

FOOD WASTE REDUCTION ALLIANCE

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BEST PRACTICES & EMERGING SOLUTIONS GUIDE

*A joint project by the Food Marketing Institute,
the Grocery Manufacturers Association & the National Restaurant Association.*





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Food Waste:

Organic residue generated by the processing, handling, storage, sale, preparation, cooking, and serving of foods

The following toolkit was developed to help guide companies through the basic steps in food waste reduction. Included are sections on how to get started, as well as suggestions for how to identify a range of solutions.

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ABOUT FWRA

The Food Waste Reduction Alliance is a joint industry collaborative focused on reducing food waste. The effort, launched in 2011 by the Grocery Manufacturers Association, the Food Marketing Institute and the National Restaurant Association, aims to reduce food waste at its source, increase donations to food banks and decrease the amount of food sent to landfills.

FWRA brings together the manufacturing, retail, and restaurant industries, as well as expert partners from the anti-hunger and solutions provider sectors to tackle one of our biggest challenges in the United States. More than 30 companies have joined the effort and are actively seeking solutions to this challenge.

EXECUTIVE SUMMARY

The Food Waste Reduction Alliance (FWRA) was formed in the spring of 2011 by a group of retailers and food manufacturers to develop a better understanding of this emerging issue. It is facilitated by the Grocery Manufacturers Association (GMA), the Food Marketing Institute (FMI), and the National Restaurant Association (NRA). The success and momentum of the first three years has resulted in another three year commitment and investment by the industry groups and their members.

Food waste can be defined in many ways, however, considering the industry sectors FWRA represents, a broad definition is required: “Any solid or liquid food substance, raw or cooked, which is discarded, or intended or required to be discarded. Food waste is the organic residue generated by the processing, handling, storage, sale, preparation, cooking, and serving of foods.” FWRA’s scope of work is focused on manufacturing and processing; transportation; and food sales (in store and in restaurant) of food products. Parts of the value chain not currently included in our work are agricultural food production and consumer behavior in-home. This is with the understanding that we would first aim to understand and tackle issues where FWRA member companies can make the biggest impact. For the next three years FWRA plans to further address how we can eliminate waste in the first place in our section of the value chain. Recognizing that in-home food waste is a major contributor to food waste sent to landfill, FWRA is supportive of efforts that provide a better understanding of consumer behavior and related in-home waste issues, but it remains out of the scope of our direct work.



OUR PRIMARY OBJECTIVES

Initially, FWRA set two primary objectives: reduce food waste to landfills and increase food donation. As FWRA has evolved, those objectives still ring true, although the objective to reduce food to landfills has expanded. Our current goals are to:

GOAL #1:

Reduce the amount of food waste generated

GOAL #2:

Increase the amount of safe, nutritious food donated to those in need

GOAL #3:

Recycle unavoidable food waste, diverting it from landfills

To meet these goals, FWRA has four established Working groups:

Best Practices and Emerging Solutions: Research and access emerging solutions that meet our collective goals. This toolkit is also the responsibility of this working group.

Assessment: Develop and quantify metrics related to food waste within the manufacturing, retail and restaurant sectors. This committee surveys companies for data to increase knowledge and report long term impacts of FWRA efforts. The committee has conducted two surveys to-date to better understand food donation and food waste generation, disposal and diversion in our sector. The first was of manufacturers and retailers, and the second included the restaurant industry. The corresponding reports by BSR can be accessed on [FWRA website](#).

Communication: Collaboration with other working groups and with the broader FWRA membership and stakeholders to amplify and tell the story.

Policy: Work towards understanding institutional and public policies that can affect the ability to achieve FWRA objectives and how to positively influence changes where needed.

This guide is intended to educate and elevate the issue of food waste to a broader audience, to provide some tools and experiences from peer companies to help others get started and to be a catalyst for changing the social acceptability of wasted food.



INTRODUCTION TO THE FOOD WASTE CHALLENGE

As many in our industry convene to address the issue of how to feed 2 billion more people by 2050, much of that conversation is related to increasing food production. However, increasing production cannot be the sole solution. Reducing waste and improving yield of the existing crops and animals through more effective and efficient processing, packaging, storage, transportation and distribution will also be key to solving the issue of food access for the future.

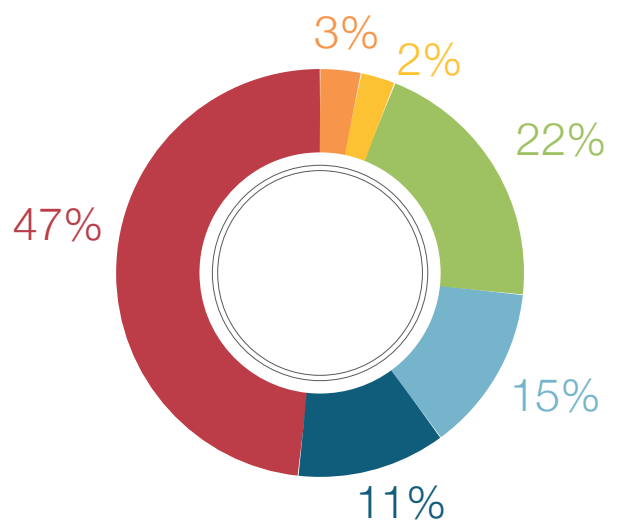
One of the first tasks of FWRA was to gain better understanding of the metrics around food waste in the United States. We commissioned a study by BSR to explore available public data to help us understand the landscape of the problem. [The report of this first study](#) is published on FWRA website. Overall findings indicate that approximately 80 billion pounds of food is discarded in US landfills each year. The pie chart to the right is an estimate of where those food losses are occurring.

