

RETAIL FOOD WASTE IN THE UNITED STATES

SOLVING THE ECONOMIC, ENVIRONMENTAL AND SOCIAL ISSUES



Executive Summary

Food waste has become a major issue in the United States. With financial, environmental and social ramifications, the effects of the food waste problem span the nation.

Each year, 90 billion pounds of food is wasted at the retail and consumer levels in the United States, totaling \$161.6 billion. [1] The vast majority of uneaten food ends up in the nation’s landfills where decomposing food creates methane, a green house gas, further increasing the ecological footprint of food products produced and transported only to become waste.

This report specifically addresses food waste at the retail level of the supply chain and provides information on challenges faced and strategies retailers may employ in efforts to reduce and differ food waste from landfills.

While changes in public perception of food fit for purchase and changes in retailer ordering and stocking procedures are needed to ensure long-term change in the creation of food waste, these approaches take time. Until these goals are achieved, billions of pounds of food will continue to be wasted each year in the United States.

Immediate relief from the environmental impact and financial losses associated with food waste in America can be found in food recycling. By implementing food recycling programs in all grocery outlets, retailers can begin the process of creating real and lasting change in their operations. A comprehensive food recycling program can arm individual retail outlets and nation-wide corporations with the insight and reporting needed to manage and track food waste.

1. Introduction

What is Food Waste?

Food waste is one element of “food loss,” a measurable amount of the post-harvest food supply, which is not consumed for a variety of reasons. Food loss includes figures of loss from cooking, natural shrinkage, mold, pests, and spoilage due to inadequate climate control as well as food waste. The USDA defines food waste as “food discarded by retailers due to undesirable color or blemishes and plate waste discarded by consumers.” [1] As the term waste implies, this food is viable for a variety of uses including human or animal consumption, composting or recycling, but is discarded.

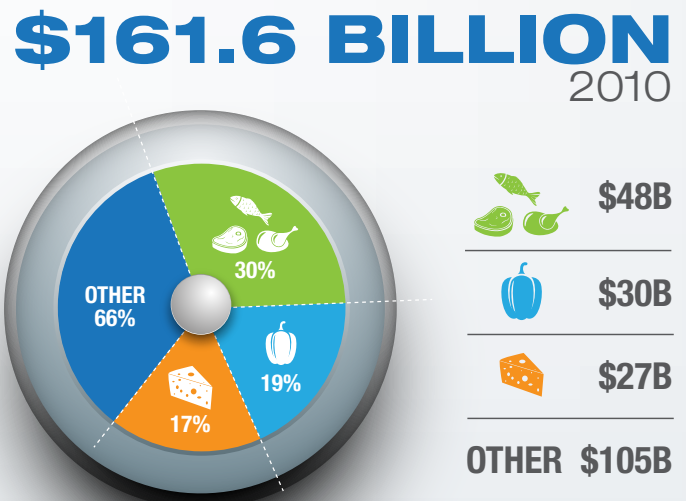
Food Waste by the Numbers

Pounds

While accurate figures on food waste are difficult to decipher, a USDA report includes an analysis of food loss in the United States (of which food waste is one component). According to the findings, 133 billion pounds (31 percent) of the 430 billion pound available food supply went uneaten due to food loss at the retail and consumer levels in 2010. Retail-level losses are estimated at 43 billion pounds, while consumer-level losses are reported at 90 billion pounds. [1]

