



**THE AVOIDABLE CRISIS OF FOOD WASTE:**

the roadmap

## ACKNOWLEDGEMENTS

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Accessible from: [www.SecondHarvest.ca/Research](http://www.SecondHarvest.ca/Research)



Second Harvest is Canada's largest food rescue organization and an expert in perishable food recovery. Every year we are expanding our network to include more farms, manufacturers, distributors and retailers. We work with hundreds of businesses across the food supply chain, reducing the amount of edible food going to waste, which in turn stops millions of pounds of

greenhouse gases from damaging our environment. The food Second Harvest recovers is redirected to social service organizations and schools, ensuring people have access to the good food they need to be healthy and strong. Second Harvest is a global thought leader and continually innovates processes and shares methods, to create a better future for everyone.

[www.SecondHarvest.ca](http://www.SecondHarvest.ca)

[www.FoodRescue.ca](http://www.FoodRescue.ca)



Value Chain Management International (VCMi) has authored/co-authored several publications on food loss and waste and is a leading public and industry voice in bringing awareness to the opportunities and solutions surrounding food waste reduction, traceability, and the environment. VCMi measures waste within the overall analysis of food systems to

create pragmatic and sustainable solutions for businesses and industry organizations along the value chain. VCMi applies specialized value chain diagnostic tools to detect where waste occurs and to determine how to eliminate it. VCMi then participates in the implementation of new practices to solve the issues and ensure successful outcomes.

[www.VCM-International.com](http://www.VCM-International.com)

# this research is a world first:

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- It's the first to measure volume (weight) using a standardized system across the whole food value chain
- It encompasses all food types from terrestrial and marine commodities
- It identifies and validates loss factors based on primary data provided by industry
- It provides a whole of chain analysis, from primary production through to end of life
- It identifies the root causes of FLW, where they occur along the value chain, and the extent to which they differ by food type
- It establishes a replicable whole of chain FLW analytical framework, comprising standardized metrics that can be used at enterprise and industry level
- It establishes a means to connect commodities to finished products (foods and beverages), to enable extrapolations to be established between consumer products and primary source
- It calculates mass balance: total available commodities produced for food, minus exports, plus imports (from a whole chain perspective)
- It assesses the destination of FLW occurring along the value chain

## WE NEED TO

# radically change

## HOW WE VALUE FOOD



Apples rot under trees due to labour shortages or low prices making it uneconomical for farmers to harvest



Surplus milk goes into sewers



Thousands of acres of produce are plowed under due to cancelled orders



Fish are caught then tossed back into the water to die if they don't match the quota

The abundance of food in Canada has led us to dismiss its intrinsic value as a source of life-giving nutrition at the same time as 4 million Canadians – including 1.4 million children – struggle to access healthy food.

There is a way forward, but we need to start by radically re-thinking how we value food at each stage of the value chain. As you will see, there is a strong business, social and environmental case for reducing food loss and waste and rescuing and redistributing surplus food.

Consumers also play a part: we shop 2 for 1 deals but let the second item spoil because we didn't need it; a product passes its best before date and we throw it away because we think it's not edible; we expect abundant portions when we dine out but don't finish our meals.

Due to product dating practices that have no correlation to food safety, perfectly good foods and beverages go to landfill rather than being donated.

This pattern is repeated at retail: fresh bread is thrown into garbage bins at the end of the day along with tubs of yogurt that are a few days shy of their best before date and blemished fruit that is still edible.

### HOW FOOD WASTE DAMAGES THE ENVIRONMENT

Food loss and waste (**FLW**) is an enormous economic cost to businesses and society. It also has a significant environmental impact.

FLW represents almost 60 percent of the food industry's environmental footprint. Much of this waste and its environmental footprint is entirely avoidable.

Food that ends up in landfill creates methane gas which is 25 times more damaging to the environment than carbon dioxide.

The United Nations Intergovernmental Panel on Climate Change report states that significant action needs to be taken to avoid global warming above 1.5°C by 2030. Tackling food loss and waste must be considered an urgent priority by all levels of government, industry and individuals.

All of us – from farmers to manufacturers, from producers to distributors, from stores to homes – need to rethink how we view excess food and change our habits, so that people can benefit and an environmental crisis can be avoided.

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Every year, 56.5 M M tonnes of CO<sub>2</sub> equivalent emissions are created by food waste in Canada

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# why

## WE NEED TO STUDY FOOD LOSS AND WASTE

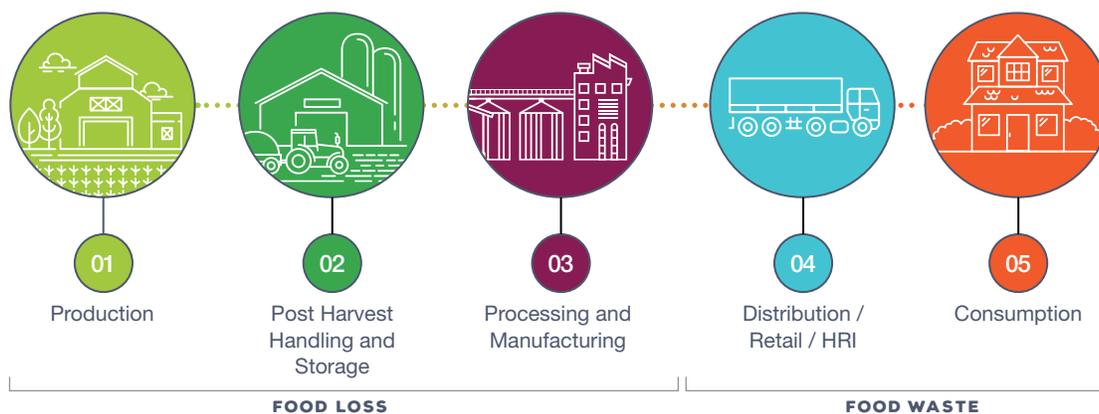
Second Harvest is in the business of food rescue, and after more than three decades working on this problem, we know that there is much more that can be done. The amazing healthy and nutritious food we recover hides in plain sight: it is not waste; it is surplus that can't be sold at market.

Accurate measurement of food loss and waste (FLW) is vital for economic and environmental reasons but it has not been consistent: many people in the food industry don't take full advantage of the commercial opportunities that can be realized by addressing the root causes of FLW. This includes how much food loss can be prevented and rescued.

Second Harvest partnered with Value Chain Management International (VCMi) and consulted with over 700 food industry experts through online surveys and interviews to identify the

root causes of FLW. With this data a framework was created for the entire food value chain to measure FLW.

This study found a need to standardize measurement in order to compare results, create benchmarks and provide clearer direction for government, industry and consumer solutions. We would then be able to implement sustainable solutions to help reduce FLW, through prevention and redistribution. See the Technical Report for a detailed explanation of the measurement framework.



