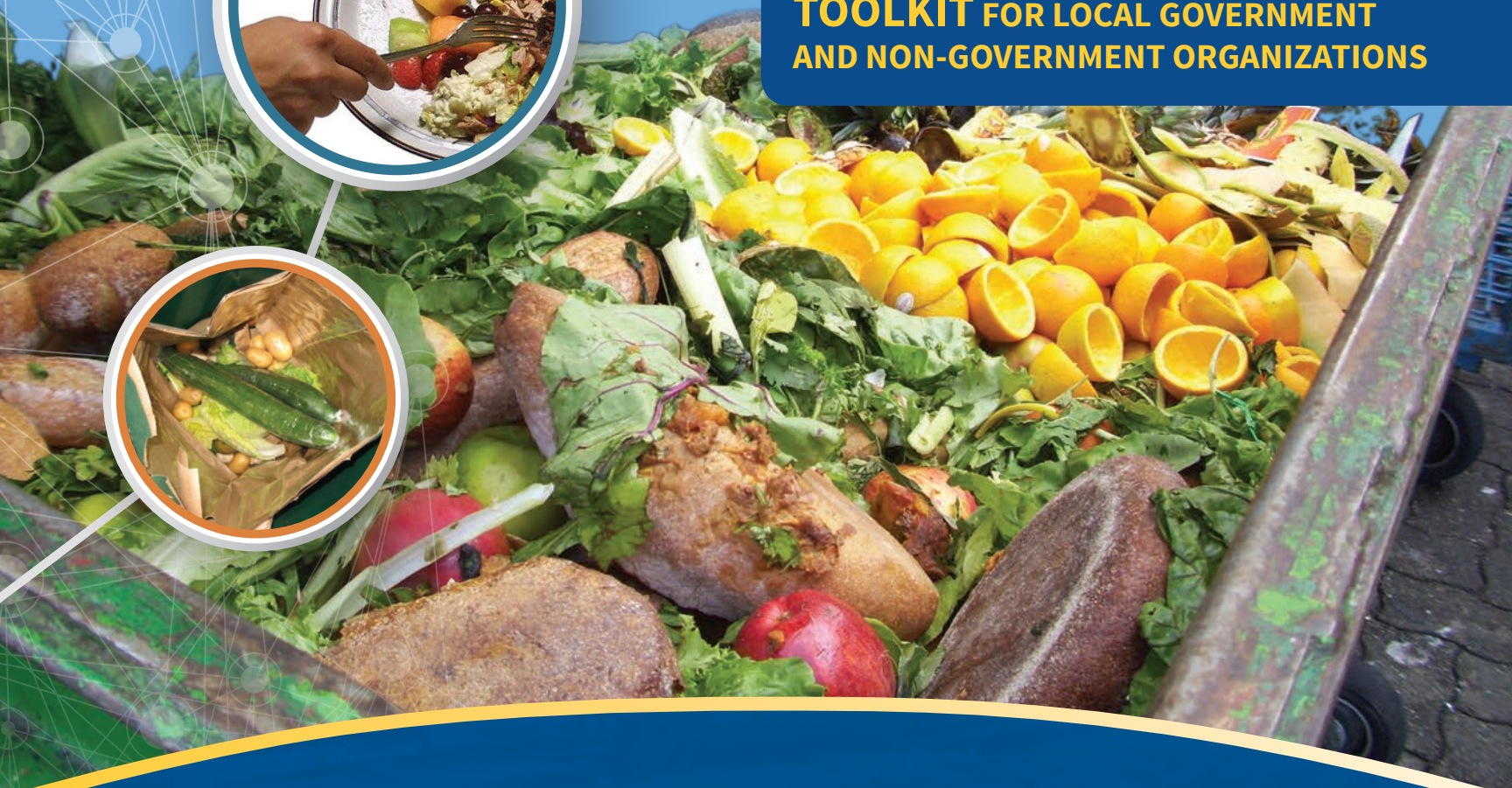




Ministry of
Environment

RESIDENTIAL FOOD WASTE PREVENTION

TOOLKIT FOR LOCAL GOVERNMENT
AND NON-GOVERNMENT ORGANIZATIONS



TETRA TECH

OQM | Organizational Quality
Management Program

ISSUED FOR USE
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This report was prepared for the British Columbia Ministry of Environment

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EXECUTIVE SUMMARY

Tetra Tech EBA Inc. (Tetra Tech) was retained by the British Columbia Ministry of Environment (Ministry) to review food waste prevention programs and develop a post-consumer residential food waste prevention toolkit. The toolkit is a resource that helps local governments or non-governmental organizations address the issue of preventable post-consumer residential food waste. This report describes different program models and their components, and provides guidance for identifying suitable approaches, based on a community's size, capacity, and priorities.

Food waste reduction or prevention is a strategy for preventing food waste from being created in the first place. Most people don't realize how much food they throw away every day. Uneaten leftovers and spoiled food make up over 25% of the waste discarded from a household. It is estimated that every person in the province of British Columbia (BC) (through the residential curbside collection program) throws away 100 kg of preventable food waste each year.

Community interest in food waste prevention is growing in BC as more community organizations are beginning to educate both businesses and the public on the many benefits to food waste prevention/reduction. Food waste prevention has become a topic of interest as it represents a significant opportunity to reduce environmental impacts that are caused by western civilization's food consumption habits. Food waste prevention has social, environmental, and economic benefits for citizens and municipalities.

This study was undertaken to help BC's local governments understand the importance and value of food waste prevention programs. A business case shows how these programs would affect sustainability measures such as social, environmental, and economic factors outlined in Table A. Food waste prevention programs and programming options were presented in a manner that shows how local governments can develop, implement, and adapt programs that would meet their needs, objectives, and/or available resources.

Table A: Sustainability Benefits for Food Waste Prevention/Reduction Programs

Social	Environmental	Economic
Residents and customers care about food waste	Reduce environmental footprint associated with growing, processing, and distribution of excess food (water, fertilizer, land, fuel, etc.)	Less waste to dispose means reduced waste management costs including avoided processing costs and lower collection costs
Increased partnerships with community and civil society organizations through joint advocacy efforts to reduce food waste	Diverting food waste from disposal conserves landfill space or infrastructure capacity, and helps to reduce greenhouse gas emissions both from hauling and from methane production in landfills	Less need for additional processing infrastructure or disposal capacity due to the reduction in the total amount of garbage and organic material generated
Increased donation of food to help food security and supply of food for people who need food	Helps meet community commitments to greenhouse gas (GHG) reduction targets in Official Community Plans, Regional Growth Strategies, and Climate Action Charter ¹	Reduced consumer cost of buying food that is ultimately never consumed and wasted
	Diverting food waste from composting conserves processing space and capacity, and reduces GHG associated with hauling and processing of organics	

¹ Reducing food waste can also make a significant contribution to tackling greenhouse gases. It has been estimated that 7% of all global GHG emissions, or 3.3 billion tonnes CO₂ equivalent (CO₂eq) per year, are due to preventable food waste (WRAP, 2015).

Reducing food waste decreases the amount of food waste that needs to be managed. Management costs include hauling costs, landfill costs (where a large portion is often still disposed), and organics process costs. Food waste reduction represents a significant opportunity to reduce the total quantity of waste that needs to be managed thereby reducing the municipality's associated waste management costs.

Two financial case studies were evaluated. Both programs demonstrated a payback in disposal cost savings between \$3.40 and \$5.50 for every \$1.00 invested in the food waste prevention program. The analysis is summarized in Table B. In addition, for every tonne of food waste that is prevented there are savings to residents of approximately \$5,000 by not need to purchase food and drink that is ultimately wasted, and 4 tonnes of GHG reductions (UNEP, 2014).

Table B: Program Payback and Savings per Household

	Herefordshire and Worcestershire, UK	West London Boroughs
Number Of Households	312,545	601,000
Program Costs		
Food Waste Prevention Program Cost	\$171,900	\$321,782
Program Implementation Cost/Household	\$0.55	\$0.54
Reductions and Savings		
Estimated Tonnes Reduced/Year	2,340	5,250
Tipping Fees (\$/Tonne)	\$103	\$138
Gross Savings In Disposal Costs	\$241,020	\$724,500
Disposal Savings Over 1 Year/Household	\$0.77	\$1.21
Disposal Savings Over 3 Years/Household	\$1.85	\$2.94
Return on Investment¹		
Three Year Payback	\$3.40 for every \$1.00 spent	\$5.50 for every \$1.00 spent

¹ In addition, there are approximately \$5,000 in savings by residents from preventing food waste and 4 tonnes of GHG for every tonne of food waste that is prevented (UNEP, 2014).

Typical Components for a Food Waste Prevention Program

Each municipality is different and needs to consider developing a pilot or program that meets its needs and the needs of the residents. Key considerations which need to be taken into account when tailoring a program include, but are not limited to:

- Drivers, goals, and objectives;
- Resources available: staff time, technical support (e.g., marketing and program development), and budget;
- Timeline for planning and implementation;
- Target populations: number of residents and demographics; and
- Partnership opportunities.

Food waste prevention programs typically consist of the following elements and tools. These broadly fit into the following four categories:

1. Conventional media awareness campaigns, e.g., radio adverts, posters, and local newspaper articles;
2. Online media awareness campaigns, e.g., websites and use of social media;
3. Behaviour change strategies and tools, e.g., meal planners, food waste challenges, and storage tips; and
4. Community outreach events, e.g., food waste workshops, farmers markets, and local film screenings.

A program scan was completed to identify relevant programs/campaigns that have a residential food waste prevention component, and that have tested program tools that are relevant to implementing residential food waste prevention programs in BC. The full list of 22 programs identified can be found in Appendix A. These programs were ranked from high to low in terms of having the most useful materials, data, and case studies for developing a municipal toolkit that is applicable to BC communities. The four programs identified as being most relevant to mid-sized municipalities in BC are listed in Table C. Many of the other programs identified in the scan have drawn considerably on these programs in developing their own resources and advertising.

Table C: Most Relevant Programs for Mid-Sized BC Communities

Name	Country	Key Elements
Food: Too Good to Waste	U.S.	<ul style="list-style-type: none"> Developed by the U.S. Environmental Protection Agency (EPA) Provides resources for reducing food waste at home which can be downloaded Trialed by a number of U.S. municipalities
Love Food Hate Waste (LFHW)	UK	<ul style="list-style-type: none"> Developed by WRAP Raises awareness and guides people to take small practical steps Provides online resources for individuals/communities A number of municipalities have rolled out LFHW campaigns
Think Eat Save: Reduce Your Food-Print	Germany	<ul style="list-style-type: none"> Developed by the Save Food Partnership Aims to act as a platform for exchange of ideas and projects Website provides news and resources including graphics for a campaign package and a guide for rolling out a campaign
Food-Print Project*	Canada (BC)	<ul style="list-style-type: none"> Developed by Farm Folk City Folk Focuses efforts on assessing how much food waste Vancouverites produce and how to reduce that waste at home Provides resources such as shopping tips, food storage, etc.

This report provides the rationale and a summary of tools for BC municipalities to make a business case for food waste reduction programs. The tools and resources summarized within this report are intended to create opportunities for BC municipalities to begin to implement food waste reduction programs and demonstrate leadership on the issue.

We are seeking feedback on the tools and information presented in the report. Please, after looking at this toolkit, take the time to email the Ministry at envprotdiv@Victoria1.gov.bc.ca to provide comment on the usefulness of the information presented.

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Appendix A	Food Waste Reduction Program Scan
Appendix B	Resource Toolkit Table
Appendix C	Sample Resources
Appendix D	Detailed Case Studies

ACRONYMS & TERMINOLOGY

Acronym	Definition
BC	British Columbia
CBSM	Community Based Social Marketing
CFWR	Committed Food Waste Reducers
EPA	Environmental Protection Agency
FAO	Food and Agricultural Organization of the United
FTE	Full-time Equivalent
GDP	Gross Domestic Product
GHG	Greenhouse Gas
kg	Kilogram
L	Litre
LFHW	Love Food Hate Waste
MF	Multi-Family
Ministry	British Columbia Ministry of Environment
MSW	Municipal Solid Waste
SF	Single-Family
SSO	Source Separated Organics
UK	United Kingdom
UNEP	United Nations Environment Program
U.S.	United States
VCM	Value Chain Management
WRAP	Waste & Resources Action Programme

Terminology	Definition
Avoidable Food Waste or Preventable Food Waste or Wasted Food	Food that was purchased to eat but has since spoiled, or food that was prepped but was not eaten and then thrown away. The vast majority of avoidable food is composed of material that was at some point prior to disposal, edible, even though a proportion is not edible at the time of disposal due to deterioration (e.g., gone mouldy).
Possibly Avoidable Food Waste	Food and drink that some people eat and others do not (e.g., apple and potato skins). As with 'avoidable' waste, 'possibly avoidable' waste is composed of material that was, at some point prior to disposal, edible.
Post-consumer waste	Waste produced by the end consumer of a material stream. Commonly, it is simply the garbage that individuals routinely discard.
Residential waste	Solid waste produced by all residences and includes waste that is picked up by the municipality at the curbside (either using its own staff or through contracting firms), and waste from residential sources that is self-hauled to depots, transfer stations and disposal facilities.
Unavoidable or Non-Edible Food Waste	Waste arising from food and drink preparation or consumption that is not, and has not been, edible under normal circumstances. This includes egg shells, banana peels, pineapple skin, apple cores, meat bones, tea bags, and coffee grounds.

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech) was retained by the British Columbia Ministry of Environment (Ministry) to review food waste prevention programs and develop a post-consumer residential food waste prevention toolkit. The toolkit is a resource that helps local governments or non-governmental organizations address the issue of preventable post-consumer residential food waste. This report describes different program models and their components, and provides guidance for identifying suitable approaches, based on a community's size, capacity, and priorities.

1.1 Background

Food waste reduction (or prevention) focuses on preventing food waste from being created in the first place. Most people do not realize how much food they throw away. Uneaten leftovers and spoiled produce make up over 25% of the total waste discarded from households.

In 2014, Value Chain Management International Inc. reported that the cost of Canada's annual preventable food waste was over \$31 billion in 2014. This is equivalent to \$880 per person per year in Canada. Fifty percent of that food waste occurs in households where food that has been purchased is being discarded without being eaten. For a family of four that is equivalent to throwing away \$1,760 worth of food and beverage purchased annually.

Consumer behaviour is one of the root causes for edible food being wasted or discarded. This is due primarily to aesthetic quality standards, for example the rejection of food items that are blemished or not perfectly shaped. Other typical consumer habits that lead to food waste include inadequate meal planning (cooking too much), over purchasing, and improper storage of fresh food (particularly fruits and vegetables). Another factor effecting excessive food waste is consumer misinformation regarding shelf-life. 'Best-before-dates' are commonly interpreted as 'expiry dates' leading to a lack of understanding about the quality and safety of unopened food products. An external barrier beyond the control of the consumer includes industry trends where food is often sold in large package and portion sizes. Larger portion sizes are attractive as they have a lower cost per portion; however this can lead to food waste if all the food is not consumed.