Cost

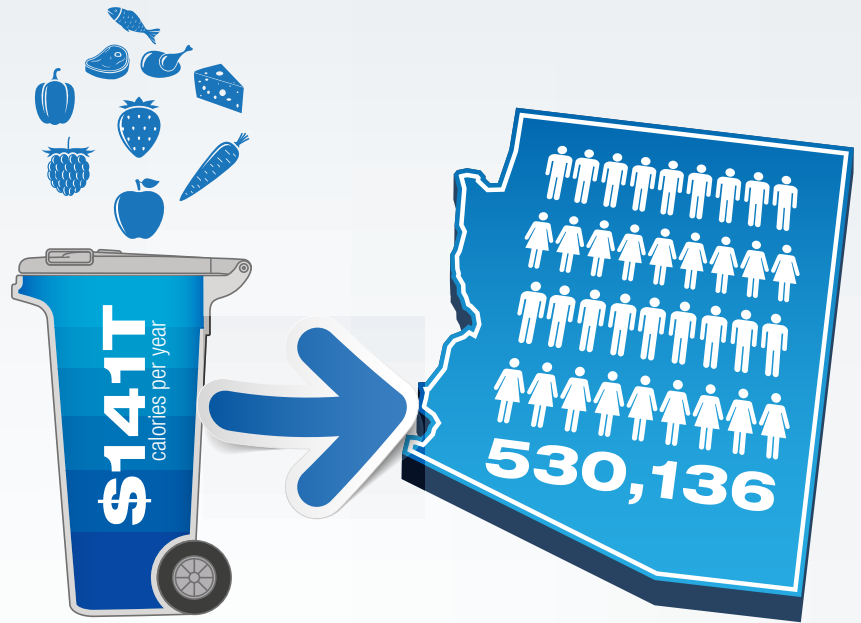
The value of food waste in the U.S. is estimated at a combined \$161.6 billion for retailers and consumers using numbers from 2010. Broken down by food group, the three largest categories for food waste were meat, poultry and fish; vegetables; and dairy products totaling \$105 billion, or 66 percent of calculated food waste in the U.S. Meat, poultry and fish losses totaled \$48 billion (30 percent); vegetables totaled \$30 billion (19 percent); and dairy products totaled \$27 billion (17 percent). [



Social Impact

According to Feeding America, 48.1 million Americans (comprised of 32.8 million adults and 15.3 million children) lived in food insecure households in 2014. Food insecurity is defined as limited or uncertain availability of nutritionally adequate and safe foods. 14 percent of U.S. households can be classified as food insecure. [2]

Millions of Americans struggle to gain access to nutrient-rich foods, such as fresh fruits, vegetables and meat that are discarded as food waste in retail locations and in the private homes of consumers each day. An estimated 141 trillion calories per year (387 billion calories each day) went uneaten in 2010. That total equates to a loss of 1,249 out of an available 3,796 calories per day for the average American. Of this, caloric losses at the retail level are estimated at 460 calories with 789 calories lost at the consumer level. [1]



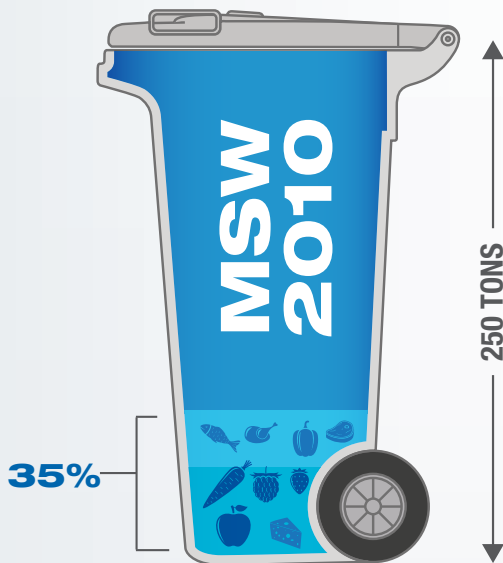
Based on a recommended daily intake of 2,000 calories, 530,136 people could be fed for an entire year on food wasted in the U.S. That is more than the population of Tucson, Arizona – the nation's 33rd largest city.

Environmental Impact

The environmental impact of food waste is two-fold. First, with the use of resources needed to farm, process and transport food that will not be used, and second the greenhouse gas emissions generated by food waste in the nation's landfills.

The use of our nation's most precious natural resources — water and energy — to produce food that will go uneaten takes a toll on the environment. An estimated 25 percent of the total freshwater used in agriculture in the U.S. is attributed to the production of food waste. Also wasted are the 300 million barrels of oil used to produce food, which will inevitably become waste. [1]

Of the 250 million tons of municipal solid waste (MSW) in the U.S. in 2010, 34 million tons (roughly 14 percent) was comprised of food waste. After recovering some materials for recycling, 21 percent of the remaining MSW to be landfilled was comprised of food waste. [1]



As millions of tons of food waste decompose in the nation's landfills, methane gas is created and released into the atmosphere. Methane is a greenhouse gas 25 percent more potent than carbon dioxide (CO₂). According to the EPA, 34 percent of methane emissions in the U.S. are attributed to landfills. [1] Additionally, the environment suffers from the resulting CO₂ emissions of farming and transporting organic materials — only to be transported once again to the landfill.