In the food value chain, the words "**LOSS**" and "**WASTE**" have distinct but interconnected meanings.

**LOSS** is the discarding of food that occurs from production through to processing. Examples include edible foods not meeting customer specifications (e.g. too small, not perfect shape); orders from customers being changed or cancelled; or a lack of labour on the farm causing fruit to not be picked.

**WASTE** is the discarding of food during distribution and marketing to consumers through retail or foodservice and subsequently in the home. Food waste also applies to food and beverages that are donated to food rescue organizations but end up being discarded.

## IS ALL FOOD WASTE THE SAME?

There are two types of food loss and waste (FLW):

### AVOIDABLE

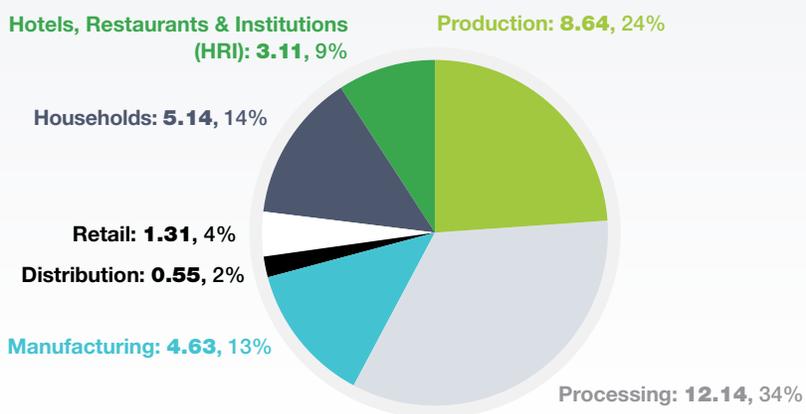
This would include FLW such as apples that reach the retail store but are not purchased by consumers. This unexpected or “unplanned” FLW is the greatest opportunity to reduce FLW or rescue edible food.

Because unavoidable FLW occurs in the production of foods and beverages that are subsequently lost and wasted, all types of losses and waste can be reduced to a degree.

### UNAVOIDABLE

By-products that are inedible are thrown out, such as animal bones, husks, and the planned waste that happens when food is cooked and processed. This is expected or “planned” FLW.

#### TONNAGE (IN MILLIONS) AND PERCENTAGE OF TOTAL WASTE



58%

OF ALL THE  
FOOD PRODUCED IS  
**LOST OR WASTED**

35.5 M M Tonnes

32%

OF THIS LOST AND WASTED FOOD  
COULD BE RESCUED TO SUPPORT  
COMMUNITIES ACROSS CANADA

11.2 M M Tonnes

#### THE SOURCE, VOLUME AND VALUE OF AVOIDABLE FLW

These figures don't include the immense production costs, such as water, power, fertilizer, labour etc., as well disposal fees. The environmental costs include GHG emissions produced by food decomposition in landfill.

FOOD SUPPLY CHAIN STAGE	VOLUME (MILLION TONNE)	VALUE (BILLION)
Production (Produce Only)	0.66	\$2.88
Processing & Manufacturing	4.82	\$20.96
Distribution	.55	\$2.41
Retail	1.31	\$5.70
Consumer	2.38	\$10.37
HRI	1.44	\$7.14
<b>TOTAL</b>	<b>11.17</b>	<b>\$49.46</b>

# THE TOMATO:

*a story of loss*  
FROM FIELD



TO  
FORK



# overview



In the pages ahead, we will follow the path of a tomato through the supply chain to see how and why food loss and waste (FLW) occurs.

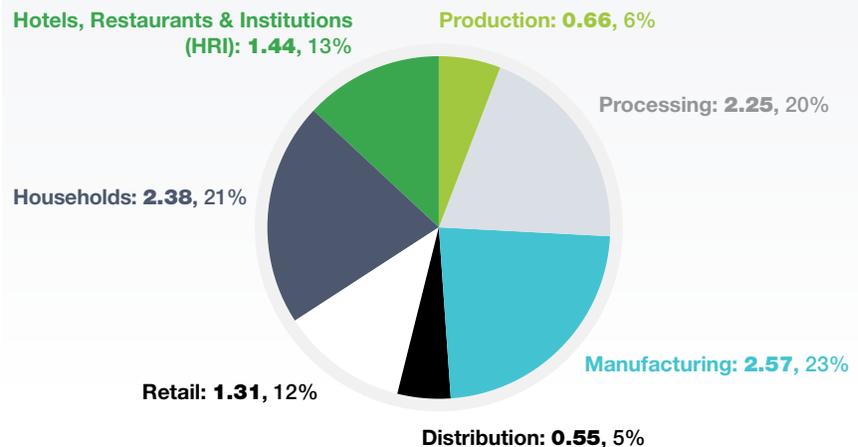
We'll conclude by envisioning how we can work towards longer-term change and a revolution in how we value food.

The issue of food waste is complex and challenging but it's vital for all of us to understand how, why and where it happens. Knowing the root causes of FLW enables the development of sustainable FLW solutions.

The path of a tomato is an ideal example to illustrate the pain points of where loss and waste can occur along the chain because tomatoes reach retail in both their original fresh form – prepackaged or loose – and as a processed good, like canned tomatoes or tomato paste.



## TONNAGE (IN MILLIONS) AND PERCENTAGE OF UNPLANNED, POST-PROCESSING (AVOIDABLE), POTENTIALLY EDIBLE FLW



# production

## GROWN AND GATHERED



01

Millions of tomatoes are grown each year in Canada and it's expected that hundreds of thousands won't make it to market. Some won't even make it off the farm or out of the greenhouse.

### WHY AND WHERE LOSS AND WASTE OCCUR ON THE FARM OR GREENHOUSE

#### AESTHETIC CRITERIA

Only "perfect" Grade One or Grade Two produce will be sold to retail. Particularly if produced for sale in the fresh market, a tomato that is not the exact right size, shape or colouring will likely not have a market.

#### FORECASTS

What growers are asked to grow by their customers, sometimes ahead of crops being planted may exceed actual demand. This can leave farmers with a crop that they cannot sell.

#### PRICES

The prices paid to many farmers, particularly those supplying the fresh market, can fluctuate widely, sometimes falling below the cost of production.

#### VARIETY

There are many varieties of tomatoes and some can only be sold to certain markets due to their appearance, size, taste or internal qualities. This increases the potentially negative effects that aesthetics, incorrect forecasts and low prices already have on farmers. Due to forecasting, price or variety, the farmer may not even harvest the product – especially if they have no food rescue connection. If grown in the field, crops may be plowed back into the ground.