There are a number of international programs that address the issue of preventable post-consumer residential food waste. Large notable food waste prevention programs include:

- *Food Too Good to Waste* (US Environmental Protection Agency [EPA]);
- *Love Food Hate Waste* (LFHW) (WRAP, UK);
- *Think Eat Save* (United Nations Environment Program [UNEP]); and
- *Stop Wasting Food* (Stop Wasting Food, Denmark).

Food waste prevention programs and tools have also been adopted and developed in British Columbia (BC) by government and non-government based organizations such as Farm Folk City Folk, the City of Vancouver, and Metro Vancouver. The Ministry has been working with the U.S. EPA, using the "Food: Too Good to Waste" platform, to promote food waste prevention. This program has been adopted by Washington State and then adapted for a local context. Materials that have been developed are being used at the County and Local Government level to test scalable models to foster food consumption behaviours that reduce food waste.

1.2 Objective

The objective of this study is to provide BC's local governments with an understanding of the importance and value of food waste prevention programs, and to provide impetus and support for the development of local programs. This study includes the following components:

- High level review of organics management practices at the national and provincial level;
- Business case for a typical mid-sized BC community, which assesses how these programs would positively affect social, environmental, and economic sustainability measures;
- Review and evaluation of key food waste prevention programs and programming options to help local governments develop programs that meet their needs, objectives, and availability of resources; and
- Resource toolkit which highlights the most appropriate strategies and tools from the programs reviewed, to support local governments to adapt available resources and implement a food waste prevention program.

2.0 ORGANICS MANAGEMENT STRATEGY AND HIERARCHY

Many communities in BC and around the world have adopted zero waste as a goal or guiding principle in their solid waste management framework. Zero waste focuses on reducing waste and reusing materials prior to recycling and composting/digesting. Food waste prevention programming fits within this zero waste goal. In May 2013, the Ministry released a draft Zero Waste Business Case (completed by Innes Hood Consulting, 2013), which found that moving towards Zero Waste in BC will reduce costs, generate new gross domestic product, and create new jobs.

2.1 National Perspective

One third of the food produced for human consumption is wasted globally (Food and Agriculture Organization of the United Nations [FAO], 2013). When food is wasted, both food and money are lost. Energy, water, and other resources that were used to produce the food are also lost. Food waste is lost along the various parts of the supply chain as illustrated in Figure 1.

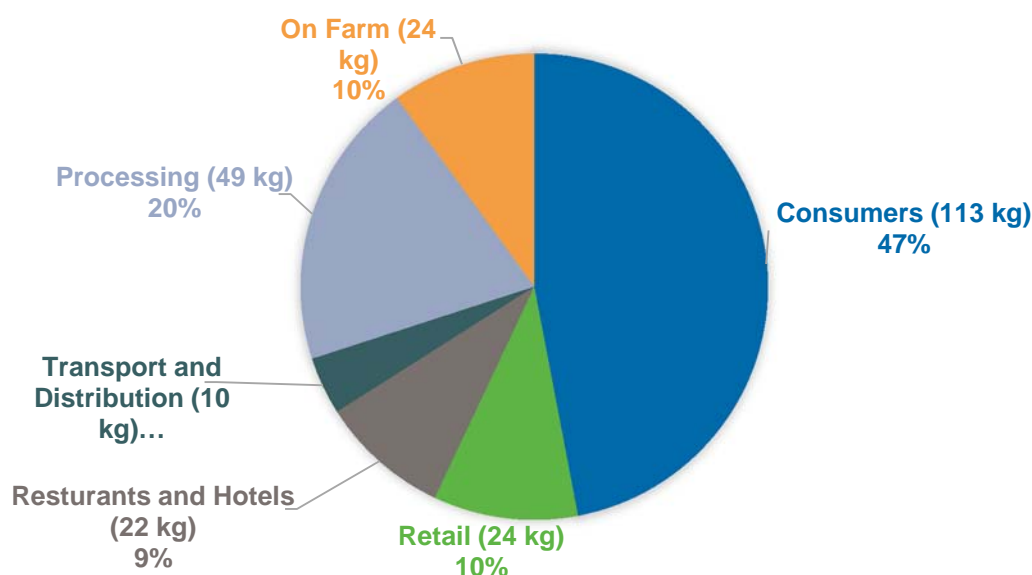


Figure 1: Where Food Waste Occurs in Canada (Adapted from VCM, 2014)

The largest portion—almost 50% of all total food wastage—occurs at the post-consumer stage (Value Chain Management Centre, 2012). This is equivalent to 90–125 kg per person of edible food disposed annually, which ends up in the garbage and/or organic waste streams. These waste streams are typically managed and paid for through municipal services.

2.2 Provincial Perspective

The provincial waste management strategy is based on the “5Rs” hierarchy of reduce, reuse, recycle, recovery, and residuals management as shown in Figure 2. This hierarchy takes into consideration a ranking of the most environmentally sound strategies for municipal solid waste management. The hierarchy places the greatest emphasis on reducing, reusing, and recycling wastes. Reducing the overall quantity of waste generated is the top priority in a zero waste approach.



Figure 2: Solid Waste Prevention Hierarchy (British Columbia Ministry)

In BC, solid waste management planning aims for sustainable waste management, beginning with overarching principles that specify waste reduction as an important priority (Schilt, 2012). Food waste prevention represents a logical and achievable initiative that should reduce both garbage and organics generation in the residential sector (WRAP, 2015). The Ministry places food waste reduction at the top of the waste prevention hierarchy and sees it as the most sustainable strategy towards achieving zero waste. Food waste prevention can result in financial and environmental benefits since it:

- Saves on resources for producing the food products; and
- Saves on the resources for collecting, hauling and processing.

2.3 Food Waste Prevention Hierarchies

Food waste prevention hierarchies have been developed by multiple organizations and are generally presented in a similar manner to the waste prevention hierarchy in Figure 2. Food waste reduction focuses on opportunities to reduce the total quantity of food waste generated. Food waste diversion includes using edible food to feed other people or animals. The bottom half of the pyramid deals with options for managing the unavoidable organic waste through biogas production and composting.

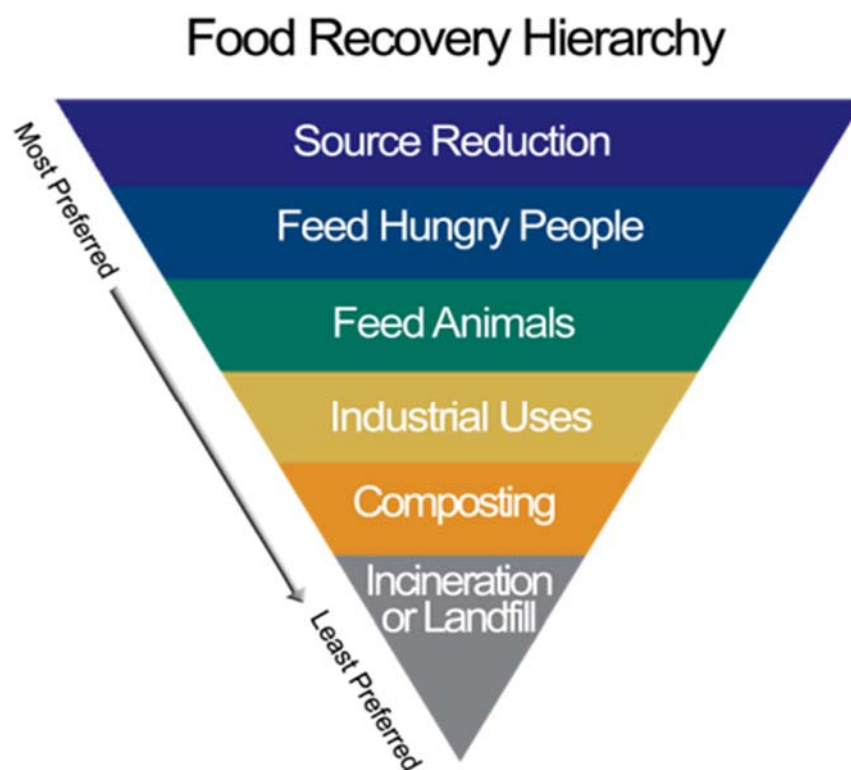


Figure 3: U.S. EPA's Food Waste Recovery Hierarchy

3.0 BUSINESS CASE FOR FOOD WASTE PREVENTION

Residential food waste is a result of more food being purchased than a household can consume. Reducing food waste can significantly lower costs to consumers, and reduce the total quantity of waste that needs to be managed by municipalities. The following business case outlines savings that can be realized by municipalities in avoiding disposal costs from having residents reduce the amount of food they discard.

3.1 Considerations for Preventing Food Waste

Combatting edible food waste has been a government public awareness issue since the first and second world wars. Preventing edible food waste was seen as an important measure to ensure resources were properly rationed and utilized to their fullest potential.

Due to social, economic, and environmental pressures, food waste prevention has become a focus area in many governments around the world. Examples of food waste prevention targets are listed below:

- The “Roadmap to a Resource Efficient Europe” sets out a 50% food waste reduction target for 2020 and a 50% prevention target on avoidable food waste by 2025. This was proposed by the European Parliament early in 2012.
- Municipalities in the UK have set avoidable food waste reduction targets of 20% over a period of 3 years, using the LFHW campaign.
- In Ontario, the Region of York has set a food waste reduction target of 15% (decreasing disposal and processing rates by 13,845 tonnes per year) by 2031 in their solid waste management plan.

Community interest in food waste reduction is growing in BC as more community organizations are beginning to educate both businesses and public on the many benefits to food waste reduction/prevention. News media, such as the Vancouver Sun, have reported on the issue and have calculated that BC residents spend an average of \$43.90 per week on produce, and throw away 11% of their purchases (Vancouver Sun, 2013). More recently, a 2014 documentary created by Vancouver filmmakers called “*Just Eat it: A Food Waste Story*”, has become a hit, airing on many National television networks in Canada and the United States. The documentary, which focuses on the amount of food waste and food rescue in North America, has since won many awards including the Vancouver International Film Fest Impact Award and the Must See BC winner, Emerging Canadian Filmmaker & Top 20 Audience Choice at Hot Docs.

Food waste prevention has become an important topic as it represents a significant opportunity to reduce environmental impacts that are caused by food consumption habits. There are many benefits that result from food waste prevention/reduction including social, environmental, and economic considerations that are outlined in Table 1.

Table 1: Sustainability Benefits for Food Waste Prevention/Reduction Programs

Social (Community / Citizen Engagement)	Environmental	Economic
Residents and customers care about food waste	Reduce environmental footprint associated with growing, processing, and distribution of excess food (water, fertilizer, land, fuel, etc.)	Less waste to dispose means reduced waste management costs including avoided processing costs and lower collection costs
Increased partnerships with community and civil society organizations through joint advocacy efforts to reduce food waste	Diverting food waste from disposal conserves limited landfill space or infrastructure capacity, and helps to reduce greenhouse gas emissions both from hauling and from methane production in landfills	Less need for additional processing infrastructure or disposal capacity due to the reduction in the total amount of garbage and organic material generated
Increased donation of food to help food security and supply of food for people who need food	Helps meet community commitments to GHG reduction targets in Official Community Plans and Regional Growth Strategies, and Climate Action Charters ¹	Reduced consumer cost of buying food that is ultimately never consumed and wasted
	Diverting food waste from composting conserves processing space and capacity, and reduces GHG associated with hauling and processing of organics	

¹ Reducing food waste can also make a significant contribution to tackling greenhouse gases. It has been estimated that 7% of all global GHG emissions, or 3.3 billion tonnes CO₂ equivalent per year, are due to preventable food waste (WRAP, 2015).

3.2 Examples of Financial Benefits Recognized in the UK

Two financial case studies were conducted by WRAP for the LFHW campaign implemented by various local authorities in the UK. The financial review was converted to Canadian Dollars and is presented in Table 2. Both programs demonstrated a payback in disposal cost savings between \$3.40 and \$5.50 for every \$1.00 invested in the food waste prevention program.

Case Study #1

Herefordshire and Worcestershire spent \$0.55 per household on their food waste prevention program, and after 3 years achieved an estimated gross savings of \$1.85 per household, for a return on investment of \$3.40 for every \$1.00 spent. This is the savings for only the diverted tonnage; there would also be associated savings in hauling, and residents would also save money in throwing out less purchased food. A summary of the analysis for their calculations is provided in the following section 3.2.1.

Case Study #2

West London Boroughs tracked the financial implications of implementing the LFHW campaign from October 2012 to March 2013. They attribute a decrease in total avoidable food waste of 14% to the campaign. In weight terms, total food waste decreased from 2.6 kg per household per week pre-campaign to 2.2 kg post-campaign (UNEP, 2014). This equates to a total decrease of 5,250 tonnes per year in avoidable food waste. The total savings showed that for every \$1.00 invested, there was up to \$5.50 in savings in avoided costs. In addition, this equates to residents saving an estimated \$26 million by not wasting good food and drink, and 20,000 tonnes of prevented GHGs projected over a 3 year period (UNEP, 2014).

Table 2: Program Payback and Savings per Household

	Herefordshire and Worcestershire, UK	West London Boroughs
Number Of Households	312,545	601,000
Program Costs		
Food Waste Prevention Program Cost	\$171,900	\$321,782
Program Implementation Cost/Household	\$0.55	\$0.54
Reductions and Savings		
Estimated Tonnes Reduced/Year	2,340	5,250
Disposal Cost (/Tonne)	\$103	\$138
Gross Savings In Disposal Costs	\$241,020	\$724,500
Disposal Savings Over 1 Year/Household	\$0.77	\$1.21
Disposal Savings Over 3 Years/Household	\$1.85	\$2.94
Return on Investment		
Three Year Payback	\$3.40 for every \$1.00 spent	\$5.50 for every \$1.00 spent

A copy of the detailed case studies summarized above is included in Appendix D.

3.2.1 Financial Review: Herefordshire and Worcestershire UK

The first program review was completed for Herefordshire and Worcestershire UK. The program was calculated to prevent an estimated 2,340 tonnes of food waste during the 12 month campaign.

It was estimated that after the initial campaign, awareness and participation in food waste reducing behaviours would drop by 20% each year, meaning that less and less food waste diversion would be attributable to the campaign without continued effort put forth by the municipalities to run the campaign. In other words, the initial campaign's effects carry over into subsequent years but are weaker. In this case, the accumulated prevention over the first 3 years was a total of 5,616 tonnes. This data is summarized in Table 3.

The overall initial investment in the program was \$171,900 in year one. Therefore the cost per tonne (prevented) to run the program was \$73/tonne in the first year of the program. The cost to landfill was \$103/tonne during the time of the program.

As the program effects carried over into subsequent years, the campaign continued to prevent waste from being created, and the total cost per tonne (prevented) to run the program decreased to \$31/tonne based on the tonnage of 5,616 diverted over 3 years. This is a significantly lower cost than if this waste was created and needed to be disposed of at \$103/tonne. The estimated net cost savings over a 3 year period was estimated to be over \$400,000.

The cost to run the food waste prevention program covers the upfront costs in the first year, and becomes even more attractive as the cost/tonne decreases over time due to the continued diversion year after year.