2. Retail-Level Supply Chain Losses

In the developed economy of the United States, approximately 80 percent of food loss takes place at the retail and consumer levels of the supply chain. Losses at the farm, transportation and processing levels account for the remaining 20 percent. [3]

Some food losses at the retail level of the supply chain are unavoidable, such as damaged packaging, spillages, and spoilage due to technical malfunctions. Other culprits of loss, however, may be addressed by the retailer or corporation in an effort to reduce food waste.

Overstocking

As with retailers in other industries, grocers manage inventory based on expected consumer demand. When demand is not as great as anticipated, the retailer finds it has excess merchandise. However, unlike other products, fresh meat, seafood, produce and dairy products have an extremely limited shelf life. While retail outlets may be able to store non-perishable overstock, excess perishable items tend to become waste.

Consumer Preferences

Consumer perceptions and buying habits shape the way retailers operate. Retailers typically keep produce bins and meat counters fully stocked to avoid the negative consumer connotations associated with scarcity in the food supply. Perceptions of the quality of the food on display can differ depending on the volume of product represented. For example, a consumer may be more likely to purchase a piece of fruit from a display showcasing dozens of apples to choose from, rather than a display with only a few apples. Of course, excess food that is not sold becomes waste.

Additionally, American consumers have become accustomed to purchasing perfectly shaped, blemish-free foods. With a plethora of choices in fully-stocked produce bins, consumers bypass fruits and vegetables of odd shapes and sizes, or those with natural blemishes. Though perfectly safe and healthy to eat, imperfect produce is much less likely to sell. These imperfect pieces of fruit or bunches of vegetables may be loaded straight from the pallet to the trash.

Sell by Dates

An estimated \$900 million worth of inventory was pulled from U.S. shelves due to date code expiration in 2001. [4] Much of this loss can be attributed to the misinterpretation of “sell by” and “best by” dates on food labels as expiration dates. With the public perception that food is not safe for consumption after the date printed by the manufacturer, retailers often pull products from the shelves as sell by dates are looming. This practice may protect retailers from negative press associated with selling “expired food.”

Adding to date labeling confusion is the lack of federal governance or industry standard practice. Federal law does not require date labels, nor does it regulate the sale of goods past a labeled date. The FDA does provide a Food Code outlining requirements for food dating of shellfish, refrigerated, ready-to-eat food, and potentially hazardous foods. This code is voluntary and is only regarded as law if a state adopts it. Regulations vary widely by state, with 41 states enforcing some form of date labeling regulations, and nine that do not require date labels at all. Additionally, some states regulate the sale of food products after labeled dates while others do not. [4] Confusion surrounding dating of food products and the food waste attributed to the issue have led some to call for a universal dating program that establishes a standard language for quality-based and safety-based labeling. [4]



3. Prevention Efforts

Source Reduction

The EPA recommends source reduction as a method to prevent food waste at the retail level and “save labor costs through more efficient handling, preparation, and storage of food that will actually be used.” [5] This begins with a waste audit to determine amount and type of food waste generated. This information can be used as a baseline by which to measure future reduction. Information derived by a waste audit can provide beneficial information regarding the amount of food wasted compared to the amount purchased by consumers, which can in turn be used by retailers and corporations to adjust ordering and stocking procedures. Additional strategies include comparing inventory with customer orders and implementing computer-assisted ordering using information based on inventory and sales predictions.

Selling “Ugly” Produce

In 2014 French grocery retailer Intermarché launched a global campaign to bring awareness to food waste selling “ugly” fruits and vegetables. The “Inglorious fruits & vegetables” (“les fruits & légumes moches” in its native French) campaign featured advertisements



across a variety of media platforms including print, billboards, TV, radio, social media and in-store product promotions. The campaign led to international recognition for Intermarché, reaching 21 million people in the first month alone. Store traffic, across the country, increased by 24 percent during the campaign and the retailer sold an average of 1.2 tons of “inglorious” produce per location within the first two days alone. [6]

Intermarché partnered with produce growers to purchase the “ugly” fruits and vegetables that would normally be thrown out, as they did not meet the appearance standards needed to be purchased by retailers. Produce branded with the “Inglorious fruits & vegetables” label was sold at a 30 percent discount compared to its more visibly appealing counterparts.

While Intermarché successfully diverted tons of food waste from French landfills, the “Inglorious fruits & vegetables” campaign seemingly only addressed waste at the farm level, rather than the retail level of the supply chain. Financial information such as the amount the company spent on the campaign (marketing agency fees, media buys and promotional materials) is not available, but can be assumed extensive.