#### TEMPORARY AND SEASONAL WORKERS

The farming and food processing sector has been negatively impacted by changes to the seasonal and temporary worker regulations. In agriculture and horticulture, having too few workers leads to on-farm losses due to the inability to harvest crops at peak quality. Some crops are not harvested at all. In the fruit and vegetable industry, crops harvested past their prime result in a higher



# 6%

OF AVOIDABLE FLW  
DURING PRODUCTION  
(PRODUCE)

.66 M Tonnes  
\$2.88 B

percentage of produce being discarded and higher than usual losses occurring in storage.

All this good food is lost at the source, where it's grown and gathered. When we take a look at a tomato's journey through the food value chain, we see the amount of food thrown away is enormous. This has been acceptable practice for far too long.

# post-harvest

## HANDLING AND STORAGE



02



### BARRIERS TO RESCUING AND DONATING FOOD — AND WHAT CAN BE DONE

#### ISSUE: IMPROVED COORDINATION BETWEEN FOOD RESCUE AND DONOR

A patchwork system has evolved to rescue and redistribute food. This system lacks coordination to effectively communicate the opportunity to donate across the food supply chain. Also, there is limited infrastructure in the charitable sector to take advantage of donations from larger institutional food donors. This leads to an excess of certain commodities at certain times of the year and leaves producers with limited options for donating food that are cost-effective and/or places a substantial burden on those who are determined to donate. This situation is particularly acute in rural areas, where the majority of crops are grown.

#### PROPOSED ACTION:

Strategic oversight and implementation of lean enterprise practices. Explore and implement online food donation platforms such as [FoodRescue.ca](http://FoodRescue.ca) (see appendix).

#### ISSUE: CROP INSURANCE

Weather or other growing factors can create quality and size issues that prevent a farmer from selling their crops to the commercial market. To protect themselves financially in the event of such an occurrence, farmers insure their crops. Many crop insurance claims do not relate to a food safety hazard. Hail-damaged apples, for instance, look less appealing but are still edible. However, claiming crop insurance can prevent a farmer from donating a crop to food programs, resulting in nutritious foods unnecessarily going to waste.

Crop insurance is complex, occurs at a provincial level, and there is no standardized process for determining allowable claims and calculating the value of that claim. Exactly how the claim process works also differs by crop. Claims can be on an entire crop during the growing cycle, or part of a crop if frost or disease prevents the full crop from being harvested and/or sold. Sending fruits and vegetables to a food rescue organization could constitute supplying a market, hence it could affect indemnity – even if the supplying of that product to the “market” does not constitute a revenue.

#### PROPOSED ACTION:

Remove clauses in crop insurance policies that prevent the donation of edible crops.

#### ISSUE: THE PERCEPTION OF LIABILITY

Food businesses state liability concerns as one of the main reasons for not donating food.

#### PROPOSED ACTION:

All levels of government can work to increase food industry awareness of Food Donation and Good Samaritan Act legislation that exist in every province and territory in Canada, protecting businesses from liability when donating in good faith.



# processing

## AND MANUFACTURING



### WHY AND WHERE LOSS AND WASTE OCCUR DURING PROCESSING

#### GRADING

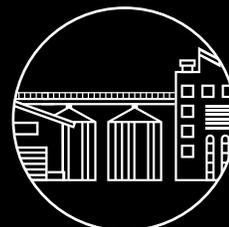
Grading is the sorting of vegetables and fruits into different categories according to size, shape, appearance and colour. If the tomato does not meet exacting specifications it could be rejected by the processor, and if no secondary market exists to sell the rejected tomatoes then waste occurs.

#### INACCURATE FORECASTS

A fear of shorting a customer and incurring significant financial penalties lead to over production and excess inventories. If demand is lower than forecast, processors are left with excess stock; if demand is higher than forecast, processors can be penalized for not filling orders.

#### PROCESS INEFFICIENCIES

Supply chain inefficiencies, ineffective packing processes, and order modifications can all cause loss. For example, machines being operated incorrectly can lead to product falling onto the floor; orders modified at the last minute can cause packed product to be discarded or lost during the process of repacking.



03

## WHY AND WHERE LOSS AND WASTE OCCUR DURING MANUFACTURING

Manufacturing is the process of taking edible raw materials and transforming them into food products that can be bought and sold. At this step, a tomato would be turned into canned tomatoes, tomato paste or tomato sauce.

Value chain inefficiencies caused by poor communication and non collaborative relationships, ineffective manufacturing processes, or inventory management issues can all cause loss.

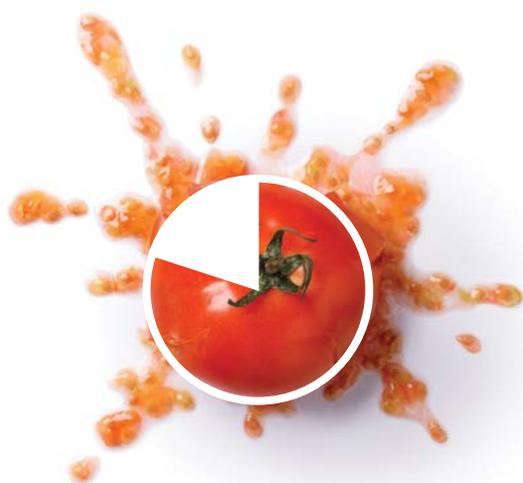
### DATE CODING / LABELLING

Manufacturers often implement conservative date labels (e.g. use-by dates, best before dates, etc.) to protect their brand and manage consumer perceptions of the product's quality. Date labels are set by each manufacturer and not by governmental regulations.

If products are close to or past the date label assigned to them, some retail and foodservice customers have the option to return the product to the manufacturer at no cost to them. Even though a manufactured product's date code can be highly conservative and the food perfectly safe to eat, some manufacturers will not donate this food.

### PACKAGING

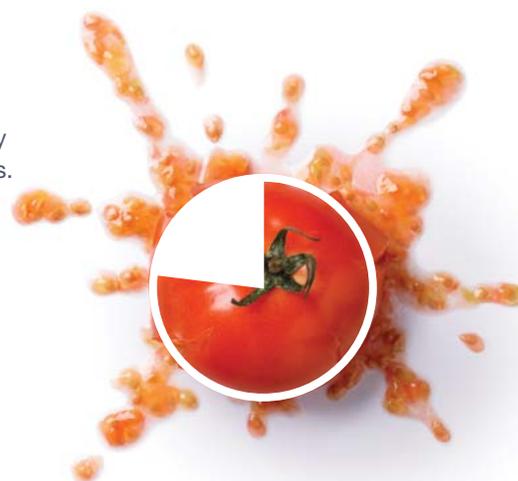
Product shelf life can be extended – often significantly – by packaging it or changing the design or the materials in which products are packaged.



# 20%

OF AVOIDABLE FLW  
DURING PROCESSING

2.25 M Tonnes  
\$9.78 B



# 23%

OF AVOIDABLE FLW  
DURING MANUFACTURING

2.57 M Tonnes  
\$11.17 B

# processing

**AND MANUFACTURING**

“In date coding  
we have  
created a  
monster.”