Table 3: Three Year Savings Herefordshire and Worcestershire UK (Adapted from WRAP, 2010)

	2008/09 (Year 0)	2009/10 (Year 1)	2010/11 (Year 2)
Estimated Tonnes Reduced	2,340	1,872	1,404
Cost of Disposal to Landfill/Tonne	\$103	\$103	\$103
Gross Savings in Disposal Costs	\$241,020	\$192,816	\$144,612
Initial Investment (Campaign Cost)	\$171,900	\$0	\$0
Net Disposal Saving	\$69,120	\$192,816	\$144,612
Net Disposal Saving over 3 Years	-	-	\$406,548

3.3 Preventable Food Waste Disposed in BC

In 2012, the per capita disposal rate for all types of garbage in BC was 570 kg/capita. The residential (household) garbage made up approximately 44% of this total, or 250 kg/capita (the remainder is made up of industrial, commercial, institutional, construction renovation, and demolition waste) (BC Stats, 2012). Food waste and organics are the largest portion of residential garbage, representing up to 40% of the weight. Due to the large amount of organics in the waste stream, many regional districts and municipalities have focused on implementing source separated organics (SSO) programs to divert organics from disposal. As a result of these initiatives, the overall quantity of food scraps in the garbage has been decreasing as these materials are being diverted from the garbage to the organic waste stream.

Currently over 64% of residents in the province are part of region districts or municipalities that have started collecting SSO and have banned organic waste from landfills. It is estimated from SSO curbside collection data in 2014 that the residential food scraps diversion programs are collecting approximately 75 kg/capita of organics.

To quantify the amount of avoidable food waste in BC, waste composition studies were conducted by the Ministry in 2015. These studies looked at the composition of residential garbage and curbside organics and separated out the preventable food waste portion. It was determined that 25% of the garbage is classified as preventable food waste. Considering the total organics portion of garbage is around 40%, this means that around 70% of the organics in the garbage is preventable food waste.

For residents with a curbside organics program, it was also determined that 50% of the organics in the curbside organics program were classified as preventable food waste. When households with and without curbside organic programs were compared, it was determined that both types of services resulted in the same amount of preventable food waste being disposed. The households with organics collection had significantly less organics in the garbage as this material was found in the green bin. However, when the amounts of preventable food waste from the garbage and curbside organics program was added together, it was found to be the same as households that only have curbside garbage collection or put all of their organics into the garbage. Regardless of whether edible food is being thrown away into the garbage or the organics stream, the total amount of preventable food waste discarded per person is similar.

Table 4 summarizes estimated preventable food waste in BC. The quantities presented in Table 4 are an average combining homes that have curbside SSO programs, and those that only have garbage collection. It is estimated that every person in the province through the residential curbside collection program is throwing away 100 kg of preventable food waste each year.

Table 4: Quantity of Preventable Food Waste from the Residential Sector Generated in BC

	Units (per year)	Residential Curbside Garbage	Residential Curbside Food Scraps	Total
Total Weight Disposed Per Year (Residential BC Average)	(kg/capita)	250	75	325
% Preventable Food Waste	%	25%	50%	–
Total Weight of Residential Preventable Food Waste	(kg/capita)	63	38	100

3.4 Financial Benefits of Food Waste Prevention

Reducing food waste means less waste being generated that needs to be managed. Management costs include hauling costs, the landfill costs (where a large portion is often still disposed), and organics processing costs. Food waste prevention represents a significant opportunity to reduce the total quantity of waste that needs to be managed, processed and marketed. Table 5 outlines the potential cost avoidance for a BC community that can arise from implementing a food waste prevention/reduction program that achieves an overall food waste reduction of 10%.

Table 5: Potential BC Municipal Cost Savings from Residential Food Waste Reduction

	Community A	Community B
Number of Households	5,000	10,000
Program Costs		
Estimated Food Waste Prevention Program Cost	\$10,000	\$20,000
Program Implementation Cost/Household	\$2.00	\$2.00
Reductions and Savings¹		
Estimated Tonnes Reduced/Year	125	250
Disposal Cost/Tonne	\$90	\$90
Gross Savings in Disposal Costs	\$11,250	\$22,500
Disposal Savings Over 1 Year/Household	\$2.25	\$2.25
Disposal Savings Over 3 Years/Household	\$5.49	\$5.49
Return on Investment²		
Three Year Payback	\$2.75 for every \$1.00 spent	\$2.75 for every \$1.00 spent

¹ Average household size in BC was 2.5 persons in 2011.

² In addition, there are approximately \$5,000 in savings by residents by not wasting good food and drink and 4 tonnes of GHGs for every tonne of food waste that is prevented (UNEP, 2014).

A program run in a BC community, which reduces avoidable food waste by 10%, would see a 10.0 kg/capita or 25.0 kg/household reduction in the total quantity of food waste that needs to be managed for every household in the program. This represents a potential return on investment and disposal cost savings of \$2.75 for every \$1.00 spent on a food waste prevention program.

4.0 FOOD WASTE PREVENTION PROGRAMMING OPTIONS

A broad range of food waste reduction programs are currently being rolled out at the various government levels in North America and around the world. In general, these programs have been developed by non-profits or national partnerships, driven by the environmental benefits of reducing food waste. Where these programs have been utilized by municipalities as the basis of residential food waste prevention programs, the drivers have been primarily economic (lower waste management costs and savings for lower income residents) and environmental (meeting provincial/national environmental targets).

4.1 Program Review

A program scan was completed to identify relevant programs/campaigns that have a residential food waste prevention component, and that have tested program tools that are relevant to implementing residential food waste prevention programs in BC. The full list of 22 programs identified can be found in Appendix A. These programs were ranked from high to low in terms of having the most useful materials, data, and case studies for developing a municipal toolkit that is applicable to BC communities. The four programs were identified as being most relevant to mid-sized municipalities in BC are listed in Table 6 below. Many of the other programs identified in the scan have drawn considerably on these programs in developing their own resources and advertising.

Table 6: Most Relevant Programs for Mid-sized BC Communities

Name	Country	Key Elements
Food: Too Good to Waste	U.S.	<ul style="list-style-type: none"> Developed by the U.S. EPA Provides resources for reducing food waste at home which can be downloaded Tried by a number of U.S. municipalities
Love Food Hate Waste	UK	<ul style="list-style-type: none"> Developed by WRAP Raises awareness and guides people to take small practical steps Provides online resources for individuals/communities A number of municipalities have rolled out LFHW campaigns.
Think Eat Save: Reduce Your Food-Print	Germany	<ul style="list-style-type: none"> Developed by the Save Food Partnership Aims to act as a platform for exchange of ideas and projects Website provides news and resources including graphics for a campaign package and a guide for rolling out a campaign
Food-Print Project*	Canada (BC)	<ul style="list-style-type: none"> Developed by Farm Folk City Folk Focuses efforts on assessing how much food waste Vancouverites produce and how to reduce that waste at home Provides resources such as shopping tips, food storage, etc.


* A detailed review and case-study were not developed for the Food-Print Project since it has not been rolled out by other municipalities. However, a number of its online tools have been included in section 4.3

The first three—which are the most comprehensive—are being run by national level organizations such as the U.S. EPA and WRAP, but have been developed to assist local governments, non-profit organizations, schools, and businesses in running food waste reduction programs. Local governments are the primary users of these campaigns, adapting materials and resources for residential food waste programs.

Tables 7 through 9 below provide a review of the most relevant three programs. The review was conducted through the lens of a municipal government, primarily focusing on tools/resources available for downloading, and

the resources required to implement a similar pilot or program. Case studies of municipalities that have implemented these programs are also provided, although the available information in some cases is limited.

Table 7: Program Overview Food: Too Good to Waste

Title	Description
	<p>Website: http://your.kingcounty.gov/solidwaste/wasteprevention/challenge.asp</p> <p>Implementation Guide: http://www.westcoastclimateforum.com/sites/westcoastclimateforum/files/related_documents/02_ToolKit_Implementation_Guide_for_the_Good_Too_Good_to_Waste_Pilot.pdf</p>
Program Overview	<ul style="list-style-type: none"> Community-based social marketing (CBSM) campaign aimed at reducing food waste from households Focus on assisting households to make small shifts in how they shop, prepare, and store food Provides a toolkit and guide for governments and organizations considering implementing a Food: Too Good to Waste pilot or program Toolkit provides a vetted and researched model which enables efficient use of limited resources. Tools are focused on behavior change and outreach Municipalities encouraged to run a pilot first, analyze data, and then scale up
Goals	<ul style="list-style-type: none"> Support local governments and other organizations to roll out residential pilots and programs that reduce food waste
Outputs: Tools and Resources	<p>Behaviour Change Strategies and Tools</p> <ul style="list-style-type: none"> Get Smart: Food: Too Good to Waste Challenge Smart Shopping: "Meals in Mind" Shopping List Template Smart Storage: Keep Fruits and Vegetables Fresh Smart Prep: Prep Now, Eat Later Smart Saving: "Eat me First" Prompt <p>Community Outreach Tools</p> <ul style="list-style-type: none"> Community workshop presentations Infographic posters
Inputs: Staff Time, Data/Technical Support, Financial	<p>Staff Inputs (estimated at 0.2 Full Time Employee FTE) over the course of the pilot/program)</p> <ul style="list-style-type: none"> Design pilot using the implementation toolkit Prepare and modify materials Recruit households and support throughout the pilot Monitor progress and collect data Next stage planning Outreach and partnership building with community organizations and partners <p>Financial Inputs (excluding FTEs)</p> <ul style="list-style-type: none"> Printing materials and providing incentives for waste challenge (est. at \$12 per household or \$2,400 for a pilot of 200 homes) Workshop and event costs (est. \$2,000) Consultancy costs to support pilot and program design (est. \$15,000)

Title	Description
Timeline	Pilots have ranged from 5 to 8 months (including planning, preparation, participant recruitment, and data analysis post pilot/program). Full scale programs would have a longer time-scale (e.g., two to four years)
Monitoring and Evaluation	Data collected by implementing municipalities has included: <ul style="list-style-type: none"> ▪ Household measurements of food waste (by volume/weight) ▪ Observational and demographics data from household participants ▪ Event data (number of people reached)
Success Factors	<ul style="list-style-type: none"> ▪ Engage households through existing social networks ▪ Engage households at community events (with free food/drinks as incentives) ▪ Engaging people in groups is resource efficient and reinforces the social nature of the tools, therefore encouraging behaviour change
Challenges	<ul style="list-style-type: none"> ▪ For the food challenge, recruitment and retention were challenging in most pilots. However, they were also key to changing behaviours in the long term. People were just not aware of how much food they were wasting until they measured it.
Partners	<ul style="list-style-type: none"> ▪ Government programs ▪ Civic groups and non-profits ▪ Schools and after-school programs ▪ Local libraries ▪ Restaurants, grocery stores, farmers markets, other businesses

CASE-STUDY: Food: Too Good to Waste – King County, Washington, USA

Objectives: Reducing wasted food is a priority for King County in its effort to achieve Zero Waste and climate action goals, since food accounts for 14% of the County's consumption-based greenhouse gas emissions. The specific aim of the King County pilot was to test the effectiveness of the pilot messaging and tools in reducing food waste and to gauge the impact of a CBSM campaign based on these results.

Targeted Behaviors: During the pilot, all five waste prevention strategies were introduced: (i) Get Smart Food Challenge, (ii) Smart Shopping, (iii) Smart Storage, (iv) Smart Prep, and (v) Smart Saving.

Tools Used in Pilot: This pilot used both the Shopping List Template and the Fruit and Storage Guide tools. They also structured the pilot around a modified Challenge. In addition, King County developed several other tools including: Top Five Ways to Waste Less Food information sheet; Packing a Waste Free Lunch tip sheet; a blog to keep families informed and motivated; Food: Too Good to Waste daily tip presented by the teacher; and a Learn More resource list.

Target Population and Sample Size: The target audience for the King County implementation was families with young school-aged children. The pilot was introduced to 110 families in Fall-City (a peri-urban town with a population of approximately 2,000).


Community Partners: King County partnered with a local elementary school through the Green Schools Program. They were assisted by marketing firm Colehour and Cohen who have special expertise in CBSM.

Budget: Estimated at \$20,000 (excluding staff time)

Implementation: The invitation to participate was sent via email to the families of the fourth grade children. A King County representative then visited the classroom to explain to the students why wasted food is bad for the environment and household economics and distributed the measurement tools (bag and weekly worksheets). The teachers incorporated new messages into curricula each week with daily tips/facts. The first week waste collection served to establish a baseline for the volume of food going to waste. Both preventable and non-edible food waste items were collected in the same measurement bag to simplify the process. At the start of the second week of the pilot, all five pilot waste prevention behaviours were introduced. Thereafter, tools were introduced one at a time at one week intervals. Students were also presented a daily food waste reduction tip. All families who completed the challenge were given recognition certificates and were entered in a draw for grocery store gift cards.

Observations: The tools were well received and gave King County confidence in the overall messaging. Students and parents were especially influenced and surprised by how much food (and money) could be saved as a result of simple strategies. As a result of this finding, the county will emphasize potential savings in their broad-scale campaign. On average families that participated all five weeks reduced their food waste by 28%. However, a "challenge" where people have to measure waste and report is great for raising awareness but is onerous. Incentives may help to reduce barriers to participation. In King County teachers assigned homework and the county offered a prize for participation, but still many families did not follow through. During the pilot, King County did not have a lot of local resources to give people, so in the full-scale campaign they are putting emphasis on improving the website for King County.