BSR estimates that while consumer and residential waste represent the largest sources of food waste, FWRA members nonetheless have the opportunity to have a significant impact, with restaurants accounting for 37%, manufacturers accounting for 3%, and retailers accounting for 2% of food waste. The other piece of the pie, the Institutional sector, includes hospitals, schools, hotels and a wide variety of facilities that could benefit from many of the recommendations being made in this publication.

“Wasted food is the antithesis of the Triple Bottom Line.”

-Gail Tavill, ConAgra Foods

BSR | FOOD WASTE STUDY — TIER 1 ASSESSMENT (GMA/FMI)



Residential: 34,740	Full-Service Restaurants: 15,851
Industrial: 2,411	Quick-Service Restaurants: 10,780
Grocery Stores: 1,664	Institutional: 8,000



INTRODUCTION TO THE FOOD WASTE CHALLENGE (CONTINUED...)

Since this first benchmarking study, FWRA has conducted two industry surveys with BSR to get better data and insights into how different sectors are addressing that challenge in the U.S. We know that the food waste profiles of the food manufacturing, retail and wholesale, and restaurant sectors are dramatically different due to their different operating environments. Those differences include: the number of locations, type and amount of food disposed of, and average distance from food recycling facilities, as well as many other considerations. As a result, solutions to food waste reduction and diversion also vary dramatically depending on industry segment. The infographics below are from the 2015 survey results and show how the manufacturing, retail, and restaurant sectors are tackling food waste and donating food to those in need.



[Click here to view full size infographics.](#)



INTRODUCTION TO THE FOOD WASTE CHALLENGE *(CONTINUED...)*

ECONOMICS: What industry can afford losses of 25-40% of production? There are financial incentives to tackle the food waste problem. In business, it's a cost advantage to use all of the raw materials we buy. More yield from those ingredients means more profitability. It also means spending less on disposal fees to discard food.

SOCIAL: According to the U.S. Department of Agriculture, nearly 50 million Americans, including 16 million children, are food insecure, meaning they lack enough money to secure adequate nutrition. These nearly 50 million people are forced to make choices between food and other basic necessities. Groups like Feeding America, through their more than 202 food banks and 61,000 emergency shelters, food pantries and soup kitchens, are working to help families and individuals in every county in the nation secure access to nutritious food.

Another, Food Donation Connection, partners specifically with restaurants, whose needs can be more complicated due to frequency of pick-up, size and variability of what is available for donation, and other variables.

In finding ways to improve our practices and attitudes about waste; manufacturers, retailers and restaurants can increase donation to help fill this need.

How Feeding America Works



1 DONATIONS ARE MADE

Feeding America secures donations from the food and grocery industries, government agencies, individuals and other organizations.



2 FOOD IS MOVED

The Feeding America network moves donated food and grocery products through member food banks where the need is greatest.



3 FOOD IS DISTRIBUTED AND STORED

Member food banks ensure the safe storage and reliable distribution of donated goods to local charitable agencies.



4 FOOD REACHES THOSE IN NEED

Donations are provided to people in need at food pantries, soup kitchens, youth programs, senior centers and emergency shelters.

ENVIRONMENT: Agriculture consumes over half the land area in the United States and about 80% of the water. It takes the same amount of water to produce a hamburger as it does to take a 90-minute shower. So when that food goes to waste, so do all of the resources it took to produce, pack, cool, and transport it, making the environmental implications of wasted food quite remarkable. In addition to the resources that go into wasted food in production, nearly all of the food waste ends up in landfills, where it decomposes and releases methane, a potent greenhouse gas. In fact, food is now the single largest contributor to landfills today.

Consider these estimates of the resources dedicated to food that never gets eaten in the United States:



Source, U.S. EPA

Feeding the planet is already a struggle, and will only become more difficult with more than nine billion people expected on the planet in 2050. The United Nations has predicted that we will need up to 70% more food to feed that projected population. This makes resource conservation along the value chain even more important. FWRA members and others in food industry are critical partners in this journey.



[For more information and reports on food waste, check out the News and Resources tab of the Food Waste Reduction Alliance website.](#)

Manufacturers, retailers and restaurants all create food waste, but in quite different volumes and in different ways. Check out the Tier 3 analysis here to see how and why.



GETTING STARTED: BEST PRACTICES TO KEEP FOOD OUT OF LANDFILLS

There are unique challenges dependent on what sector you are in, but there are some common tools you can leverage to get you started, as well as industry specific case studies to learn from.