In 2016, a select few American retailers seem to be taking a cue from the French grocer by launching pilot programs of their own to offer “ugly” produce in their stores. National retailer Whole Foods partnered with Imperfect Produce, an online retailer of “ugly” produce, to test the sale of cosmetically challenged fruits and vegetables in select California stores. Data on the success of the pilot program has yet to be announced at the time of this publication. [7]

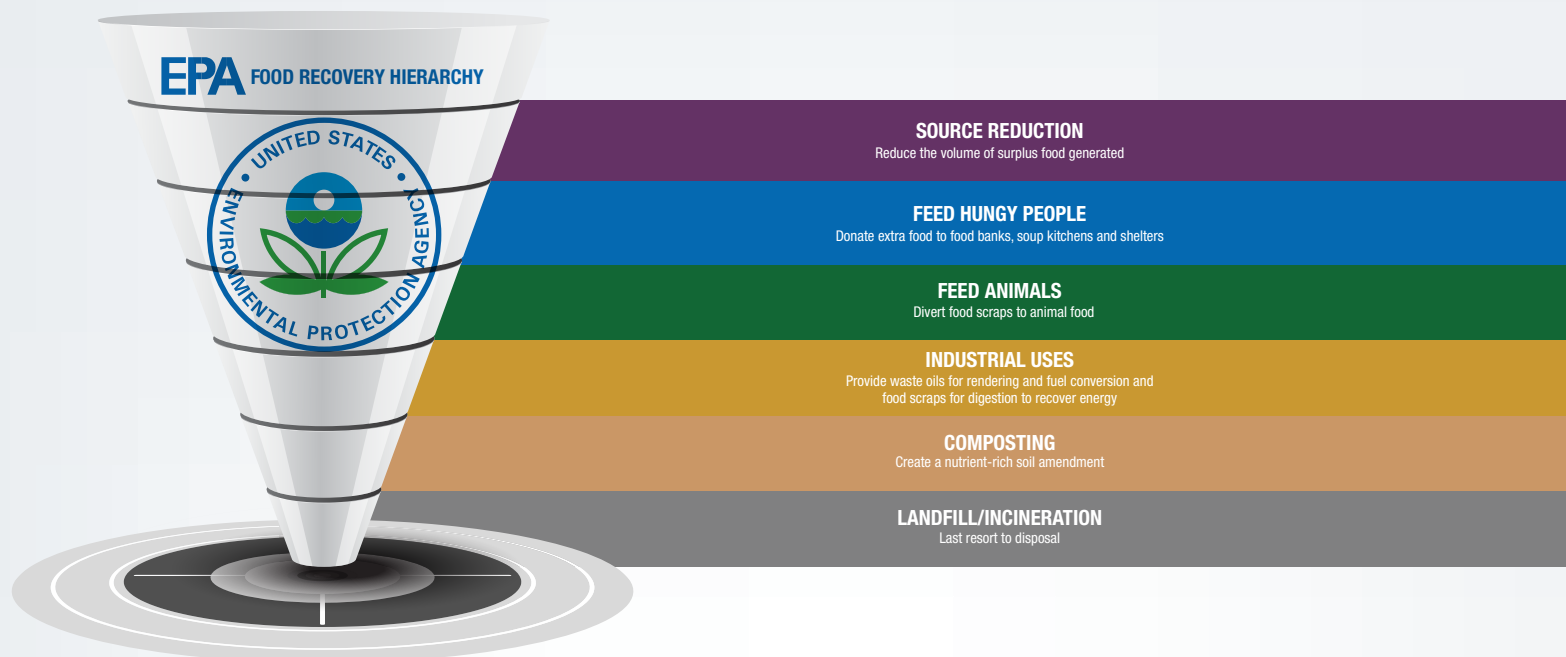
Discount stores

Founded by former Trader Joe’s President Doug Rauch, Daily Table opened its doors to the public of Dorchester, Mass. in 2015. Addressing food waste at the farm, production and retail levels, the discount food retailer sources surplus food from growers, manufacturers, supermarkets and restaurants. The not-for-profit retailer sells fresh produce, canned and/or packaged foods as well as grab-and-go meals prepared on-site. [8]

Dedicated to providing nutritious food at affordable prices, Daily Table is membership-based and caters to low-income residents of the local community. Nutrient-rich food sold by the retailer may be offered after the sell by date on the package. The retailer insists food sold is not expired with this statement on the Daily Table website: “We will only sell quality, nutritious and safe groceries that still have a reasonable window of use past their ‘display code’.” [8]

Daily Table prevents food waste by selling overstock and food items past their display dates, but it is clear that civic rather than environmental duty drives the operation. The retailer’s mission is to serve the community by providing jobs and nutritious food to the people of Dorchester.