Table 8: Program Overview: Love Food Hate Waste

Title	Description
	<p>Website: http://england.lovefoodhatewaste.com/</p>
Program Overview	<ul style="list-style-type: none"> UK-based campaign aimed at reducing food waste in households and communities Provides information, statistics, graphics, and activities for free on its website Works with municipalities and regions to roll out local campaigns using a variety of tools and strategies (partners required to purchase some tools/approaches) Metro Vancouver has entered into a contract with WRAP to implement the LFHW campaign materials
Goals	<ul style="list-style-type: none"> Work with municipalities and regional government to roll out local food waste campaigns (franchise approach) Aims to raise awareness and help people to take action by demonstrating that by doing easy practical everyday things in the home we can all waste less food, benefitting our purses and the environment too
Outputs: Tools and Resources	Behaviour Change Tools <ul style="list-style-type: none"> Meal planners and shopping lists
	Community Outreach Tools <ul style="list-style-type: none"> Community workshops: Save More Training of Trainer Workshops (to train volunteers that want to host/present workshops in their own community)
	Awareness Raising Tools <ul style="list-style-type: none"> Campaign materials Posters, adverts (radio and print)
Inputs: Staff Time, Data/Technical Support, Financial	<p>Staff Inputs (estimated at 0.5 FTE depending on level of support from LFHW)</p> <ul style="list-style-type: none"> Design program using website resources or by working with LFHW Adapt campaign materials (posters, adverts, radio) and print Create PR buzz (write editorials, host a program launch event, press adverts) Hire ambassadors to go door-to-door Organize and staff roadshows and community events including: farmers market stands, training of trainers' workshops, cooking clubs, Save More events, etc. Monitor progress and collect data <p>Financial Inputs (excluding FTEs)</p> <ul style="list-style-type: none"> Material design and printing, developing adverts, workshop and event costs and LFHW consultancy fees (est. \$0.5 per household or \$50,000 for a population of 100,000)
Timeline	<ul style="list-style-type: none"> Roughly 6 months for a campaign

Title	Description
Monitoring and Evaluation	<p>Data collected by implementing organizations has included:</p> <ul style="list-style-type: none"> Before and after surveys to measure <ul style="list-style-type: none"> Number of 'Committed Food Waste Reducers' Recognition of LFHW brand in the area Money saved by residents by not wasting food and drink Estimated quantity of food waste diverted from landfill in the following year Cost per tonne of food waste saved (campaign spending) Net savings – avoided disposal costs
Success Factors	<ul style="list-style-type: none"> Direct one-to-one engagement is a positive method of communicating at a local level. Working with local groups who wish to save money and waste less food is a cost efficient and preferred method Working with local Children's Centre and Master Composter programs have been effective Rolling out a campaign in tandem with national and regional efforts helps to re-inforce the method
Challenges	<ul style="list-style-type: none"> Going door-to-door to discuss food waste prevention with residents was found to be inefficient in some cases (see Hampshire case study) Getting good PR
Partners	<ul style="list-style-type: none"> Local community organizations

CASE-STUDY: Love Food Hate Waste – Herefordshire and Worcestershire, UK

Objectives: The aims of the campaign were to raise awareness of the need to reduce food waste, reduce the level of food waste being sent to landfill and help residents to save money. The campaign objectives were: i) to increase the percentage of committed food waste reducers in Herefordshire and Worcestershire by 10% from October 2008 to April 2009; and ii) as a result of Objective One, to divert 2,340 tonnes of food waste from landfill by April 2009.

Targeted Behaviors: Food waste prevention, saving money

Tools Used in Campaign: Advertising, door-to-door outreach, roadshows

Target Population: There are 309,000 households across the two counties

Community Partners: Civil society groups, Women's Institute, Children's Centers, Composter Program

Staff input: 0.5 FTE

Budget: Estimated at \$150,000 (excluding staff time)


Implementation: All households within the two counties were part of the promotional campaign, but households with children were a particular focus. The campaign was a mix of advertising, community engagement, and PR. This included: 11 billboards for 4 weeks; bus adverts; door-to-door engagement (21,700 households visited and 7,000 canvassed); editorials – articles in district magazines and staff newsletters; campaign launch with accompanying press opportunity; 20,000 leaflets printed for roadshows and events; posters in community locations; press adverts; press articles; pull up banners for roadshows and events; 4 weeks radio advertising using the national Love Food Hate Waste radio ads; and over 30 roadshows – residents were asked to fill in a food waste questionnaire and in return they could take away a free prize, e.g., branded jute bag, recipe cards.

Observations: The percentage of Committed Food Waste Reducers (CFWR) increased from 13% to 23% in 5 months, meeting Objective One (a 10% increase in CFWRs). Objective Two was also achieved as the total estimated tonnage diverted by the campaign was 2,340 tonnes at a cost of ~\$70/tonne (2008/09). (This estimate is based on pre and post-campaign sampling of household food waste from garbage and food-waste specific collection streams.) Based on the cost of landfilling waste in 2008/09 (~\$100/tonne) this equates to a net saving (avoided disposal cost) of over ~\$40,000. Due to the carry over effects of the initial campaign over subsequent years, this is expected to increase to over ~\$390,000 over a 3 year period. This would reduce the campaign cost to ~\$30/tonne avoided. The pre- and post-campaign surveys also established the following:

- Campaign awareness increased from 23% to 40%.
- Over 70% of those who were aware of the campaign felt it was informative; over 50% felt it provided useful tips and practical advice; 45% felt the campaign made them reluctant to throw food away.
- There was a large increase in recall of the LFHW message from council publications (24% to 42%) and on billboards & other outdoor advertising (8% to 15%).
- Residents referred frequently to supermarket roadshows as being positive and informative.

Local media and local authority publications covered the campaign very successfully. The local press attended a number of road shows which resulted in articles and pictures in the local papers. The door-to-door engagement element of the campaign had been included to test whether this communication method, which has been used successfully for recycling services, could be a useful technique for waste prevention. In the post-campaign survey, of those who stated they had been visited, only 6% felt they threw away less food waste and a further 2% said they threw away much less. (When households were visited, many people claimed not to waste food, perhaps because it's socially unacceptable. Although people were happy to discuss food waste in general they were reluctant to talk about their own barriers – this reluctance probably resulted in minimal impact from this method.)

Table 9: Program Overview: Think, Eat, Save

Title	Description
	http://www.thinkeatsave.org/index.php/launch-pr
Program Overview	<ul style="list-style-type: none"> ▪ Campaign of Save Food Initiative (UNEP, FAO and Messe Dusseldorf) ▪ Raises awareness about food waste issues through an exchange of inspiring ideas and projects ▪ Provides information, a campaign toolkit, statistics, poster graphics, website banners, articles, and activities for free on its website
Goals	<ul style="list-style-type: none"> ▪ To become a one-stop-shop for news and resources about food waste reduction ▪ To galvanize individuals and organizations into action by sharing inspiring ideas and projects and adding its authority and voice to the discussion
Outputs: Tools and Resources	Behaviour Change Tools <ul style="list-style-type: none"> ▪ Food waste diary
	Community Outreach <ul style="list-style-type: none"> ▪ Campaign Toolkit http://www.fao.org/docrep/018/i3342e/i3342e.pdf
	Awareness Raising Tools <ul style="list-style-type: none"> ▪ Infographics (e.g., throwing out half a hamburger equates to the same water usage as taking a 60 minute shower) ▪ Posters (including Tips for Things to do at Home) ▪ T-shirt design ▪ Links to news stories, blogs reports, other campaigns
	Guidance Document <ul style="list-style-type: none"> ▪ High-level planning guide for governments and local authorities http://www.thinkeatsave.org/downloads/UNEP-FW-Guidance-content-VERSION-WEB.pdf
Inputs: Staff Time, Data/Technical Support, Financial	Staff Inputs (estimated at 0.2 FTE) <ul style="list-style-type: none"> ▪ Use guidance document (Module 3) to design and plan program implementation ▪ Adapt and print campaign materials ▪ Liaise with participating households (questions related to the food waste diary) ▪ Monitor progress and collect data Financial Inputs (excluding FTEs) <ul style="list-style-type: none"> ▪ Material design and printing, developing adverts, and workshop and event costs (est. \$5,000 to \$15,000 depending on scale or pilot/program) ▪ Waste composition study – to provide baseline data (est. \$10,000)
Timeline	6 months to 2 years

Title	Description
Monitoring and Evaluation	<ul style="list-style-type: none"> Encourages institutions rolling out a campaign to: ensure they have good baseline data (waste composition study and surveys) and then measure, monitor, and report on progress. Suggested metrics include: <ul style="list-style-type: none"> Tonnes of food and drink waste saved (associated financial and environmental benefits) Changes to products and packaging, e.g., labelling Changes to household/consumer behaviours (e.g., meal planning, cupboard checking, use of left-overs, use of freezer, use of date labels, etc.)
Successes Factors	No data available
Challenges	No data available
Partners	UNEP, FAO, Messe Dusseldorf Group, The SAVE FOOD Initiative, Feeding the 5000, WRAP, The Zero Hunger Challenge, Stop Wasting Food, OzHarvest, EU Fusions, NRDC, CinemAmbiente, WWF, Food Shift, Satisfaito, United Against Food Waste, Sustainable Restaurant Association, United Against Waste

CASE-STUDY 3: Think, Eat, Save – Various Municipalities

Objectives: A number of municipalities the world over have used the Think, Eat, Save campaign to raise awareness about food waste issues on World Environment Day

Targeted Behaviors: Food waste prevention, environmental sustainability

Tools Used in Campaign: Advertising, cooking classes, waste reduction workshops, food-growing events, and lecture series.

Target Populations:

Bayside City Council, Australia has run a Think.Eat.Save campaign for two years in a row, partnering with iconic local institution Pantry to present a cooking master class and five course dinner. The masterclass was presented by celebratory chefs. They lent their support to the campaign by highlighting in the community the need for sustainable food choices.

City of Casey, Australia got behind the Think.Eat.Save campaign for World Environment Day in 2013. The City encouraged all residents to take a positive and proactive approach to the environment. The City held Living Greener workshops to educate residents about sustainable living, including growing their own food and managing food waste. Residents were encouraged to visit the City's community gardens.

Dubai got behind the Think.Eat.Save campaign for World Environment Day in 2013. The Dubai campaign encouraged residents to become eco-friendly eaters and help reduce their carbon footprint in the process. The municipality organized lectures and events for students, government employees and the public on how to reduce food waste and their carbon footprint.

4.2 Typical Components for a Food Waste Prevention Program

Food waste prevention programs typically consist of the following elements and tools. These broadly fit into the following four categories:

1. Conventional media awareness campaigns, e.g., radio adverts, posters, and local newspaper articles;
2. Online media awareness campaigns, e.g., websites and use of social media;
3. Behaviour change strategies and tools, e.g., meal planners, food waste challenges, and storage tips; and
4. Community outreach events, e.g., food waste workshops, farmers markets, and local film screenings.

A municipality (or any other organization) developing and rolling out a food waste prevention program would need to select which program elements are right for their campaign. These are examined in section 4.3.





4.3 Tools and Resources




A variety of campaign tools and approaches were identified from the scan and full program review. These are captured and summarized in a table in Appendix B using the four program categories outlined in Section 3.2—traditional and online media, behaviour change tools and community outreach events—as a framework. The full table provides a list of resources and approaches developed and used by different food waste prevention programs, and evaluates them with respect to adaptability, resource requirements and effectiveness. Table 10 below is a simplified version, which highlights the program elements and explains how each tool works.

The following programs/websites were used to populate the toolkit table.

- Food: Too Good Too Waste;
- LFHW;
- Think Eat Save;
- Food Isn't Waste;
- Just Eat It: A Food Waste Story; and
- Farm Folk City Folk.

Table 10: Food Waste Prevention Tools from Various Programs

Program Element	Program	Image	How Does it Work?
Radio Adverts	<ul style="list-style-type: none"> <u>Love Food Hate Waste</u> 		<ul style="list-style-type: none"> Use local radio networks to promote food waste reduction program activities and to raise awareness
Posters/Outdoor Adverts	<ul style="list-style-type: none"> <u>Food Isn't Waste</u> <u>Think Eat Save</u> 		<ul style="list-style-type: none"> Dynamic and fun images to capture people's attention Posted in public spaces
Newspaper Articles	<ul style="list-style-type: none"> <u>Think Eat Save</u> 		<ul style="list-style-type: none"> During the launch of your program, use articles and press releases to raise awareness about other activities
Websites	<ul style="list-style-type: none"> Various 		<ul style="list-style-type: none"> Use your website to host: information, tools, top tips, news, infographics, videos, event calendars, local stories, etc. Make your website a good place to find food waste resources for residents
Social Media (e.g., Facebook)	<ul style="list-style-type: none"> <u>Love Food Hate Waste</u> <u>Just Eat It. A Food Waste Story</u> 		<ul style="list-style-type: none"> Used to disseminate tools and tips to a larger network of people Can post items through existing networks rather than starting from scratch Forum for online discussions about issues and informing people about events
Social Media (e.g., YouTube)	<ul style="list-style-type: none"> <u>Food Wastage Footprint</u> <u>Stop Food Waste</u> <u>Love Food Hate Waste – Cambs County Council</u> 		<ul style="list-style-type: none"> Video used to pass on a large amount of information in a digest-able manner Can be loaded onto websites or other social media platforms Can be a call to action or to publicize an event
Infographics	<ul style="list-style-type: none"> <u>Food: Too Good to Waste</u> <u>Farm Folk City Folk</u> <u>Think Eat Save</u> 		<ul style="list-style-type: none"> Tells a story about food waste Can be used online, as a poster or handout Can be distributed door-to-door, at community events and workshops, farmers markets, local stores, etc.

Program Element	Program	Image	How Does it Work?
Challenges	<ul style="list-style-type: none"> Food: Too Good to Waste Farm Folk City Folk 		<ul style="list-style-type: none"> Supports households to track food waste generation or 'foodprint' Raises household awareness about food wasted leading to behaviour change Monitors food waste of residents – provides municipality with household data
Meal Planners	<ul style="list-style-type: none"> Food: Too Good to Waste Love Food Hate Waste 		<ul style="list-style-type: none"> Supports households to prepare shopping lists and simplifies food management Creates awareness of amount of food actually needed to feed household Focuses on cost saving benefits of 'shopping in your kitchen' first
Storage Tips	<ul style="list-style-type: none"> Food: Too Good to Waste Farm Folk City Folk 		<ul style="list-style-type: none"> Provides useful information on keeping produce fresh Visual aid – guide to put on fridge - to prompt people
Eat me First Prompt	<ul style="list-style-type: none"> Food: Too Good to Waste 		<ul style="list-style-type: none"> Encourages households to designate area in the fridge for food to be eaten soon Visual aid – fridge guide – to prompt people
Community Workshops	<ul style="list-style-type: none"> Food: Too Good to Waste Love Food Hate Waste 		<ul style="list-style-type: none"> Engages households by partnering with community-based organizations (CBOs) Organize workshops in partnership with CBOs for roughly 8–20 people Facilitate workshops
Community Film Screenings	<ul style="list-style-type: none"> Just Eat It. A Food Waste Story 		<ul style="list-style-type: none"> Community film screening and Q&A with the film-makers to discuss food waste issues
Cooking Clubs	<ul style="list-style-type: none"> Love Food Hate Waste (Let's get cooking partner) 		<ul style="list-style-type: none"> Community cooking clubs with recipe ideas for leftovers Opportunity to facilitate discussions about food waste
Door-to-Door Outreach	<ul style="list-style-type: none"> Love Food Hate Waste 		<ul style="list-style-type: none"> Door-to-door engagement is used to raise awareness amongst residents

4.4 Developing a Municipal Program: Selecting Tools

Each municipality is different, and should develop a pilot or program that meets their needs and the needs of their residents. There are several key considerations which need to be taken into account when tailoring a program, including but not limited to:

- Drivers, goals, and objectives;
- Resources available: staff time, technical support (e.g., marketing, program development), and budget;
- Timeline for planning and implementation;
- Target populations: number of residents and demographics; and
- Partnership opportunities.