— Retail Executive



03



### BARRIERS TO RESCUING AND DONATING FOOD

#### ISSUE: CONFUSION BETWEEN EXPIRY AND BEST BEFORE DATES

A best before date is not an expiry date and has little to do with food safety. Consumers typically interpret “best before” to mean “bad after.” The situation is further complicated by manufacturers not donating food that is close to its best before date, and by differing criteria amongst community food organizations about what food they will accept based on its date codes.

In Canada, only five foods require expiry dates:

- Nutritional supplements
- Meal replacements
- Baby formula and other human milk substitutes
- Pharmacist-sold foods for very low-energy diets
- Formulated liquid diets



#### PROPOSED ACTION:

Federal, Provincial and Municipal Health Departments can raise public awareness about when it is safe to consume and donate products past their best before dates.

Expiration dates are required on a limited number of foods that have strict compositional and nutritional specifications (see left).

Food with best before dates are safe to eat past the date if they are unopened and stored at the proper temperature. Foods past the best before date can also be donated to food rescue programs, if Public Health guidelines are followed.

Check [FoodRescue.ca](http://FoodRescue.ca) for more details: <https://www.foodrescue.ca/docs/default-source/default-document-library/best-before-timeline.pdf>

#### ISSUE: FOOD LABELLING

In Canada, foods that do not meet legal labelling requirements are often destroyed and not donated. Labelling issues are not always related to food safety. Not meeting these requirements results in foods not being able to be sold or donated, even if the issue does not pertain to food safety.

#### PROPOSED ACTION:

Establish clear guidelines and legal framework by the government for allowing the donation of mislabelled food products that do not represent a food safety hazard.

#### ISSUE: VENDOR SUPPLY AGREEMENTS

Vendor agreements between manufacturers and retailers can include a clause stating that excess products must be destroyed, and therefore cannot be donated.

#### PROPOSED ACTION:

Review and revise vendor agreements to enable donation of edible food.

# distribution

## DISTRIBUTION:

### WHY AND WHERE LOSS AND WASTE OCCUR DURING DISTRIBUTION

A tomato and a can of tomato sauce are both on their way to either a grocery store or an HRI (hospital, restaurant or institution) foodservice location.

Food waste occurs at the distribution level primarily because product is stored at the incorrect temperature, shipments are delayed, the product is handled incorrectly, products reach their best before or expiry date, or there are issues such as not keeping the right temperature when transporting. This leads to products being rejected. Improper employee training, human error and equipment malfunction can cause these issues. Meat, dairy and produce are all time- and temperature-sensitive, and if not stored or handled correctly can spoil quickly.

## RETAIL:

### WHY AND WHERE LOSS AND WASTE OCCUR AT RETAIL

#### BEST BEFORE DATES

If food has not been sold by its best before date, or if it is unsold close to, or past the best before date, retailers can send product back to the processor or manufacturer, and charge the supplier of the product accordingly.

#### PART-FILLED SHELVES

Consumers tend not to purchase a product when shelves or bins are only part-filled or nearing empty. A fear of being penalized by their customers if 100% on-shelf availability is not met drives suppliers to keep excess product on hand or ensure it is available at short notice. This fear encourages overproduction in primary production, processing and manufacturing.

#### PRODUCE AESTHETICS

According to survey respondents, consumers do not buy imperfect fruits and vegetables and will sift through bins, bruising the fruit with their touch and only selecting what they deem "perfect." Produce can also be bruised or spoiled by untrained or inattentive staff. Produce that is not sold is typically sent to landfill, unless the retailer is connected to a food rescue operation.

#### EXCESS STOCK

When distribution centres have excess inventory, products are unexpectedly pushed to retail stores. This leads to loss occurring in the store and, often, stores having insufficient time to arrange for these products to be rescued before they spoil.



# 5%

OF AVOIDABLE FLW  
IN DISTRIBUTION

.55 M Tonnes  
\$2.41 B

# retail



04

## BARRIERS TO RESCUING AND DONATING FOOD

### ISSUE: CONFUSION ABOUT WHEN FOOD IS SAFE TO DONATE

Public health authorities commonly promote a “when in doubt, throw it out,” philosophy towards food that could be donated. The lack of clear and robust guidance surrounding the management of excess safe-to-eat foods leads to current rules mandated by provincial and municipal governments being interpreted and acted upon differently. This results in edible foods going to landfill. There are no consistent public health regulations across Canada: regulations differ even within the same province, as it is up to municipalities to execute them. The result is confusion among provincial or national food businesses about when and how they can donate excess product. The system is equally confusing for food rescue organizations to navigate and to assure food donors of the correct process.

### PROPOSED ACTION:

Develop clear testing protocols to assess safety of food for circumstances where businesses are in a position to donate i.e. after a refrigeration/freezer malfunction.

### ISSUE: PERCEIVED OR REAL COST AND COMPLEXITY OF DONATION VERSUS WASTE MANAGEMENT

Reducing the cost of labour as a percentage of overall sales has been a priority for businesses in the competitive food sector. Margins are small, competition is fierce, and customers are demanding low prices. Processes that are inefficient and/or require additional staff time are being eliminated. In order to prepare food for donation, resources need to be dedicated to sort, package, store and process donations so they can be picked up by recipient agencies. This all takes staff time and costs money; sending food that cannot be sold to landfill is cheap and easy by comparison.

### PROPOSED ACTION:

Develop standardized operating procedures across food rescue landscape to reduce the cost and complexity of donating, and build awareness of best practices that reduce complexity.



# 12%

OF AVOIDABLE FLW  
IN RETAIL

1.31 M Tonnes  
\$5.70 B

### ISSUE: THE PERCEPTION OF LIABILITY

As in other areas in the value chain, distribution and retail food businesses state liability concerns as one of the main reasons for not donating food.

### PROPOSED ACTION:

All levels of government can work to increase food industry awareness that Food Donation and Good Samaritan Act legislation exists in every province and territory in Canada, protecting businesses from liability when donating food in good faith.

# hotels,

## RESTAURANTS AND INSTITUTIONS (HRI)

### WHY AND WHERE LOSS AND WASTE OCCUR IN HRI

#### PLATE WASTE

Food that has been served to a customer and left uneaten is called “plate waste,” which cannot be repurposed: an uneaten tomato side salad will be thrown out, since public health regulations will prevent its rescue and donation. Plate waste is particularly an issue in buffets where both staff and diners play a role in creating avoidable waste: staff by over-preparing food to give the impression of variety and abundance, and diners by overfilling plates to take advantage of this abundance.