4. Recovery Practices



The EPA recommends a set of prioritized efforts for retailers to limit and divert food waste from landfills - the Food Recovery Hierarchy. The hierarchy provides a road map to managing food waste starting with the most desirable efforts and ending with the least desirable solution, landfill or incineration of food waste.

The first tier of the EPA's hierarchy, source reduction, deals with reducing the generation of food waste (covered earlier in this report). The remainder provides preferable ways to dispose of food waste.

Feeding Hungry People

The second step in the Food Recovery Hierarchy is feeding hungry people. Retail food donation programs can provide healthy, nutritious food to 14 percent of Americans in food insecure households across the nation. The Bill Emerson Good Samaritan Food Donation Act protects corporate donors from potential legal liability when donating "apparently wholesome food or an apparently fit grocery product" when given in good faith. [5]

While retailers are legally protected when donating food to non-profit organizations such as soup kitchens, food pantries and shelters, many grocers chose to forgo food donation or limit donations to foods less likely to spoil quickly, like bakery items. This is done to prevent the likelihood of negative press in the event donated food is found to be unfit for consumption.

Feeding Animals

The third tier in the hierarchy is feeding animals. This form of food recycling can be done in one of two ways: direct feed or processed recycling. In the case direct feed programs, unsellable food is collected to feed livestock on local farms or animals at local sanctuaries. Recycling organic items, such as fruit and vegetables, can be used as feed for cattle, while meat and seafood can be used to feed big cats like lions and tigers at sanctuaries. In the case of processed food, recycling meat and seafood are processed into protein rich animal feed additives that can be used in the manufacturing of pet food. It is important to note that regulations regarding food recycling for animal feed vary by state.

Industrial Uses

Continuing down the pyramid, the fourth tier of the Food Recovery Hierarchy is industrial uses for food waste, namely anaerobic digestion. Anaerobic digestion is the process in which organic materials, like food, are broken down by microorganisms creating biogas. Comprised mostly of methane and carbon dioxide, biogas can be used in many of the same applications in which natural gas is used including the production of heat, electricity and fuel. Remaining solids from the anaerobic digestion process can be composted or used as fertilizer or soil amendment.

Composting

Fifth in the hierarchy is composting. This method may be used on-site or via the use of a waste hauler. Composting closes the loop, by creating a nutrient-rich material farmers can add to soil to nourish future crops. More than a fertilizer, additional environmental advantages of compost include the remediation of soils contaminated by hazardous waste and the destruction of 99.6 percent of industrial volatile organic chemicals (VOCs) in contaminated air by compost. [5]

Landfill/Incineration

The last resort for the disposal of food waste should only be used in the event food is unfit for any of the above diversion methods due to contamination.

5. Food Waste Regulations

California Assembly Bill 1826 Solid Waste: Organic Waste

In 2014, California became the first state to require the recycling of organic waste. California Assembly Bill No. 1826 states “on and after April 1, 2016, a business that generates eight cubic yards or more of organic waste per week shall arrange for recycling services specifically for organic waste.” The bill imposes stricter regulations on organics recycling for businesses decreasing the threshold for regulation through 2020. Organics recycling is required for businesses generating four cubic yards or more of organic waste per week beginning in 2017 and four cubic yards or more of commercial solid waste beginning in 2019. [9]

If disposal of organic waste has not been reduced by 50 percent, over the 2014 disposal numbers, business that generates two cubic yards or more per week of commercial solid waste shall arrange for the organic waste recycling services. [9]

California is generally considered a national leader in environmental legislation. It is likely that other states will follow the precedent California has set in regulating organic waste recycling. Retailers generating a measurable amount of food waste should begin to implement organics recycling programs in preparation for potential policy changes in the future.