Although the above factors will be different for every BC municipality, the following subsection provides some guidance on developing a food waste prevention program that works for your community. As noted in Section 4.1, food prevention program elements can be described using the following four categories:

Program Category	Advantages	Disadvantages	Should it be Included in a Municipal Program?
Awareness Campaign – Conventional Media	<ul style="list-style-type: none"> ▪ Can reach a large number of people 	<ul style="list-style-type: none"> ▪ Awareness (receiving information passively) does not necessarily result in behavior change ▪ Conventional media can be expensive 	Maybe
Awareness Campaign – Social Media	<ul style="list-style-type: none"> ▪ Can reach a large number of people ▪ Residents are more active compared with conventional media (e.g., click on a link, see what others are doing) 	<ul style="list-style-type: none"> ▪ May not be as effective at changing behaviours compared with other more active behavior change methods 	Yes
Behaviour Change Tools	<ul style="list-style-type: none"> ▪ Using these tools and participating directly results in longer term behavior change (compared with hearing/seeing information in a passive manner) 	<ul style="list-style-type: none"> ▪ Recruiting people into behavior change programs can take time and effort ▪ Reach fewer number of people (depth over breadth) 	Yes
Community Outreach Events or Workshops	<ul style="list-style-type: none"> ▪ Participating directly results in longer term behavior change ▪ Can take advantage of existing networks/events where there will be lots of people present 	<ul style="list-style-type: none"> ▪ Reach fewer number of people (depth over breadth) 	Yes

A municipal program manager could refer back to Appendix B for best practice examples and ready-to-use tools for the above categories. While it is difficult to recommend a specific tool or approach to any given municipality without knowing the local context and available resources, all these tools come from well-renowned campaigns

which have reported their successes and challenges in the public arena, and can be used or modified as needed. There are also some step by step guides available, which are highlighted below.

Toolkits and Implementation Guides

The U.S. EPA's "Food: Too Good to Waste – A Toolkit to Reduce Household Food Waste" includes many ideas for governments, community groups, schools, or individuals to get started with a program. This toolkit can be accessed at:

- <http://westcoastclimateforum.com/food>.

For municipalities considering to implement a formal pilot program, the U.S. EPA Food: Too Good to Waste – West Coast Climate and Materials Management Forum (2013) Toolkit Implementation Guide for the Food: Too Food to Waste Pilot has many of the steps and materials necessary to design the program. This can be accessed online:

- http://www.westcoastclimateforum.com/sites/westcoastclimateforum/files/related_documents/02_ToolKit_Implementation_Guide_for_the_Good_Too_Good_to_Waste_Pilot.pdf.

A guide has been developed by the UNEP (2014): Prevention and Reduction of Food and Drink Waste in Businesses and Households: Guidance for Governments, Local Authorities, Businesses and other Organisations. This includes a five step guidance for implementing a food waste reduction program. The guide can be accessed online at:

- <http://www.thinkeatsave.org/downloads/UNEP-FW-Guidance-content-VERSION-WEB.pdf>.

Ready-to-Use Posters/Images:

The U.S. EPA Food: Too Good to Waste resources are available for editing, allowing you to add your local municipality logo. They include a number of Outreach Tools, Behaviour Change Tools, Measurement Tools, Messaging, Surveys, and Challenge Guides. Most files are in multiple formats (such as .indd .docx or .pdf). A sample of these resources are included in Appendix D.

- ftp://ftp.epa.gov/reg10ftp/Food_Too_Good_To_Waste/; and
- ftp://ftp.epa.gov/reg10ftp/Food_Too_Good_To_Waste_Implementing_Partners/.

Gaining Support for a Food Waste Prevention Program

The data outlined in Section 3.0 of this study provides a clear business case (backed up by case studies) for implementing a food waste prevention program. If more information is required, all of the sources referenced in that section can be found at the end of this report.

Monitoring and Evaluation

There is a significant variation in the degree to which the different campaigns have captured baseline information, monitored, and finally evaluated the impact of their campaigns. It is inherently difficult to measure the impact of awareness raising campaigns or individual tools, which are often used in conjunction with a number of other campaign elements. Some suggestions for data collection methods are outlined/listed below.

Baseline (before program implementation):

- Waste composition study; and
- Household surveys to capture how much people think they waste and food waste behaviours/attitudes.

Monitoring (during program implementation):

- Household measurements of food waste (by volume/weight);
- Observational and demographics data from household participants; and
- Event data (number of people reached).

Evaluation (after program implementation):

- Household surveys to capture changes in amount people say they waste and change in behaviours/attitudes.
- Analysis of household measurements of food waste:
 - Quantity of food waste diverted from the landfill;
 - Avoided disposal costs;
 - Money saved per household; and
 - Cost per tonne of food waste prevented (i.e. effectiveness of campaign spending).

A comprehensive evaluation report authored by WRAP (2013) titled: West London Food Waste Prevention Campaign Evaluation Report, details the waste reduction program and a number of metrics that can be tracked to evaluate the success of a food waste reduction program. The report can be accessed online at:

- http://www.wrap.org.uk/sites/files/wrap/West%20London%20Food%20Waste%20Campaign%20Evaluation%20Report_1.pdf.

5.0 CONCLUSION

Community interest in food waste prevention is growing in BC. This report provides the rationale and a summary of tools for BC municipalities to make a business case for food waste reduction programs. The largest portion—almost 50% of all total food wastage—occurs at home. This is equivalent to 90–125 kg per person of edible food disposed annually, which ends up in the garbage and/or organic waste management streams.

Food waste reduction supports the first goal of the waste reduction hierarchy, avoiding the generation of waste in the first place. Reduction of food waste has social, environmental and economic benefits including reductions in GHGs, and the water, energy, land and packaging needed to transport and distribute the food in the first place. Food waste reduction results in financial savings including not purchasing the food in the first place, and savings on tipping fees from managing the wasted food once it is disposed.

Food waste prevention programs typically consist of a variety of resources and tools that raise awareness and provide resources to residents to reduce the amount of food wasted. These broadly fit into the categories of conventional media, online media, behaviour change strategies and tools, and community outreach events. Each campaign has their strengths and weaknesses, and the toolkit has highlighted some of the appropriate models and program elements that have been successful. A municipality (or any other organization) developing and

implementing a food waste prevention program will need to select the program elements that are suitable for their campaign.

Based on program successes achieved by WRAP UK and other food waste prevention programs, BC communities could expect to see savings to their waste management costs of \$2.25 for every \$1.00 spent on prevention programming.

We are seeking feedback on the tools and information presented in the report. Please, after looking at this toolkit, take the time to email the Ministry of Environment at envprotdiv@Victoria1.gov.bc.ca to provide comment on the usefulness of the information presented.

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APPENDIX A

FOOD WASTE REDUCTION PROGRAM SCAN

Food Waste Reduction Program Scan

Program Name	Website	Location	Key Elements	Relevance
Food: Too Good to Waste	http://your.kingcounty.gov/solidwaste/waste prevention/challenge.asp	U.S.	<ul style="list-style-type: none"> Developed by the U.S. EPA Provides resources for reducing food waste at home. Has been trialed by a number of U.S. municipalities Online behavior changes tools which people can download, including a household challenge to see how much food people are wasting at home 	High
Love Food Hate Waste	www.lovefoodhatewaste.com http://partners.wrap.org.uk/	UK	<ul style="list-style-type: none"> Campaign developed by WRAP Raises awareness of the need to reduce food waste and guides people to take small practical steps to reducing food waste at home Provides lots of resources for people that want to reduce food waste or start community campaigns A number of municipalities and regions have worked with LFHW to roll out campaigns. Campaign spending and impact has been monitored 	High
Think Eat Save: Reduce Your Food-Print	http://thinkeatsave.org/	Germany	<ul style="list-style-type: none"> Campaign run by the Save Food partnership (see below) Aims to act as a platform for the exchange of inspiring ideas and projects Website provides a one-stop shop for news and resources including graphics for a campaign package and a guide for rolling out a campaign 	High
Food-print Project	www.farmfolkcityfolk.ca/projects/foodprint/	BC, Canada	<ul style="list-style-type: none"> Program run by Farm Folk City Folk to focus efforts on assessing how much food waste Vancouverites produce and how to reduce that waste at home, save money, and help the environment. Includes resources such as shopping tips, kitchen tips, storage, and tracking, etc. 	High
I Value Food	http://ivaluefood.com/index.php	U.S.	<ul style="list-style-type: none"> Non-profit managed website which develops and shares information and communications resources about food waste prevention Aimed at individual activists who want to start campaigns in their own community 	Medium
Donate Don't Dump	www.donatedontdump.org	California, U.S.	<ul style="list-style-type: none"> Youth-led non-profit with a mission to rescue short dated/surplus food to feed the hungry, educate, advocate, and draw public attention to the negative impact rotting food has on the environment 	Medium

Program Name	Website	Location	Key Elements	Relevance
Stop Food Waste	www.stopfoodwaste.ie/	Ireland	<ul style="list-style-type: none"> Non-profit that works with householders, communities, schools, local authorities, and businesses providing information about the food waste and how to prevent it Provides resources for individuals 	Medium
Too Good To Waste	www.toogood-towaste.co.uk/	UK	<ul style="list-style-type: none"> Aims to raise consumer and industry awareness about the scale of restaurant food waste, and offers alternatives for diners and restaurants Resources for restaurants and encourages diners to ask for doggy-bags 	Medium
Save Food	www.save-food.org	Germany	<ul style="list-style-type: none"> Collaboration between a German non-profit, FAO, and UNEP Aimed at encouraging the dialogue between industry, research, politics and civil society. The initiative will regularly bring together stakeholders involved in the food supply chain from the food industry, retail, packaging, and logistics for conferences and projects. Key priority is also to raise awareness amongst consumers 	Medium
Food isn't Garbage	www.metrovancouver.org/foodscraps	BC, Canada	<ul style="list-style-type: none"> Regional government campaign to encourage people to reduce food waste and put remainder into their green bin Aimed at all sectors. Resources provided online and graphics made accessible 	Medium
Say No to Food Waste	http://saynotofoodwaste.org/	Spain	<ul style="list-style-type: none"> Aims to fight food waste through awareness raising with events, blogs and interesting info-graphics Links to tips, reports and videos 	Medium
Feeding the 5000	http://feedbackglobal.org/campaigns/feeding-the-5000/	UK	<ul style="list-style-type: none"> Campaign from Feedback to highlight issues of food waste. Hold events where they service communal feasts for 5000 people made entirely of food which would otherwise have been wasted 	Medium
Fusions	www.eu-fusions.org/	Europe	<ul style="list-style-type: none"> Food Use for Social Innovation by Optimizing Waste Prevention Strategies is a project about working towards achieving a more resource efficient Europe by significantly reducing food waste The project will contribute towards: the harmonization of food waste monitoring; improved understanding of how social innovation can reduce food waste; and the development of guidelines for a common Food Waste policy for EU-27 Links to other programs resources and tools 	Medium


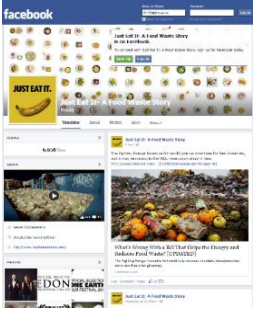

Program Name	Website	Location	Key Elements	Relevance
Iowa Food Waste Reduction Program	http://iwrc.uni.edu/services/food-waste/	U.S.	<ul style="list-style-type: none"> IWRC's primary focus is providing free, non-regulatory environmental technical assistance to Iowa's small businesses For food waste, provides facts and figures on food waste. Links to consumer (and other resources). Links to EPA site 	Low/ Medium
The Consumer Goods Forum	www.theconsumergoodsforum.com/	U.S.	<ul style="list-style-type: none"> Network that brings together the CEOs and senior management of some 400 retailers, manufacturers, service providers, and other stakeholders Hosts events for industry members. Waste is one of many areas of focus – outputs not consumer focused. 	Low
Every Crumb Counts	http://everycrumbcounts.eu/	EU	<ul style="list-style-type: none"> Initiative involving stakeholders from across Europe's food supply chain. Co-signatories have pledged to work towards preventing edible food waste, and to promote a life-cycle approach to reducing wastage 	Low
Don't Throw Away Food	http://slangintematen.se/	Sweden	<ul style="list-style-type: none"> Campaign site intended to be educational. Association organizes seminars for consumers, and has produced a consumer guide on how to reduce food waste Have an eco-mart consumer guide on how to extend the shelf-life of food Mostly in Swedish 	Low
End Food Waste Now	http://endfoodwastenow.org/	U.S.	<ul style="list-style-type: none"> Developed to help consumers understand more about the issues surrounding food that Americans waste in the United States Links to consumer tips and lots of external campaigns and other resources 	Low
Food Cycle	http://foodcycle.org.uk/about-us/	UK	<ul style="list-style-type: none"> UK charity that combines volunteers, surplus food, and spare kitchen spaces to create meals for people at risk of food poverty and social isolation Provides links to other campaigns 	Low
Guelph Food Waste	http://guelphfoodwaste.com/	Canada	<ul style="list-style-type: none"> Blog run by Guelph researchers. Links to news, campaigns and reports 	Low
Fork it Over!	www.forkitover.org/	Portland, U.S.	<ul style="list-style-type: none"> Links businesses with food rescue agencies to reduce hunger and waste 	Low
Stop Wasting Food	www.stopspildafmad.dk/inenglish.html	Denmark	<ul style="list-style-type: none"> Non-profit consumer movement against food waste. Increases public awareness by organizing campaigns, mobilizing the press and media, and encouraging discussion Empowers consumers to take actions such as cooking leftovers, shopping more wisely and distributing surplus food to shelters Resources mostly in Danish 	Low


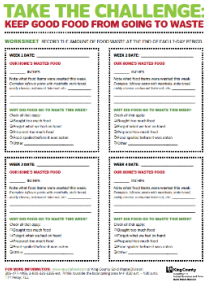



Restaurant, Food Retail, Processing, and Distribution Food Waste Reduction Programs:




Additionally, there are a host of industry-led and commercially focused food waste prevention programs. For a comprehensive mapping of all programs — targeted at consumers, businesses, policy makers, advocates, etc. — a good resource is PAC Food Waste www.pac.ca/assets/2014-foodwaste-whoswho.pdf.