#### PREPARATION WASTE

Prep waste includes food scraps and inventory casualties (when food spoils before getting used). Waste can happen at the prep stage if staff are not trained on proper techniques for preparing food, or do not have an option to cross-utilize the ingredient in other dishes, like the chopped tomato used for omelet filling at breakfast re-purposed as bruschetta topping at lunch. Other causes of preparation waste include poor forecasting and demand that does not materialize.

#### MENU DESIGN

In situations where you do not choose the type or quantity of food you receive, food waste increases. This includes hospitals, where patients do not typically order from a menu and where dieticians’ requirements dictate what must be served. Portion size is also an issue, with some restaurants and caterers providing more than the 1.2lbs\* per meal that diners typically consume.

Source: [https://furtherwithfood.org/wp-content/uploads/2017/11/HotelKitchen\\_Final\\_Final\\_11102017.pdf](https://furtherwithfood.org/wp-content/uploads/2017/11/HotelKitchen_Final_Final_11102017.pdf)

“In hospitals, 19% to 20% of served solid food is uneaten and it can be as much (or more) in other venues such as mining camps.

Universities are engaged in ‘food ethics’ but have a sense of entitlement over how much food they take.”

— Foodservice Respondent



OF AVOIDABLE FLW IN HOTELS,  
RESTAURANTS AND INSTITUTIONS

1.44 M Tonnes  
\$7.14 B



04

## BARRIERS TO RESCUING AND DONATING FOOD

### ISSUE: HIGH LEVELS OF FOOD WASTE, PARTICULARLY AT BUFFETS

The abundance of a buffet is short-lived: most uneaten food cannot be rescued and redistributed due to public health guidelines for safe food handling. In many cases, it cannot even be re-used by the caterer or restaurant for those same reasons.

#### PROPOSED ACTION:

Monitor sales and what customers most commonly leave on the plate to adjust the menu. In the case of catering and buffet, plate only what is needed and keep the rest properly stored so that unsold food can be donated to food rescue organizations.

### ISSUE: THE PERCEPTION THAT IT IS COSTLY AND TIME-CONSUMING TO DONATE TO FOOD RESCUE ORGANIZATIONS

Food businesses perceive donating food to be an added cost, either financially or in time. This could be due to a lack of infrastructure and/or ineffective communication between potential donors and recipient agencies, or logistical capacity including transport, storage and cold chain (keeping product cold or frozen until pick-up).

#### PROPOSED ACTION:

Government to support food rescue network and capacity building to decrease the barriers of logistics and storage.

### ISSUE: THE PERCEPTION OF LIABILITY

Food businesses state liability concerns as one of the main reasons for not donating food.

#### PROPOSED ACTION:

All levels of government can work to increase food industry awareness that Food Donation and Good Samaritan Act legislation exists in every province and territory in Canada, protecting businesses from liability when donating food in good faith.



## TARGETING FOOD WASTE

## at home



“We live in an environment where food is cheap and plentiful and few people have experienced hunger or food insecurity. Therefore societal attitudes do not support avoiding food waste.”

— Survey Respondent



05

A recent survey of consumers by the Canadian Centre for Food Integrity reported that households contribute to waste by throwing out leftovers, discarding food that has reached its best before date, and by purchasing too much food, which is then thrown away.

Quantifying household food loss and waste is beyond the scope of this report, and donation of home-cooked meals to food rescue organizations is not possible for food safety reasons. But, as discussed earlier, there is a role for consumers to play in reducing FLW.

More awareness and education about best before dates is needed, ideally starting with public health departments who have inadvertently exacerbated the problem by promoting a “when in doubt, throw it out” food safety message.

Given the friction between corporate brand standards and actual food safety, it could be time for this default message to become more nuanced and targeted so safe, nutritious food doesn't end up in the garbage or compost bin.

Learning to shop sustainably is another area where consumer education is needed.

Ideally, we would purchase a few days' worth of perishable food at a time, eat what we buy, then re-stock fresh items as needed, while filling the gaps with frozen fruits and vegetables and shelf-stable items like legumes and pastas. The frenetic pace of modern life has made this “old world” method challenging to maintain, and in rural or remote communities this is not pragmatic or even achievable.

While change needs to occur across the food industry, the industry exists to feed us, so we all need to reconsider how we see food's value in nutritional, human resource and environmental terms.



# 21%

**OF AVOIDABLE FLW  
AT HOME**

2.38 M Tonnes  
\$10.37 B



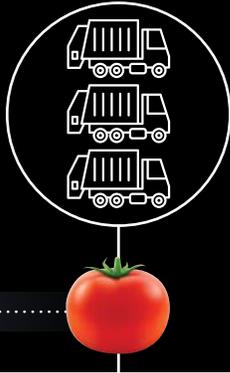
**THE ANNUAL COST OF  
AVOIDABLE FOOD LOSS  
AND WASTE IN CANADA IS**

# \$1,766

**PER HOUSEHOLD\***



\*Based on calculations using data from The Avoidable Crisis of Food Waste and Statistics Canada.



“The average consumer is not aware of the staggering and depressing extent of food loss and waste.”

— Food Retailer



# why

## waste has become standard operating procedure

There are four key reasons why the true cost of food waste is not accurately calculated.

### 1. INSUFFICIENT MEASUREMENT

The lack of a standardized approach for measuring, valuing, monitoring, benchmarking and consequently benefiting from the reduction of FLW has limited the broader adoption of FLW reduction initiatives among food businesses. For example, there is no consistency by which retailers categorize and monitor FLW, and no uniform definition of how and why foods and beverages are categorized. The cost of FLW is typically seen as the cost of disposal. Excess food sent to animal feed is viewed as revenue, while the cost of having produced that excess is ignored. This lack of consistency in measurement, valuation and reporting limits the ability to benchmark FLW and associated factors to identify opportunities and evaluate the comparative impact of FLW solutions.

### 2. LACK OF COLLABORATION

The competitive landscape often creates an obstacle to share data, plan and execute collaboratively. This transpires within and between businesses, leading to many root causes of avoidable FLW occurring at the interface between different functions (e.g. procurement and operations) and business partners. This lack of collaboration results in ineffective forecasting, planning and replenishment and consequently overproduction throughout the value chain.



### 3. SENDING TO LANDFILL IS EASY

It is often easier for staff to throw food in the garbage rather than take the time to separate it so that it can be donated. To sort and separate food from waste requires time, a change in business practices and could require additional, costly infrastructure.

These factors have negatively impacted the motivation and ability to implement the fundamental changes in behaviour within businesses, across value chains, and among consumers that are required to sustainably reduce food loss and waste.

### 4. LANDFILL / TIPPING FEES ARE LOW

Low landfill/tipping fees can make any other management option for edible and inedible food financially unviable. This is particularly the case where the population density is low and there is no infrastructure in place that can accommodate regular large scale food donations. In such cases, excess food and beverages invariably continue to be sent to landfill.