Food Date Labeling Act

In an effort to reduce the billions of pounds of food waste in the United States, The House of Representatives introduced the Food Date Labeling Act of 2016 (H.R. 5298) May 19, 2016. The bill focuses on both uniform food date labeling and public awareness. It states, “Consumer education and standardized date labeling are the top 2 most cost-effective strategies for reducing food waste, by economic value per ton diverted.” [10]

The bill calls for a uniform quality date label phrase of “best if used by,” if the labeler (producer, manufacturer, distributor, or retailer that places a date label on food packaging) includes a quality date label on the package. Quality date labels are voluntarily printed on food packaging and intended to communicate the date before which product quality will be best. Food is still acceptable for consumption after this date. The use of a quality date label remains under the discretion of the labeler. [10]

The bill also calls for a uniform safety date label phrase of “expires on” to be printed on ready-to-eat products. The safety date as defined by the act, “signifies the end of the estimated period of shelf life under any stated storage conditions, after which the product may pose a health safety risk.” Ready-to-eat products, those typically edible without additional preparation, include poultry products as defined in section 4 of the Poultry Products Inspection Act, meat products as defined in section 1 of the Federal meat Inspection Act, egg products as defined in section 4 of the Egg Products Inspection Act, foods typically eaten raw and foods eaten without further processing to minimize biological hazards. In addition to the specific foods outlined in the bill, the act the Secretary of Agriculture and the Secretary of Health and Human Services will determine high-risk read-to-eat foods that must comply with the labeling regulation. [10]

The act touches on consumer education stating that no later than 1 year after the date of enactment of this Act, the [Secretary of Agriculture and the Secretary of Health], acting jointly, shall provide consumer education and outreach on the meaning of quality date and safety date food labels.” [10] The text does not elaborate on public outreach or educational methods.

At the time of publication, the Food Date Labeling Act of 2016 has not been passed by the House of Representatives or the Senate.

6. Food Recycling Case Study



Walmart Achieves 99.99% Landfill Diversion of Organics

Walmart Stores, Inc. has developed a strong sustainability program over the last decade that focuses on financial stability and environmental responsibility. The corporation set a goal to achieve zero waste across all global operations and has been working to meet the lofty goal. To manage landfill diversion efforts for food waste, Walmart relies on Quest Resource Management Group.

As one of the largest grocery retailers in the nation, Walmart boasted 4,880 locations in the United States under its corporate umbrella in 2015. Combined, the retail locations generate more than 400,000 tons of food waste annually.

Key Challenges:

- Effective program communication for more than 1 million employees
- Management of more than 70 organics recycling service providers
- Accurate reporting for all U.S. locations

Organics Recycling Program

Quest developed a comprehensive food recycling program that built on Walmart's existing food donation efforts. The organics landfill diversion program includes:

- Direct animal feed
- Processed animal feed
- Composting
- Biodigesting

Results

Quest has been a trusted sustainability partner for the Walmart organics program since 2010. Quest provided a full-service program to manage regional service providers physically collecting organic waste for recycling at individual stores. This approach provided Walmart employees across the nation with a single point of contact for all customer service and organics bin collection requests. Quest's centralized billing and reporting provided ease of operation for the retailer. To ensure ongoing program success, onsite waste audits and training were offered at various locations throughout the year.

In 2015, Walmart and Quest successfully:

- Recycled more than 406,000 tons of organics
- Achieved a landfill diversion rate of 99.99% for organics
 - 50.23% recycled into processed animal feed
 - 25.75% recycled as direct animal feed
 - 20.91% composted
 - 3.1% biodigested
- Prevented more than 35,800 metric tons of CO2 emissions
- The equivalent emissions nearly 930,000 cars produce in a year