APPENDIX B

RESOURCE TOOLKIT TABLE

Program Element / Objective	Program	How does it Work?	Role of Municipality	Level of Effort / Adaptability	Resources – Materials	Resources – Staff
Conventional Media						
Radio Adverts	<ul style="list-style-type: none">Love Food Hate Waste	<ul style="list-style-type: none">Use local radio networks to promote food waste reduction program activities and to raise awareness	<ul style="list-style-type: none">Coordinate with local radio networksManage development of the radio advert	<ul style="list-style-type: none">Medium	<ul style="list-style-type: none">None	<ul style="list-style-type: none">Medium (coordination plus comms)
Posters / Outdoor Adverts	<ul style="list-style-type: none">Food Isn't WasteThink Eat Save 	<ul style="list-style-type: none">Dynamic and fun images to capture people's attentionPosted in public spaces	<ul style="list-style-type: none">Adapt or design images that reflect the campaign	<ul style="list-style-type: none">Medium (or low if use other program graphics)	<ul style="list-style-type: none">PostersPlacement (e.g., in-stores, newspapers)	<ul style="list-style-type: none">Medium (coordination plus graphic design)
Newspaper Articles / PR	<ul style="list-style-type: none">Think Eat Save	<ul style="list-style-type: none">During the launch of your program, use articles and press releases to raise awareness about other activities	<ul style="list-style-type: none">Write press releases, articles, and editorialsWork with local press to get the placed appropriately	<ul style="list-style-type: none">Low	<ul style="list-style-type: none">None	<ul style="list-style-type: none">Low
Online Media						
Websites	<ul style="list-style-type: none">Various	<ul style="list-style-type: none">Use your website to host: information, tools, top tips, news, infographics, videos, event calendars, local stories, etc.Make your website the place to find food waste resources	<ul style="list-style-type: none">Create a page on website dedicated to a food waste prevention programUpload infographics and tools for residents to download	<ul style="list-style-type: none">Medium	<ul style="list-style-type: none">Access to online tools	<ul style="list-style-type: none">Medium (development and ~0.5 days/ week ongoing)
Social Media (e.g., Facebook, Twitter)	<ul style="list-style-type: none">Love Food Hate WasteJust Eat It. A Food Waste StoryWasted Food 	<ul style="list-style-type: none">Used to disseminate tools and tips to a larger network of peopleCan post items through existing networks rather than starting from scratchGood forum for online discussions about issues and informing people about events	<ul style="list-style-type: none">Set up and manage municipalities' accountFind existing interest groups to tap intoFacilitate discussions and post about events and issues	<ul style="list-style-type: none">Low	<ul style="list-style-type: none">None	<ul style="list-style-type: none">Low (~0.5 days/ week)
Social Media (e.g., YouTube)	<ul style="list-style-type: none">Food Wastage FootprintFood Wastage Footprint 2Stop Food WasteLove Food Hate Waste – Cambs County Council 	<ul style="list-style-type: none">Video used to pass on a large amount of information in a digest-able mannerCan be loaded onto websites or other social media platformsCan be a call to action or to publicize an event	<ul style="list-style-type: none">Develop videoPost video to different sites	<ul style="list-style-type: none">Medium (or low if re-post other videos)	<ul style="list-style-type: none">None	<ul style="list-style-type: none">Medium (coordination plus producer)

Program Element / Objective	Program	How does it Work?	Role of Municipality	Level of Effort / Adaptability	Resources – Materials	Resources – Staff
Posters / Infographics	<ul style="list-style-type: none">Food: Too Good to WasteFarm Folk City FolkThink Eat Save 	<ul style="list-style-type: none">Tells a story about food wasteCan be used online, as a poster ,or handoutCan be distributed door-to-door, at community events and workshops, farmers markets, local stores, etc.	<ul style="list-style-type: none">Upload to websiteIdentify events and partnersDistribute handouts, flyers, and posters to relevant partners, organizations, and events	<ul style="list-style-type: none">Relatively easy to adaptMay need graphic design support	<ul style="list-style-type: none">Printed infographics (if distributing)	<ul style="list-style-type: none">Low
Behaviour Change Tools						
Challenges	<ul style="list-style-type: none">Food: Too Good to WasteFarm Folk City Folk 	<ul style="list-style-type: none">Supports households to track food waste generation or ‘foodprint’Raises household awareness about amount of food wasted leading to behaviour changeMonitors food waste of residents – provides municipality with household data	<ul style="list-style-type: none">Recruit householdsSupport households to use toolCollect data and measure impact	<ul style="list-style-type: none">Easy to adapt from existing material	<ul style="list-style-type: none">Printed instructions and worksheetsScales (optional incentive)	<ul style="list-style-type: none">Medium
Meal Planning	<ul style="list-style-type: none">Food: Too Good to WasteLove Food Hate Waste 	<ul style="list-style-type: none">Supports households to prepare shopping lists and plan meals – simplifies food managementCreates awareness of amount of food actually needed to feed householdFocuses on cost saving benefits of ‘shopping in your kitchen’ first	<ul style="list-style-type: none">Distribute template to households	<ul style="list-style-type: none">Easy to adapt from existing material	<ul style="list-style-type: none">Printed templates	<ul style="list-style-type: none">Low
Food Storage	<ul style="list-style-type: none">Food: Too Good to WasteFarm Folk City Folk 	<ul style="list-style-type: none">Provides useful information on keeping produce freshVisual aid – guide to put on fridge - to prompt people	<ul style="list-style-type: none">Distribute guide to households and at community workshops	<ul style="list-style-type: none">Easy to adapt from existing material	<ul style="list-style-type: none">Printed templates	<ul style="list-style-type: none">Low
Prompts / Reminders	<ul style="list-style-type: none">Food: Too Good to Waste 	<ul style="list-style-type: none">Encourages households to designate an area in the fridge for food that needs to be eaten soonVisual aid – guide to put on fridge - to prompt people	<ul style="list-style-type: none">Distribute guide to households and at community workshops	<ul style="list-style-type: none">Ready to useImplementing municipality can add their own logo	<ul style="list-style-type: none">Printed prompts	<ul style="list-style-type: none">Low
Strategy Mapping	<ul style="list-style-type: none">Food: Too Good to Waste	<ul style="list-style-type: none">Roadmap to ensure effective consistent and impactful campaign messaging (target audience, message, etc.)	<ul style="list-style-type: none">Use message map internally to examine what messaging and tools to focus on	<ul style="list-style-type: none">Map outline provided	<ul style="list-style-type: none">N/A (internal process)	<ul style="list-style-type: none">Low

Program Element / Objective	Program	How does it Work?	Role of Municipality	Level of Effort / Adaptability	Resources – Materials	Resources – Staff
Community Outreach/Events						
Community Workshops	<div><div><div><div>Food: Too Good to Waste</div><div>Love Food Hate Waste</div></div><div><div>Love Food Hate Waste 'Save More'</div><div>The Love Food Hate Waste - Save More pack has been developed to help you pass on a very important message: how to save money by reducing food waste.</div><div>You can use this pack with family and friends, in your community or household. You don't need to be an expert in food or cooking to do it. You just need to be keen to reduce your food waste, and to help others to do the same.</div></div></div><div></div></div>	<div><div>Engages households by partnering with community-based organizations (CBOs)</div><div>Organize workshops in partnership with CBOs for roughly 8–20 people</div><div>Facilitate the workshop and engage people in discussions about food waste prevention</div></div>	<div><div>Identify community-based organizations to partner with</div><div>Co-organize the workshop</div><div>Deliver the presentation and facilitate a discussion around food waste issues and strategies</div></div>	<div><div>Presentation ready to use/easy to adapt</div><div>Full notes/guidance available</div></div>	<div><div>PPT</div><div>Flip chart paper and pens</div></div>	<div><div>Low–Medium</div><div>1.5 hr/workshop plus coordination and prep</div></div>
Training of Trainer Workshops	<div><div>Love Food Hate Waste</div><div></div></div>	<div><div>Training sessions for community members using a 'Training of Trainers' approach</div><div>Training sessions are a mix of presentations and interactive work (1.5 to 3 hours)</div><div>Participants are provided with a comprehensive handbook, certificate, and access to follow-up support</div><div>Participants are encouraged to pass on training/activities to as many people as possible</div></div>	<div><div>Work with LFHW to organize and facilitate training workshops for volunteers</div></div>	<div><div>Toolkit and activities are developed</div><div>Need to buy materials from LFHW</div></div>	<div><div>Handbooks for participants</div></div>	<div><div>Low–Medium</div><div>1.5 -3.5 hr/ workshop plus coordination and prep</div></div>
Community Film Screenings	<div><div>Just Eat It. A Food Waste Story</div><div></div></div>	<div><div>Community film screening and Q&A with the filmmakers to discuss food waste issues</div></div>	<div><div>Work with a local cinema to organize a community screening</div><div>Promote the event</div><div>Share online link and residents can watch online at their own convenience: www.knowledge.ca/program/just-eat-it</div></div>	<div><div>Get permission to screen movie</div></div>	<div><div>Movie</div></div>	<div><div>Low– Medium</div></div>
Cooking Clubs	<div><div>Love Food Hate Waste (Let's get cooking partner)</div></div>	<div><div>Community cooking clubs with recipe ideas for leftovers</div><div>Opportunity to facilitate discussions about food waste</div></div>	<div><div>Work with local cookery clubs to combine events with waste prevention workshops</div><div>Provide resources and tools</div><div>Promote the events</div></div>	<div><div>Workshop tools – see above</div></div>	<div><div>Cookery club equipment</div></div>	<div><div>Low–Medium</div><div>1.5 -3 hr/ workshop plus coordination</div></div>
Door-to-Door Outreach	<div><div>Love Food Hate Waste</div></div>	<div><div>A door-to-door engagement approach is used to raise awareness amongst residents</div></div>	<div><div>Hire ambassadors or 'food champions' to go door-to-door and speak to residents about food issues</div></div>	<div><div>Easy to adapt/develop</div></div>	<div><div>Leaflets/prompts for ambassadors to give residents</div></div>	<div><div>High</div></div>

APPENDIX C

SAMPLE RESOURCES

INFOGRAPHIC: WHAT'S UP WITH ALL THE FOOD WASTE

A poster to hang up in public areas to draw attention to the quantity of food waste that occurs, and how this translates to wasted energy, water, and land.

WHAT'S UP WITH ALL THE FOOD WASTE?

CONSIDER THE TOMATO...

31% of fresh tomatoes bought by U.S. households are thrown out—that's 21 tomatoes a year per person!

**\$2.3
BILLION**

Throwing out that many tomatoes costs us a bundle—
over \$2.3 billion a year.

If only it was just tomatoes...
the cost of all U.S. household
food waste = \$166 BILLION!



WASTED FOOD = WASTED RESOURCES

U.S. FOOD WASTE ACCOUNTS FOR:

25%
of all
our fresh
water use.

Enough
energy to
power the
country for
more than
a week.

Enough
land to feed
the world's
hungry.

By making small shifts in how we shop, store, and prepare food, we can keep the valuable resources used to produce and distribute food from going to waste.

Sources: USDA Economic Research Service (ERS) Total and Per Capita Value of Food Loss in the United States (2012); USDA ERS, The Value of Retail- and Consumer-Level Fruit and Vegetable Losses in the United States (2011); Venkat, The Climate Change and Economic Impacts of Food Waste in the United States (2012); Hall et al. The Progressive Increase of Food Waste in America and Its Environmental Impacts (2009)



INFORMATION HANDOUT CARD: SMART STRATEGY: FRUIT AND VEGETABLE STORAGE GUIDE

A two-sided postcard sized handout with smart strategies for reducing food waste. This strategy card summarizes the best ways to store fruits and vegetables to prevent them from spoiling.

SMART STRATEGY:

Know which fruits and vegetables stay fresh longer inside or outside the fridge.

By storing them for maximum freshness, they will taste better and last longer.

PARTNER
LOGO HERE

DEVELOPED IN
COLLABORATION
WITH THE US EPA



**TOO GOOD
TO WASTE**



SMART STRATEGY:

Know which fruits and vegetables stay fresh longer inside or outside the fridge.

By storing them for maximum freshness, they will taste better and last longer.

PARTNER
LOGO HERE

DEVELOPED IN
COLLABORATION
WITH THE US EPA



**TOO GOOD
TO WASTE**



FRUIT AND VEGETABLE STORAGE GUIDE



INSIDE THE FRIDGE

- Apples, berries, and cherries
- Grapes, kiwi, lemons, and oranges
- Melons, nectarines, apricots, peaches, and plums (after ripening at room temperature)
- Avocados, pears, tomatoes (after ripening at room temperature)
- Almost all vegetables and herbs

OUTSIDE THE FRIDGE

- Bananas, mangos, papayas, and pineapples: store in a cool place
- Potatoes / onions: store in a cool, dark place
- Basil and winter squashes: store at room temperature—once cut, store squashes in fridge

MORE STORAGE TIPS

- If you like your fruit at room temperature, take what you will eat for the day out of the fridge in the morning.
- Many fruits give off natural gases that hasten the spoilage of other nearby produce. Store bananas, apples, and tomatoes by themselves and store fruits and vegetables in different bins.
- Consider storage bags and containers designed to help extend the life of your produce.
- To prevent mold, wash berries just before eating.

FOR MORE TIPS VISIT: <http://bit.ly/15fXwQd>
LEARN HOW TO STORE WITHOUT PLASTIC: <http://bit.ly/1c33nw5>

FRUIT AND VEGETABLE STORAGE GUIDE



INSIDE THE FRIDGE

- Apples, berries, and cherries
- Grapes, kiwi, lemons, and oranges
- Melons, nectarines, apricots, peaches, and plums (after ripening at room temperature)
- Avocados, pears, tomatoes (after ripening at room temperature)
- Almost all vegetables and herbs

OUTSIDE THE FRIDGE

- Bananas, mangos, papayas, and pineapples: store in a cool place
- Potatoes / onions: store in a cool, dark place
- Basil and winter squashes: store at room temperature—once cut, store squashes in fridge

MORE STORAGE TIPS

- If you like your fruit at room temperature, take what you will eat for the day out of the fridge in the morning.
- Many fruits give off natural gases that hasten the spoilage of other nearby produce. Store bananas, apples, and tomatoes by themselves and store fruits and vegetables in different bins.
- Consider storage bags and containers designed to help extend the life of your produce.
- To prevent mold, wash berries just before eating.

FOR MORE TIPS VISIT: <http://bit.ly/15fXwQd>
LEARN HOW TO STORE WITHOUT PLASTIC: <http://bit.ly/1c33nw5>

REFRIGERATOR PROMPT: EAT ME FIRST

This card is designed to be attached to a container that is put into the fridge. Items that are almost expired or need to be eaten soon can be put into this hard to miss container to act as a reminder.

By moving all items that need to be eaten to a centralized, can't-miss location, you're more likely to finish them before it's too late.

EAT ME FIRST!



**TOO GOOD
TO WASTE**

DEVELOPED IN COLLABORATION WITH THE US EPA

EAT ME FIRST!



**TOO GOOD
TO WASTE**

DEVELOPED IN COLLABORATION WITH THE US EPA

APPENDIX D

DETAILED CASE STUDIES

HOUSEHOLD FOOD WASTE PREVENTION CASE STUDY: West London Waste Authority in Partnership with Recycle For London: The Impact of Love Food Hate Waste (WRAP, 2013)

The impact of Love Food Hate Waste



- **Target area:** West London Waste Authority 601,000HH
- **Dates:** October 2012 to March 2013
- **Project partners:** LWaRB, RfL, WLWA, WRAP, and Greater London Volunteering
- **Impact:**
 - ✓ **The amount of avoidable food waste (food which could once have been eaten) decreased by 14%.** Total food waste decreased from 2.6kg per household per week pre-campaign to 2.2kg post-campaign
 - ✓ **For every £1 invested West London Boroughs saved up to £8**
 - ✓ Those households who had **seen something about food waste and claimed to be doing something different reduced their avoidable food waste by 43%** (a 35% reduction in total food waste)
 - ✓ **Reduction in the amount of avoidable food waste is equivalent to 5,250 tonnes pa** for households in West London.
 - ✓ **West Londoners would have saved £14million by not wasting this good food and drink** and 20,000 tonnes of greenhouse gases would have been prevented



Following a Love Food Hate Waste campaign in West London avoidable food waste decreased by 14% in just six months.

The reduction in food waste overall could save the Boroughs of West London around £1.3 million pa in disposal costs (including gate fees and landfill tax).