# what

## sustains the status quo of waste

### THE TRUE COSTS OF WASTE ARE NOT INTERNALIZED

The true costs of food loss and waste – especially the environmental impacts – are not being internalized by industry and consumers. Not internalizing the true costs of FLW can lead, for example, to businesses choosing to send it to landfill rather than partnering with a food rescue organization. It can also lead to consumers apportioning less value and care to the foods that they choose to purchase.

### THERE IS A LACK OF LEADERSHIP TO REDUCE FLW

This analysis identified that FLW initiatives are often not adopted by the entire organization, meaning their full potential is not achieved. The leadership that exists is hampered by the macroeconomic environment within which the Canadian food industry and its international stakeholders operate. This can be true with food rescue efforts too, where only certain locations of the business are donating excess product. To see universal adoption by all levels of the organization, strong and clear leadership with proper employee training will be required. Food rescue needs champions. (See Appendix: [FoodRescue.ca](http://FoodRescue.ca))

### WE HAVE CREATED A CULTURE OF ACCEPTING WASTE

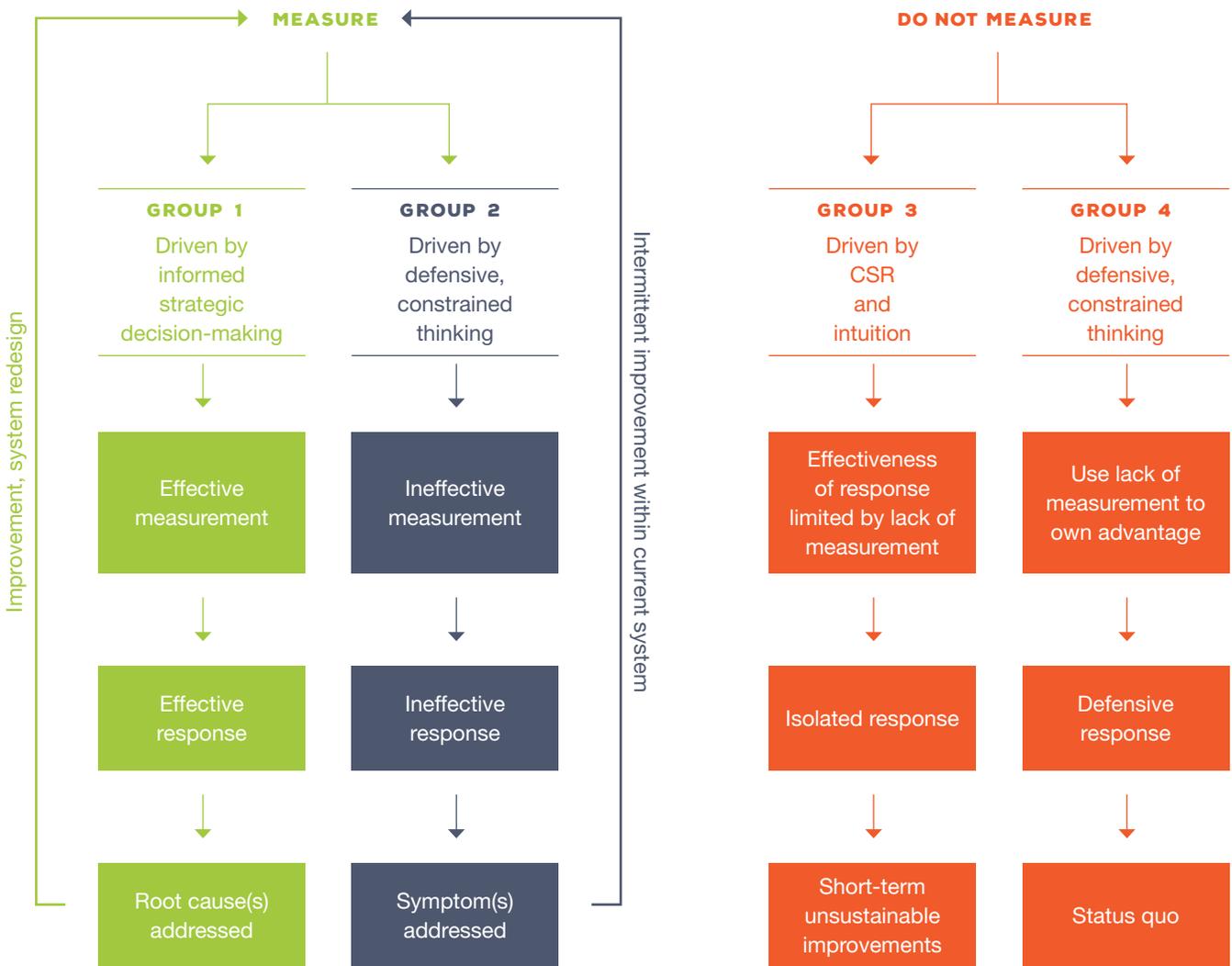
When asked about current levels of food waste, industry executives from across the supply chain often say that they are “the cost of doing business.” There is a lack of accountability to reduce food waste. A direct correlation can be drawn between some business and governmental decisions and the creation of avoidable FLW.

“The current system makes it too easy to blame other departments or cite excuses for why change should not occur. The common mantra is ‘We have industry average shrink so there’s not a problem and no need to change.’”

– Retailer

**OVERARCHING ROOT CAUSES**

Why differences exist between organizations' desire to reduce FLW reflects how a combination of the three factors that shape individuals' behaviour (culture; personal ideas; and ideals, values and beliefs). The most effective FLW reduction efforts and resulting benefits will be achieved by individuals belonging to Group 1; the least effective FLW will be achieved by individuals belonging to Group 4. The ability of individuals in Group 1 to implement programs that result in reduced FLW through prevention, donation, reuse or recycle is determined by seniority. The desire to combat FLW starts (or falters) at the top.



## WHAT MUST BE DONE

# the three to succeed

The proposed solutions and actions reflected in the three approaches below will result in reduced food loss and waste and assist in achieving the targets contained in UN Sustainable Development Goal 12, to which Canada is a signatory. Together they address the root causes of FLW.



1

### MEASURE

- Standardized FLW measurement, evaluation and reporting
- Improve forecasting, communication and collaboration
- Drive innovation in packaging and products that reduce waste



2

### LEAD

- Mentorship and capacity building
- Drive changes in business practices
- Engage employees in constructive reasoning and response



3

### ENABLE

- Addressing policies, legislation and regulations that are incongruent to reducing FLW
- Government and industry committing to constructive, outcome-driven collaboration

The first two approaches (Measure and Lead) are proven means of reducing FLW in industry and at home. We believe that they also have a role in reducing FLW, by encouraging the rescue and redistribution of edible food, and improving the performance of redistribution systems.

The third approach (Enable) is about creating an enabling environment for motivating and supporting industry, consumers, food rescue organizations and community food programs to reduce FLW wherever possible; and reducing FLW going to landfill through reuse and recycling.