7. Conclusion

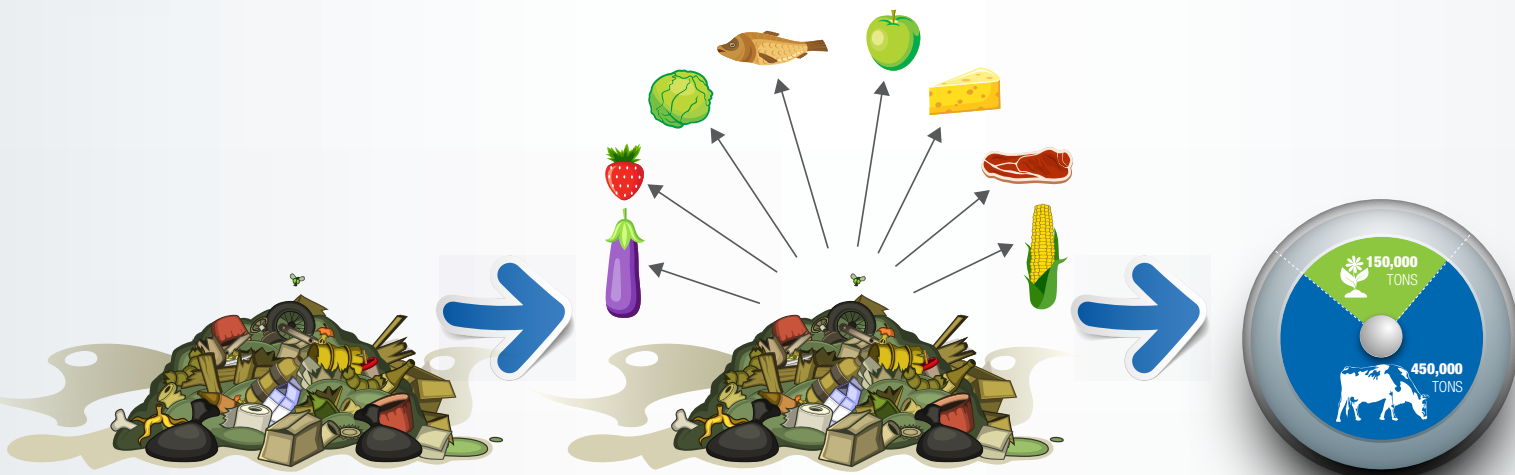
It is recommended that retailers and corporations take a two-pronged approach to the problem of food waste that includes both preventative and recovery measures. Turnkey programs, like those offered by Quest Resource Management Group (Quest), allow retailers large and small to quickly implement programs to defer organics from landfills and reduce the environmental impact of food waste.

Comprehensive sustainability services provided by Quest are specifically tailored to the individual needs of the retailer. Each client receives a detailed road map outlining the programs and services Quest will manage to implement their agreed upon landfill diversion, recycling, sustainability and environmental initiatives.

Quest leverages a network of more than 3,500 pre-approved service providers across the nation to implement waste minimization programs, chain-wide, in a matter of months.

Quest's turnkey programs include securing national pricing, dedicated account management and 24-hour client services support (365 days a year), auditing invoices and billing, regulation compliance protection and reporting for clients.

Many of the nation's largest brands and corporations trust Quest to manage their recycling and sustainability programs. In 2015, Quest managed landfill diversion of more than 1.3 million tons of material. Quest's food waste recycling program successfully diverted 600,000 tons of food from landfills through animal feed and composting efforts alone. The company diverted 450,000 tons of food waste for recycling into animal feed, leading to a CO2 emission savings equivalent of removing just over 1 million cars from the nation's roads for a year (396,360 metric tons of Co2). Compost food recycling managed by the company totaled 150,000 tons, with the CO2 savings equivalent to emissions from more than 340,000 cars in a year (132,120 metric tons).



Quest's proven method of designing and managing integrated recycling solutions that meet the specific needs of the client is showcased at 40,000 client locations across North America. To learn more about how Quest can help your company excel on the path to zero waste.



[CLICK HERE TO LEARN MORE](#)

Quest Resource Management Group turns your sustainability strategies into financial gains and competitive strength.

We help large corporations streamline operations and reduce costs by minimizing the amount of waste they generate. We use landfill diversion and commodity market expertise to help you waste less, pay less and look good doing it.

We specialize in designing and managing custom, comprehensive waste minimization solutions and have earned a reputation for putting our clients on a pedestal. We are driven, nimble and incredibly efficient.

SUSTAINABILITY.



DELIVERED.

References

- [1]: United States Department of Agriculture, The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States (PDF)
- [2]: Feeding America, Hunger and Poverty Facts and Statistics
- [3]: United Nations Environment Programme, Global Waste Management Outlook
- [4]: National Resources Defense Counsel, The Dating Game
- [5]: EPA, Food Recovery Hierarchy
- [6]: Marcel, <http://itm.marcelww.com/inglorious/>
- [7]: NPR, The Salt, From Ugly To Hip: Misfit Fruits And Veggies Coming To Whole Foods
- [8]: Daily Table, <http://dailytable.org/>
- [9]: The State of California, Assembly Bill No. 1826
- [10]: United States Congress, H.R.5298 - Food Date Labeling Act of 2016