Between October 2012 and March 2013 Recycle for London (RfL) delivered a pan-London Love Food Hate Waste campaign supported by local Borough activity. The Greater London Authority (GLA) and WRAP worked in partnership to deliver the RfL programme, funded by the London Waste and Recycling Board (LWARB).

One of the local campaigns was carried out in the six Boroughs of the West London Waste Authority (WLWA) area. This campaign provided an opportunity to further understand the impact of Love Food Hate Waste in reducing food waste and funding was available from Defra to monitor changes in behaviours and food waste levels.

The campaign included radio, digital and print advertising along with supporting PR activity, events and community engagement such as cookery classes and engagement through a network of volunteers.

The full research report can be found at www.wrap.org.uk. Read on to find out more...

About



In 2012 / 13 RfL developed and ran a London-wide Love Food Hate Waste campaign, in response to the volume of food wasted by London households and the costs associated with its disposal.

In London alone, an estimated 890,000 tonnes of food is thrown away per year, of which 540,000 tonnes is avoidable. The cost to London Boroughs of reprocessing/disposing of this food waste is estimated at over £50million per annum. It costs consumers £1.4billion per year to purchase the food and drink thrown away in London, and generates the equivalent of 2.1 million tonnes of CO₂e.

The campaign and approach were developed using the '4 E's' behavioural change model: enabling people to make a change; encouraging action, engaging in the community and exemplifying what's being done by others. MINDSPACE, a checklist for behaviour change¹, was also used.

Activity was delivered on three levels, each aimed at contributing to the impact of the campaign in London:



- National activity – delivered in line with the national Love Food Hate Waste campaign calendar including activity from Love Food Hate Waste partners (WRAP).
- London-wide – awareness raising activity (enabling, exemplifying and encouraging) in line with key bursts of national activity (GLA).
- Local / community engagement – communications activity at a Borough level and community engagement activity supported by the volunteering sector (WLWA and

WRAP).

Based on national research, which shows that saving money is the main motivator in encouraging consumers to reduce food waste, the core message of the London campaign was 'You could save up to £50 per month by throwing away less food.'

London wide activity followed key themes from the national campaign including "Harvest and water", Christmas & New Year and "Fresher for Longer". Above the line advertising included radio adverts (November 2012), digital adverts and London underground posters and Metro advert (January 2013), and encouraged consumers to visit lovefoodhatewaste.com.

Three London wide events were held to generate PR; the "Food Waste Challenge" (November 2012), the "Alternative Valentines Banquet" (February 2013) and the "Feaster" banquet (March 2013). The latter

¹ MINDSPACE: <http://www.instituteforgovernment.org.uk/sites/default/files/publications/MINDSPACE.pdf>

events were delivered in partnership with partner organisations and used surplus food to create three course meals for diners.

London specific pages were created on the national LFHW website, and events held in London were listed on the national website events page. RfL and LFHW used social media channels to support activity and engage with the target audience.

All London Boroughs were involved in the London campaign, either individually or through their waste disposal authorities. The level of activity carried out locally varied from Borough to Borough and included vehicle livery, advertorials in Borough magazines and local newspapers, cookery skills workshops and demonstrations, social media, council websites and local PR.

LFHW and RfL worked alongside Greater London Volunteering to recruit and train volunteer Food Waste Champions in local communities across the city. Volunteers were fully trained in LFHW messaging through WRAP's cascade training programme and supported to cascade messages into their local communities. This enabled the campaign to reach a wider audience and to encourage behaviour change at a local level. Food Waste Champions generated a total of 11,839 volunteer hours across the whole of London, which had an economic value of £185,514².

One area of London was monitored to help measure the impact of a comprehensive LFHW campaign.

Measuring the impact of a comprehensive Love Food Hate Waste campaign

The work of WRAP and its partners (including the LFHW campaign), increasing food prices and difficult economic conditions have all helped to reduce the amount of food wasted from our homes, but determining the extent to which each of the various factors have played a role is extremely challenging. WRAP wished to provide further evidence for its partners about the impact of running a comprehensive LFHW campaign.

West London was selected for this research due to the level of internal resource (both staff and funding) that the West London partners could dedicate to the campaign project; this combined with RfL support meant that there was a comprehensive campaign with a wide range of communications activity delivered across the area, which was required for the evaluation (a minimum level of activity and behaviour change is needed to be able to measure its impact). The Boroughs of West London were keen for this evaluation research to take place. RfL provided funding and advisory support for the communications activity and WLWA also contributed significant internal resource to the project. In addition to direct funding support

² Using the Volunteering England formula for calculating the economic value of volunteering (number of volunteers X average hours worked X average hourly rate) and the average hourly wage for London of £15.67

from RfL, West London also benefited from targeted volunteer coordinator activity. This involved recruiting and training Food Waste Champions within communities and encouraging them to cascade practical messages about how to reduce food waste and save money to their own networks.

The research had two principal elements:

- Measuring any changes in the amount of food waste generated by West London households using waste compositional analysis; and
- Investigating changes in attitudes, awareness or behaviour relating to household food waste using a quantitative questionnaire survey (household interviews).

The campaign

Activity in West London focused on raising awareness of the issue of food waste locally, offering simple everyday solutions and community engagement to influence relevant behaviours. Activities were planned to amplify the impact of the national and London wide activities. Activities during the campaign period included:

- **Local radio adverts** – radio adverts placed on LBC Radio in January 2013, followed by adverts on Radio Jackie, Hayes FM and Sunrise Radio in March 2013. The minimum reach of these adverts is estimated to be 1.1million people
- **Let's Get Cooking Clubs** – 28 Let's Get Cooking Clubs were set up across West London, engaging 800 people. The purpose of the Clubs is to provide practical cookery skills and information to enable people to make the most of the food that they buy.
- **Internal communications** – targeting staff within the Boroughs of West London through internal magazines and the intranet at key points throughout the year. This activity took place in Ealing, Hounslow and Harrow, and targeted 9,000 staff members.
- **Social media** – WLWA delivered an on-going programme of social media, communicating directly with residents about LFHW (99 LFHW related tweets were put out by WLWA with 61,859 opportunities to see for WLWA followers and 138,519 retweets).
- **Local online advertising** – LFHW digital adverts included on the websites for local news, linked to the LFHW website to direct people to the national campaign (113,634 page impressions with 609 people clicking on the link and following through to LFHW.com)
- **Website** – the WLWA website included local and targeted information about LFHW including 9 comprehensive articles and a direct link to the national website.



- **Press Adverts and Advertorials** in the local press/Borough magazines – half page adverts were placed in 4 of the Borough magazines, with half page adverts placed in the local press for the other two Boroughs (for which Borough magazines were not available). This activity was delivered in October 2012. A further

round of press adverts ran in January 2013 across local press and one Borough magazine. The local newspaper and Borough magazines would have reached 689,445 people.

- **Vehicle livery** – LFHW vehicle livery on eight refuse vehicles in the London Borough of Harrow.
- **Posters** – posters were displayed in local shops and community noticeboards to promote key messages.
- **Bus and outdoor adverts** – 75 bus-back adverts were displayed for a period of 8 weeks (53 of these remained on until January) from October 2012. Twenty four 6-sheet adverts were placed across

the six Boroughs for a period of two weeks during October 2012 as well as ten 4-sheet adverts for 4 weeks.

- **European Week of Waste Reduction (EWWR)** – local zero waste challenge run by WLWA challenged local residents to reduce their food waste

- **Community Engagement activity** – WLWA delivered fifty events and community talks, directly engaging 900 residents, providing information primarily about food waste prevention but also included how to recycle the food they couldn't use

- **PR** – regular press releases to support local and London wide activity supported by national PR to

Janice Weir a Food Waste Champion said *"At Foodtruly Ltd, our customers have said that LFHW is more than just an education, it's a journey into the culinary unknown and very exciting really especially knowing we can go to a website and create recipes. We also waste less food so the savings are spent on family outings."*

help raise awareness

Costs

Support	Total direct funding	Funding per HH in West London (601,000HH)
West London proportion of London wide activity	£17,798	0.03p
West London proportion of volunteer network	£26,545	0.04p
West London funding from RfL	£51,760	0.09p
WL WA funding ³	£72,369	0.12p
Total	£168,472	0.28p

Return on Investment per annum

Investment	£168,472	
Savings in disposal costs to Boroughs of West London	£1.3 million⁴	
RoI for LA savings	<i>For every £1 invested West London Boroughs saved up to £8⁵</i>	
Savings to Residents	£14.2 million⁶	<i>Each Household in West London saved on average £24 by not buying food they would otherwise have thrown away</i>
RoI for consumer savings	1:83	
Economic value from Food Waste Champion volunteer hours	£21,507	Based on an estimate of 1,373 volunteer hours
Total savings	£15.5 million	

Results and Impact

- **The results from the composition analysis showed a statistically significant reduction of 0.4 kg per household per week - a 15% reduction in food waste** - between the pre- and post-campaign analyses. The majority of this reduction is a result of decreases in food waste in the residual waste stream.
- **Avoidable food waste decreased by 14% during this time.**
- **For households who reported that they were aware of the campaign and other food-waste messaging and claimed to be doing something different as a result** (14% of the total number

³ *combination of direct funding and staff time equivalent

⁴ It should be noted that the disposal charge during the period of the campaign was £93 a tonne. The current disposal charge is £106.50 and has been used for the purposes of this report; based on reductions in total collected food waste.

⁵ Saving divided by Investment = £1,315,275/£168,472=7.8 = 1:8

⁶ Based on a cost to consumers of £2,700 per tonne. New estimates for household food and drinks waste in the UK, Nov 2011 (<http://www.wrap.org.uk/content/new-estimates-household-food-and-drink-waste-uk>)

of households), **the reduction in avoidable food waste was 43%, a statistically significant change.** The reduction in total food waste was 35%⁷.

- **Importantly the campaign successfully encouraged people to change key targeted behaviours which then reduced their food waste.** A range of behaviours were monitored to give an indication of behaviour change in West London including planning meals in advance; checking levels of food in cupboard and fridge prior to shopping; making a shopping list; using the freezer to extend the shelf life of food; storing meat and cheese in appropriate packaging or wrapping; storing fruits and vegetables in the fridge; using up left-overs; portioning rice and pasta; and using date-labels on food. These behaviours cover a large proportion of the activities that could reduce food waste and are broadly applicable to the majority of households in the UK. Although this is not an exhaustive list, the behaviours act as a proxy for wider behaviours (e.g. storing apples in the fridge, thereby increasing shelf life, is used as a proxy for storing other fruit in the fridge) and can be seen as an indicator of real behaviour change⁸.
- If the decrease in collected food waste is scaled up to all households in the six Boroughs of West London it is **equivalent to a reduction of 12,350 tonnes per annum for all food waste and 5,250 tonnes per annum of avoidable food waste.**
 - **Residents of West London would have saved approximately £14.2 million per year not buying the good food and drink which was then wasted.**
 - The greenhouse gas emissions associated with the reduction of avoidable food and drink waste is **equivalent to 20,000 tonnes of CO₂e prevented.**
 - With landfill tax currently £72 per tonne the reduction in avoidable food waste would offer savings of almost £378,000 in landfill tax and assuming a total disposal cost of £106.50 per tonne such a reduction would save the Boroughs of West London £559,000 per annum in disposal costs (including gate fees and landfill tax). **The reduction in total disposal costs for all food waste in West London would be up to £1.3 million.**
- The 14% reduction in avoidable food waste relates to 0.17 kg / hh / week. Scaling this up to the whole of London for a year (based on 3.33 million households) gives 29,400 tonnes of avoidable food waste. Using the figure of £2,700 per tonnes of avoidable food waste leads to £79 million cost saving to residents. The cost saving to LAs from avoided disposal costs (£106.50 per tonne) could be up to £7.3m for total food waste⁹.
- It is estimated that Food Waste Champions generated a total of 1,373 volunteer hours across West London, which had an economic value of £21,507.

It should be noted that that the campaign will have mainly affected avoidable food waste: the campaign did not focus on behaviours or decisions relating to the unavoidable fraction of food waste (e.g. teabags,

⁷ These reductions are significant at the 95% confidence level.

⁸ Guide to monitoring food waste impact: Love Food Hate Waste partners site
http://partners.lovefoodhatewaste.com/resources/monitoring_love_food_rma

⁹ 68,000 tonnes

meat and fish bones, banana peel etc). Results given are those from a representative sample of households in West London. However, a proportion of the reduction could be related to the research effect, whereby the act of being interviewed has an influence on behaviours and waste levels. Therefore the results presented should be seen as an upper limit on the impact of this campaign.

Sarah Ellis, West London Waste Authority *"Whenever we talk to our residents at events they're always amazed by the Love Food Hate Waste tips we can give them. We know they're interested and take away at least one thing they can do so we're really pleased with the results of this campaign. Not only will our residents benefit individually by saving money on their shopping they'll benefit collectively too from the reduction in disposal costs. Reducing total food waste by 15% also gives us a solid business case to continue promoting LFHW."*

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Visit the Love Food Hate Waste partners site to download free of charge resources for all partners including template editorial, template artwork, videos, how-to guides, case studies, monitoring guidance, campaign calendar, recipe cards and much, much more www.lovefoodhatewaste.com/partners

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LOCAL AUTHORITY WASTE PREVENTION CASE STUDY HEREFORDSHIRE AND WORCESTERSHIRE COUNCILS: Love Food Hate Waste Campaign (WRAP, 2010)

Love Food Hate Waste campaign

Key Facts

- Campaign spend was 29p per household at a total cost of £90,000.
- A door to door engagement approach ('doorstepping') was trialled as part of the campaign but results indicated this to be less effective than other engagement methods such as roadshows and the Women's Institute Love Food Champions project.
- Committed Food Waste Reducers (a metric used to monitor the impact of food waste reduction initiatives) rose from 13% to 23% in 5 months.
- An estimated 2,340 tonnes of food waste was diverted from landfill during the year following the campaign.
- The cost of the campaign was equivalent to £38.46/tonne in 2008/09 and is likely to reduce to £16.02/tonne over 3 years (2008/09-2010/11); this is less than the cost/tonne of disposing of food waste to landfill.
- In 2008/09, the net saving (avoided disposal costs) was over £24,000, and total net savings are estimated at £220,000 for the period 2008/09-2010/11.
- Recognition of the LFHW brand increased amongst residents from 10% in the pre-campaign survey to 21% post-campaign, and awareness of the campaign similarly rose from 23% to 40%.

Introduction

Herefordshire and Worcestershire Councils submitted a joint bid to WRAP in 2008 and received funding to deliver a local Love Food Hate Waste (LFHW) campaign running from November 2008 through to the end of March 2009. The aims of the campaign were to raise awareness of the need to reduce food waste, reduce the level of food waste being sent to landfill and help residents to save money. The campaign objectives were:

1. to increase the percentage of committed food waste reducers in Herefordshire and Worcestershire by 10% from October 2008 to April 2009; and
2. as a result of Objective One, to divert 2,340 tonnes of food waste from landfill by April 2009.