The proposed solutions and actions for change are summarized below in matrices contained in the following three tables. The timelines for implementing these actions are presented as “Do now (2019),” “Do soon (2020-2021)” and “Build a plan (2022 onwards).” Together, the three matrices form the roadmap for reducing FLW in Canada. Many of the same actions could be applied worldwide in developed and developing nations to reduce FLW on a global scale. The Technical Report describes each of the proposed solutions and actions in greater detail.

## DO NOW (2019)

	PREVENT AT SOURCE	REDISTRIBUTION	WASTE MANAGEMENT
<b>INDUSTRY</b>	<ul style="list-style-type: none"> <li>Start measuring FLW</li> <li>Set FLW reduction targets</li> <li>Value benefits of meeting FLW targets</li> <li>Understand FLW root causes and work to improve</li> <li>Deliver lean-thinking awareness training to staff</li> <li>Communicate date labelling meaning to consumers</li> <li>Cease using best before dates where it does not constitute a food safety issue</li> <li>Review menu design to ensure unnecessary plate waste</li> </ul>	<ul style="list-style-type: none"> <li>Identify solutions to increase redistribution of excess food from along value chain</li> <li>Engage employees in redistribution initiatives</li> <li>Review date code policies relating to food donation, to ensure that they do not prevent the donation of safe food</li> <li>Food rescue and community food programs deliver lean thinking awareness training to staff and volunteers</li> <li>Improve strategic and operational collaboration between food rescue and community food programs at all levels (federal down to local)</li> </ul>	<ul style="list-style-type: none"> <li>Identify reuse and recycle solutions to reduce non-rescuable edible and inedible FLW from along food value chain going to landfill</li> <li>Engage employees in reuse and recycle solutions</li> <li>Identify opportunities to expand and improve upon current solutions to transform inedible FLW into edible foods and ingredients</li> </ul>
<b>INDUSTRY ORGANIZATIONS</b>	<ul style="list-style-type: none"> <li>Establish collaborative FLW agreement with members in conjunction with voluntary FLW reduction agreement with government</li> <li>Produce common FLW reporting framework</li> <li>Publish guidance on collaboratively addressing FLW</li> <li>Set FLW reduction targets</li> <li>Publish best practice date coding policies</li> <li>Develop a lean food enterprise methodology with training and implementation support</li> <li>Communicate the importance of menu design to HRI</li> </ul>	<ul style="list-style-type: none"> <li>Establish standardized communication system and processes for donors and redistributors</li> <li>Publish guidance on collaborative means to expand distribution options</li> <li>Review Good Samaritan Act legislation to identify potential weaknesses and recommend standardized framework to government</li> <li>Encourage public participation in volunteer gleaner programs</li> <li>Improve strategic oversight of food rescue and community food programs at all levels (federal down to local)</li> </ul>	<ul style="list-style-type: none"> <li>Publish guidance on collaborative means to increase industry's use of reuse and recycling options</li> <li>Publish case studies on exemplary/leading edge reuse and recycling initiatives</li> <li>Encourage and support the development of new business models by waste management haulers</li> <li>Promote proven solutions for transforming inedible FLW into edible foods and ingredients</li> </ul>
<b>GOVERNMENT</b>	<ul style="list-style-type: none"> <li>Map where FLW reduction by category can contribute to specific government objectives</li> <li>Invest in strategic voluntary FLW agreement with industry</li> <li>Review landfill policies, regulations, legislation and fees</li> <li>Increase fees for dumping organics in landfill</li> <li>Communicate responsible purchasing and food handling behaviours to consumers</li> <li>Address prescriptive nature of seasonal and temporary worker programs</li> <li>Provide funding for current and future lean, continual improvement training and implementation initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Produce a standardized framework for the Good Samaritan Act and produce a national awareness campaign</li> <li>Identify best practice redistribution processes and publicly funded means to enable improved redistribution</li> <li>Identify infrastructure gaps preventing redistribution and potential means to address</li> <li>Establish clear, robust rules surrounding the management of potentially donatable food by public health institutions, to address the current “when in doubt, throw it out” philosophy</li> <li>Provide the resources required to implement the above rules</li> </ul>	<ul style="list-style-type: none"> <li>Launch review of reuse and recycling infrastructure needs in conjunction with cost benefit analysis</li> <li>Identify best practice redistribution processes</li> <li>Identify infrastructure gaps preventing reuse and recycling</li> <li>Fund national study of actual household FLW</li> <li>Increase funding available for the development and commercialization of innovative solutions for transforming inedible FLW into edible foods and ingredients</li> </ul>

## DO SOON (2020 – 2021)

	PREVENT AT SOURCE	REDISTRIBUTION	WASTE MANAGEMENT
<b>INDUSTRY</b>	<ul style="list-style-type: none"> <li>• Implement systems that enable increases in minimum date code life of products on receipt</li> <li>• Establish collaborative planning, forecasting and replenishment programs</li> <li>• Reduce consumer FLW through pack size optimization, packaging design and labelling</li> <li>• In conjunction with employee training and mentorship, implement lean enterprise to reduce FLW and associated costs</li> <li>• Adopt new date code formats, e.g. Julian codes (see Technical Report for explanation)</li> </ul>	<ul style="list-style-type: none"> <li>• Establish industry standard on date code protocols regarding food donations</li> <li>• Review and revise vendor agreements to enable donation of edible food</li> <li>• In conjunction with the training of food rescue and community food programs staff and volunteers, implement lean enterprise training and mentorship to utilize current infrastructure and systems more effectively</li> <li>• Remove any clauses in crop insurance policies that prevent the donation of edible crops</li> </ul>	<ul style="list-style-type: none"> <li>• Invest savings and revenues from FLW reduction initiatives into individual or shared reuse and recycling infrastructure</li> </ul>
<b>INDUSTRY ORGANIZATIONS</b>	<ul style="list-style-type: none"> <li>• Assist members to quantify true cost of FLW</li> <li>• Provide CFO and executive mentorship in total cost accounting, FLW reduction best practices</li> <li>• Publish case studies on industry collaboration to reduce FLW</li> <li>• Commence publishing FLW reduction figures</li> <li>• Promote optimized packaging to consumers</li> <li>• Provide food packaging optimization advice</li> <li>• Standardize what a portion should be to reduce plate waste</li> <li>• Create official protocols for serving systems (e.g. buffet process) to encourage donation of excess food</li> </ul>	<ul style="list-style-type: none"> <li>• Support implementation of foundational redistribution system, with guidance on modifying to suit local conditions</li> <li>• Establish and communicate best practice standardized guidelines on date code policies regarding donated food</li> <li>• Work with industry and government to eliminate date codes from being abused for competitive advantage</li> <li>• Publish food rescue, redistribution figures</li> <li>• Standardize language around the descriptions used to determine whether unsold food is donated or destroyed</li> <li>• Identify and publish best practice models for implementation by food rescue and community food programs</li> </ul>	<ul style="list-style-type: none"> <li>• Support implementation of foundational reuse and recycling systems, with guidance on modifying to suit local conditions</li> <li>• Identify best practice reuse and recycling practices for packaged foods</li> <li>• Publish improvements in reuse and recycling, including amount diverted from landfill</li> </ul>
<b>GOVERNMENT</b>	<ul style="list-style-type: none"> <li>• Tie food procurement by public institutions to the reporting of FLW</li> <li>• Commence investment in infrastructure required to enable room service meal preparation and delivery in publicly funded HRI</li> <li>• Review impact of business relationships on FLW levels and destinations</li> <li>• Legislate mandatory reporting of FLW</li> <li>• When issuing RFPs, include need for respondents to measure and reduce the amount of food going to waste</li> <li>• Establish clear national enforceable date coding regulations and legislation</li> <li>• Establish standardized emissions polices, regulations and legislation</li> </ul>	<ul style="list-style-type: none"> <li>• Invest in the development of innovative redistribution infrastructure and initiatives, including the implementation of lean by food banks and other hunger relief agencies</li> <li>• Collaborate with industry, food rescue and community food programs on redistribution initiatives to ensure best practices wherever possible</li> <li>• Publish best practice food rescue, redistribution and community food program models</li> <li>• Establish clear guidelines and legal framework for allowing mislabelled food products that do not represent a food safety hazard to be donated</li> <li>• Ensure removal of any clauses in crop insurance policies that prevent the donation of edible crops</li> </ul>	<ul style="list-style-type: none"> <li>• Invest revenue from increased landfill and emissions taxes in the development of innovative reuse and recycling infrastructure and initiatives</li> <li>• Establish standardized reuse and recycling polices, regulations and legislation</li> <li>• Establish national ban to prevent FLW going to landfill with firm timelines for its implementation</li> <li>• Establish national ban to prevent FLW being dumped at sea with firm timelines for its implementation</li> </ul>

## BUILD A PLAN (2022 ONWARDS)

	PREVENT AT SOURCE	REDISTRIBUTION	WASTE MANAGEMENT
<b>INDUSTRY</b>	<ul style="list-style-type: none"> <li>Invest savings from FLW reduction initiatives into infrastructure and technology upgrades required to enable further reductions in FLW</li> </ul>	<ul style="list-style-type: none"> <li>Expand scope and scale of collaborative rescue, redistribution and community food initiatives</li> <li>Establish formal collaborative agreements between multi-regional food redistribution and community food programs</li> </ul>	<ul style="list-style-type: none"> <li>Expand scope and scale of collaborative reuse and recycling initiatives</li> </ul>
<b>INDUSTRY ORGANIZATIONS</b>	<ul style="list-style-type: none"> <li>Assist businesses to individually and jointly evaluate long-term investment options to reduce FLW through prevention</li> <li>Benchmark FLW reductions by industry through prevention</li> </ul>	<ul style="list-style-type: none"> <li>Assist businesses to individually and jointly evaluate long-term investment options to reduce FLW through redistribution</li> <li>Benchmark FLW reductions by industry through redistribution</li> </ul>	<ul style="list-style-type: none"> <li>Assist businesses to individually and jointly evaluate long-term investment options to reduce FLW through reuse and recycling</li> <li>Benchmark FLW reductions by industry through reuse and recycling</li> </ul>
<b>GOVERNMENT</b>	<ul style="list-style-type: none"> <li>Minimize incongruences in policies, regulations and legislation relating to food packaging design, materials and recycling</li> <li>Invest in infrastructure required to enable room service meal preparation and delivery in publicly owned HRI</li> <li>Tie implementation of pragmatic lean process improvement courses to public owned of tertiary business, management and commerce related courses</li> <li>Reintroduce food handling and preparation studies into schools</li> </ul>	<ul style="list-style-type: none"> <li>Collaborative investment in and operation of redistribution infrastructure and community food programs initiatives</li> <li>Tie support for expansion of collaborative and innovative food rescue, redistribution and community food models to performance</li> </ul>	<ul style="list-style-type: none"> <li>Collaborative investment in and operation of reuse and recycling infrastructure and initiatives</li> <li>Establish mandatory reuse and recycling policies, regulations and legislation (differentiated by rural, urban and semi-urban)</li> </ul>

# appendix

## FOODRESCUE.CA

Second Harvest heard from businesses that they're willing to donate their surplus product, they just needed a system to make it easy and safe to connect with social service programs in their own communities.

To make an efficient food donation system that allows the donation of food to registered not-for-profits and charities across Canada, Second Harvest developed [FoodRescue.ca](http://FoodRescue.ca), an online platform that connects food donors with non-profit partners.

### HOW FOODRESCUE.CA WORKS

Food businesses and not-for-profits apply to become rescuing partners at [FoodRescue.ca](http://FoodRescue.ca) and confirm they will comply with Second Harvest's safe food handling guidelines as prescribed by federal, provincial and municipal health departments.

When a business has surplus food available for donation, they create a post on [FoodRescue.ca](http://FoodRescue.ca) indicating the type and amount of food they have and its time window for pickup.

A notification is sent by text or email to all not-for-profits who have the capacity to retrieve and store that donation. An interested organization can claim the donation and go directly to the donor for pickup. There is also an option to create a recurring donation, where donors can pre-schedule pickups. Donors enter information into [FoodRescue.ca](http://FoodRescue.ca) once, and the system manages everything from there.

### THE BENEFITS FOR SOCIAL SERVICE ORGANIZATIONS

- Food programs receive greater access to fresh, nutritious food
- Fosters local awareness of the need and creates connections in the community
- Positive environmental impacts by rescuing good food
- Social service organizations gain access to safe food handling resources

### THE BENEFITS FOR FOOD BUSINESSES

- Analytic functionality and detailed reporting
- People expect businesses to do the right thing and it is never the right thing to throw away good, safe food
- Lower waste disposal fees
- Thanks to the Ontario Donations of Food Act, donors don't require any special insurance

To get more information about scaling this for your community, contact: [info@SecondHarvest.ca](mailto:info@SecondHarvest.ca)

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“Through [FoodRescue.ca](http://FoodRescue.ca) we can access items like yoghurt and juice that we usually don't have the budget to provide. Our clients and cooks are loving it!”

— CEO, Monarch Recovery Services



## HOW YOU CAN HELP

Every donation helps Second Harvest achieve our dual mission: to rescue nutritious food for people experiencing hunger, and to protect our environment by keeping surplus food out of landfill.

Second Harvest is a registered Canadian charitable organization. Learn more about becoming a donor at [SecondHarvest.ca/Donate](https://SecondHarvest.ca/Donate).



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