Background to campaign

The Herefordshire and Worcestershire councils work together to promote waste prevention, reuse and recycling throughout the counties. The results of a waste composition analysis reinforced a need to focus on reducing food waste, and to aid households in doing this. The concurrent media coverage of the 'credit crunch' highlighted food waste reduction as a good way of encouraging people to save themselves money. Food waste reduction links well with action on climate change because wasted food represents wasted emissions from all stages of food production, transport and storage; and decomposing food in landfill generates methane. Worcestershire County Council has been awarded Beacon Authority Status for its work on tackling climate change.



About Herefordshire and Worcestershire

- There are 309,000 households across the two counties.
- Herefordshire and Worcestershire are largely rural with centres of population in Hereford and Worcester cities and a number of small to medium towns.
- Herefordshire is a unitary authority. Within Worcestershire there are seven local authorities (Worcestershire County Council (Waste Disposal Authority), Bromsgrove District Council, Malvern Hills District Council, Redditch Borough Council, Worcester City Council, Wychavon District Council and Wyre Forest District Council).
- In 2008/09 Herefordshire had a recycling and composting rate of 33% and Worcestershire 42%.
- One of the councils, Wychavon, operates a food waste collection which was rolled out during the LFHW campaign period.

- 20,000 leaflets printed for roadshows and events;
- posters in community locations;
- press adverts - 7 x 1/2 page press adverts x2 (Nov 08 and Jan 09);
- PR local links - press articles;
- pull up banners for roadshows and events;
- radio advertising - 4 weeks radio advertising using the national Love Food Hate Waste radio ads; and
- over 30 roadshows – residents were asked to fill in a food waste questionnaire and in return they could take away a free prize e.g. branded jute bag, recipe cards. The questionnaires provided the councils with useful information to base their future work on.

A door to door engagement trial was carried out as part of the project. Eight 'Food Champions' spoke to residents on their doorsteps about the issues of food waste and offered them hints and tips to help them to waste less food, tailored to each conversation. The Acorn classification model was used to ensure a representative sample of households was visited across the two counties during the door to door engagement and the pre- and post-campaign surveys undertaken as part of the campaign monitoring process.

The Approach

The campaign was led by Herefordshire Council and Worcestershire County Council, working in partnership with the six waste collection authorities. Local and countywide activities were planned, some of which were run by individual authorities and others jointly.

All households within the two counties were part of the promotional campaign but households with children were a particular focus. The campaign was a mix of advertising, community engagement, and PR.

This included:

- billboards - 11 billboards for 4 weeks;
- bus advertising - bus back/sides;
- door to door engagement trial (21,700 households visited and 7,000 canvassed);
- editorials - articles in district magazines and staff newsletters
- campaign launch with accompanying press opportunity;



Results/Conclusion

The percentage of Committed Food Waste Reducers increased from 13% to 23% in 5 months, meeting Objective One (a 10% increase in CFWRs). In turn this meant Objective Two was achieved as the total estimated tonnage diverted by campaign was 2,340 tonnes at a cost of £38.46/tonne (2008/09). Based on the cost of landfilling waste in 2008/09 (£54/tonne)¹ this equates to a net saving (avoided disposal cost) of over £24,000. This is expected to increase to over £220,000 over three years (2008/09-2010/11)². This would reduce the campaign cost to £16.02/tonne avoided.

The pre- and post-campaign surveys also established the following:

- Campaign awareness increased from 23% to 40%.
- Over 70% of those who were aware of the campaign felt that it was informative; over 50% felt it provided useful tips and practical advice; 45% felt that the campaign made them more reluctant to throw food away.
- There was a large increase in recall of the LFHW message from council publications (24% to 42%) and on billboards & other outdoor advertising (8% to 15%).
- Residents referred frequently to supermarket roadshows held by council staff as being positive and informative.

Local media and local authority publications covered the campaign very successfully. Following liaison between officers and journalists the local press attended a number of road shows which resulted in articles and pictures in the local papers. During the campaign a number of stories about the door to door engagement trial appeared in the national media but these were not accurate reflections of what was happening on the ground and there is no evidence that this media coverage had any impact on delivery of the campaign locally.

The door to door engagement element of the campaign had been included to test whether this communication method, which has been used successfully in many areas to explain recycling services to residents, could be a useful technique for waste prevention. In fact 26% of respondents to the post-campaign survey stated that they had been visited by a food adviser. As shown in Table 1, of those who stated they had been visited only 6% felt

they threw away less food waste and a further 2% said they threw away much less.

Since your visit from the food waste adviser, would you say that the amount of uneaten food that you or your household throws away has increased, decreased or stayed the same? Do you...

Throw away much more now **0%**

Throw away slightly more now **1%**

Throw away the same amount **91%**

Throw away slightly less now **6%**

Throw away much less now **2%**

**Don't know/
can't remember
(unprompted)** **0%**

Table 1 - Effect of visit from a food waste adviser on respondents' food waste arisings

"Many people we spoke to claimed not to waste food, perhaps because it is felt to be socially unacceptable, whereas the WRAP research³ found that almost everyone throws some food away. Although people were often happy to discuss food waste in general they were reluctant to talk about their own barriers to reducing food waste at the doorstep."

A Herefordshire and Worcestershire Food Champion

The proportion of CFWRs (23%) in the post-campaign survey sample was very similar for those visited and not visited by a food waste adviser. This suggests, although does not prove, that the door to door engagement was not key to the increase in CFWRs; however it should be noted that the pre- and post-campaign survey responses were not necessarily from the same households and therefore other effects could explain this similarity.

Despite the campaign's overall success, door to door engagement appears to be an inefficient method of directly engaging with members of the public regarding food waste. Reducing food waste involves more complex behaviours than recycling and it has been -

1. WRAP (2010) Comparing the cost of alternative waste treatment options. Accessed on 3rd December 2010 from www.wrap.org.uk/downloads/2010_Gate_Fees_Report.43ff83ce.9523.pdf

2. See Note on avoided disposal costs (pg 5) for explanation of calculation.

3. WRAP (2007) The Food We Waste

found that working with partner organisations such as established civil society groups using a team of food waste advisers is more successful, as in the Women's Institute (WI) Love Food Champions project^{4,5}.

Herefordshire and Worcestershire councils are now developing the campaign through enhanced community engagement using their established network of Master Composters and through local groups such as Children's Centres.

Key Learning Points

- Direct one to one engagement to help people waste less food is a positive and effective method of communicating at a local level. Door to door engagement appears to be inefficient. Working with local groups who wish to save money and waste less food is more cost effective and is preferred.
- Since the campaign Herefordshire and Worcestershire are continuing to promote LFHW and its messages, working with their local Children's Centres and expanding the remit of their successful Master Composter programme.

The net disposal saving over 3 years (see Table 2) has been calculated using the cost per tonne for disposal to landfill and allowing for the year on year increase in landfill tax. It allows for an assumed year on year drop off rate of 20% of the original tonnage saved so that 6 years after the campaign no additional tonnage diversion is attributed to the campaign (i.e. the number of CFWRs will have reduced to pre-campaign levels). This assumption is conservative and drop off rates may well be less than 20%, resulting in higher tonnage diversion and associated financial savings.

Note on Monitoring and Evaluating Food Waste Programmes

WRAP initiated a review of its committed food waste reducer metric in 2009. This metric was made up of three questions relating to a self-reported estimate of food waste generated; how bothered by food waste the respondent is; and how much effort to minimise food waste the respondent goes to. In late 2009, this started to show anomalous results – the proportion of CFWRs was decreasing, but levels of behaviours that reduce the amount of food waste (e.g. planning meals) were increasing. These anomalies were most likely the result of people doing more to tackle food waste, but building it into their daily routine, so not feeling that they make a special effort towards reducing food waste; becoming less bothered by food waste as they produce less of it; and making more accurate assessments of the quantities of food that they do waste as they become more aware of what they throw away.



Note on avoided disposal costs

	2008/09 (Year 0)	2009/10 (Year 1)	2010/11 (Year 2)
Estimated tonnes reduced	2340	1872	1404
Cost of disposal to landfill/tonne (W Midlands average)	£49	£57	£65
Gross saving in disposal costs	£114,660	£106,704	£91,260
Initial investment (campaign cost)	£90,000	0	0
Net disposal saving	£24,660	£106,704	£91,260
Net disposal saving over 3 years			£222,624

Table 2 - Disposal savings resulting from food waste tonnage diverted from landfill due to an increase in CFWRs

4. Love Food Champions pages on the WI website www.thewi.org.uk/standard.aspx?id=10880

5. WRAP & Women's Institute (2008) Love Food Champions report www.wrap.org.uk/downloads/LFC_draft_FINAL_report_171008-FINAL.9a2e4b02.6083.pdf

Further analysis of existing datasets (which were not available when the metric was developed) showed only a weak link between the quantity of food waste generated by a household and either their stated level of effort or 'botheredness'. However, a strong link was found between stated levels of food waste generated and measured levels of food waste. This new evidence indicated that an improved method for monitoring the impact of household food waste reduction programmes was needed.

Going forward WRAP recommends using a survey to monitor self-reported levels of food waste where compositional analysis (which is the most accurate method) is not feasible. WRAP is refining the recommended self-reported question but in the meantime the following question should be used both before a campaign and afterwards:

"Thinking about the different types of food waste we have just discussed, how much uneaten food, overall, would you say you generally end up throwing away? – Quite a lot, A reasonable amount, Some, A small amount, Hardly any, None, Don't know".

The original CFWR metric is still valid for those authorities who have already carried out monitoring or are midway through. For further information about monitoring your local Love Food Hate Waste campaigns please contact LAartwork@wrap.org.uk.

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Waste & Resources Action Programme

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FOOD: TOO GOOD TO WASTE PILOT DESCRIPTION AND FINDINGS (U.S. EPA, 2014)



Food: Too Good to Waste Pilot Descriptions and Findings

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King County, Washington

Objectives: Reducing wasted food is a priority for King County in its effort to achieve Zero Waste and climate action goals, since food accounts for 14% of the County's consumption-based Greenhouse Gas emissions. The specific aim of the King County pilot was to test the effectiveness of the pilot messaging and tools in reducing food waste and to gauge the impact of a Community-Based Social Marketing (CBSM) campaign based on these results.

Target Population and Sample Size: The target audience for the King County implementation was families with small children. The pilot was introduced to 110 families with a child enrolled in the 4th grade at the public elementary school in Fall City, a peri-urban town with a population of approximately 2,000.

Targeted Behaviors: During the pilot, all five waste prevention behaviors were introduced to the families.

Tools Used in Pilot: This pilot used both the Shopping List Template and the Fruit and Storage Guide tools. They also structured the pilot around a modified Challenge as described below under the subheading "Implementation Choices". In addition, King County developed several other tools including: a Top Five Ways to Waste Less Food information sheet; Packing a Waste Free Lunch tip sheet; a blog to keep families informed and motivated; a Food: Too Good to Waste daily tip PowerPoint presentation by the teacher; and a Learn More resource list.

Community Partners: King County partnered with a local elementary school through their Green Schools Program. They were assisted by the marketing firm of Colehour and Cohen who have special expertise in CBSM campaigns in developing and implementing their pilot.

Length of Pilot: The participant engagement period lasted approximately two months, including time to recruit and assess and acknowledge the families' participation. The length of the Challenge was five weeks. As King County developed their materials in parallel with the Forum, the overall length of their pilot was eight months.

Implementation Choices: The invitation to participate in the Food: Too Good to Waste Challenge was sent via email to the families of the 4th grade children. A King County representative then visited the classroom to explain to the students why wasted food is bad for the environment and household economics and distributed the measurement tools (bag and weekly worksheets). The teachers incorporated new messages into curricula each week with daily tips/facts. The first week waste collection served to establish a baseline for the volume of food going to waste. Both preventable and non-edible food waste items were collected in the same measurement bag to simplify the process. At the start of the second week of the pilot, all five pilot strategies were introduced. Thereafter, tools were introduced one at a time at one week intervals. Students were also presented a daily food waste reduction tip. All families who completed the challenge were given recognition certificates and entered in a drawing for grocery store gift cards.

Observations: The tools were well received and gave King County confidence in the overall messaging. Students and parents were especially influenced and surprised by how much food (and money) could be saved as a result of simple strategies. As a result of this finding, the county will emphasize potential savings in their broad-scale campaign. On average families that participated all five weeks reduced their food waste by 28%. However, a “challenge” where people have to measure waste and report is great for raising awareness but is onerous. Incentives may help to reduce this barrier to participation. In King County teachers assigned homework and the county offered a prize for participation, but still many families did not follow through. During the pilot, King County didn’t have a lot of local resources to give people, so in the full-scale campaign they are putting emphasis on improving the website for King County and including more info about why it’s important.

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Honolulu, Hawaii

Objectives: The City and County of Honolulu (CCH) are interested in food waste management solutions that would both lower the costs of landfilling as well as offset the cost of importing food to the island. The Honolulu pilot sought to test CBSM food waste reduction strategies and tools including a [cookbook](#) with local chef-contributed recipes and food waste prevention tips. It also aimed to see if there was a connection between preventable food waste and the number of meals outside the home.

Target Population and Sample Size: Out of approximately 210 emails sent, 17 households were recruited to participate in a four week challenge. The principal audience was young adults although two households were in their fifties and two households had children. The average age of participants was 34.

Targeted Behaviors: All five behaviors were tested but the “Buy What You Need” strategy was combined with the “Make a Shopping List with Meals in Mind” strategy and relabeled “Smart Shopping”. In addition, households were encouraged to test recipes for using up leftover ingredients.

Tools Used in Pilot: The Workshop Presentation was used to introduce the Food: Too Good to Waste Challenge to the household participants. Behavior support tools included: a food storage guide developed by Eureka Recycling; a menu planner used in the Australian campaign; an “Eat Me First” prompt; and a [cookbook](#) containing recipes for using up leftover ingredients developed by local chefs.

Community Partners: Alexander Lavers researched, directed and managed the pilot in fulfillment of a Master degree in Environmental Sciences from the University of Gothenburg, Sweden.

Length of Pilot: The total elapsed time of the pilot was four months. Recruitment took approximately three weeks, while the length of the Challenge was four weeks. Adapting, preparing and purchasing materials for the challenge took three weeks as did the data analysis. In addition, the project organizer spent several months coordinating the cookbook’s development with the contributing restaurants, the graphic designer, and the county.

Implementation Choices: Recruitment was made by email using personal contacts in two social networks, the Recycling Branch of the Refuse Division of CCH and a Honolulu running club. Challenge participants were asked to measure preventable and non-edible food waste for two weeks after which they measured both types of waste for an additional two weeks while trying food waste reduction strategies. Non-pilot study cookbook recipients will receive an option to fill out a survey on their experience with the cookbook/ toolkit; in return for their responses they will receive a coupon to a restaurant featured in the cookbook.

Observations: Participation and retention was facilitated by early and frequent engagement. Pilot participants saw a 19.6% reduction in preventable food waste in weeks using food waste prevention strategies compared to baseline weeks. Households that did not see a reduction in food waste had irregular events that affected their success. There was significant variability in the food waste collection data possibly related to age. Older participants started with less food waste. Households with members aged 28 to 34 achieved the largest reduction but started with more waste.



Ministry of
Environment

RESIDENTIAL FOOD WASTE PREVENTION

TOOLKIT for Local Government and Non-Government Organizations



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