CONDUCT A WASTE CHARACTERIZATION ASSESSMENT

In your own operation, what resources are being wasted and to what order of magnitude? Explore the root causes: is the waste a result of policies, processes, practices or customary behaviors, or some other driver? Document those findings and develop plans to address those of the greatest value and impact to your business.

Getting started is often as simple as doing a “dumpster dive,” particularly in facilities with fairly consistent material use and waste streams. In these cases, pick a representative day at your facility, recruit a small team, lay out some tarps, dress for the mess and start sorting! The goal of this exercise is to determine both the type of materials in your waste stream as well as the order of magnitude generated. One way to categorize materials is to consider those recognized by the [US Environmental Protection Agency’s \(EPA\) WARM model](#). By using these categories, you now have access to other types of tools for reporting data.

It’s important to note that to be most effective and holistic; these assessments should be for ALL waste, not just food waste. Recycling opportunities for plastics, metals, glass, paper, etc. can often be sources of income and part of an overall landfill diversion strategy. Enlist your local waste provider for guidance and assistance.

GETTING STARTED: BEST PRACTICES TO KEEP FOOD OUT OF LANDFILLS (CONTINUED...)

CONDUCT A WASTE CHARACTERIZATION ASSESSMENT

The waste assessment process can be conducted for any size or type of facility, from offices, to restaurants, to retail stores and even large scale manufacturing plants. More complex operations may require additional effort like tracking waste on multiple days and/or analyzing waste hauling invoices and other documentation, but the basic process is the same: **categorize and quantify**.

Once you have established what kind and how much material you are discarding, this information is valuable in three key ways. First, you can create a baseline from which you can measure progress over time. Second, you can look for areas to reduce or avoid the generation of the waste and third, you can look for areas to reuse, recycle or otherwise find value in those materials outside of landfills.

ASSESSING WASTE STREAMS TO IDENTIFY DIVERSION OPPORTUNITIES



© 2013 Waste Management

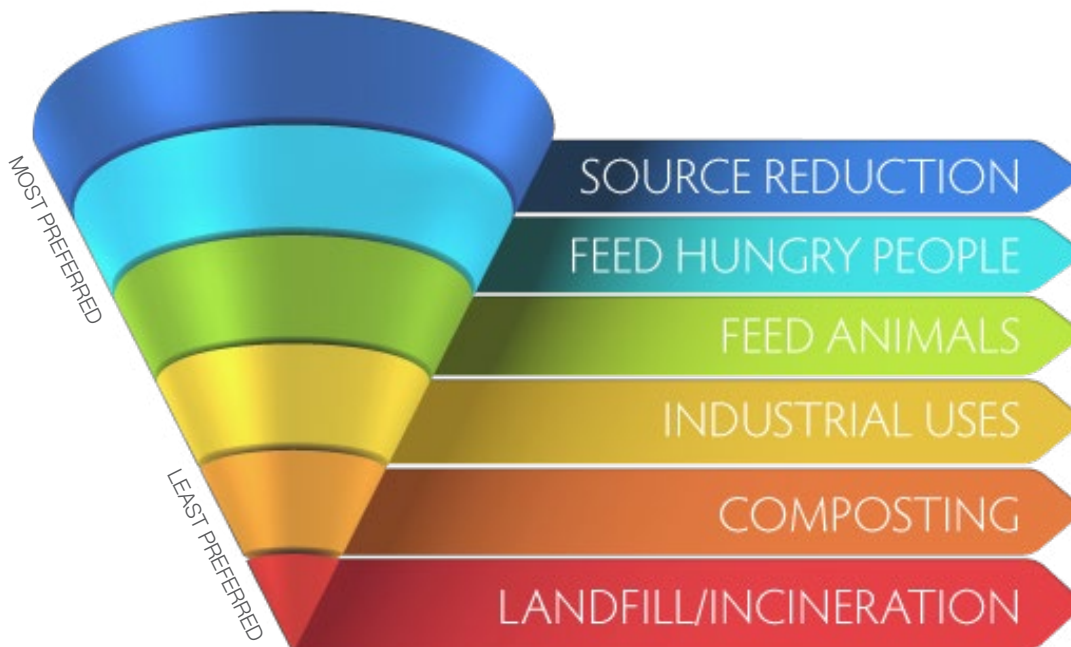
THINK GREEN.

GETTING STARTED: BEST PRACTICES TO KEEP FOOD OUT OF LANDFILLS *(CONTINUED...)*

CONDUCT A WASTE CHARACTERIZATION ASSESSMENT

The EPA provides guidance on the best, highest use for food waste, in their Food Recovery Hierarchy (fig 1). The diversion outlets will be dependent on local capacity and demand, as well as how much scale is involved. In many cases, revenue can be generated from recycling or animal feed when the right connections are made. In other situations, capacity or infrastructure may not yet exist. This is when collective action in or across industry, such as that among FWRA members, is extremely valuable.

FIG 1: EPA FOOD RECOVERY HIERARCHY



Wegmans Food Markets leveraged their relationship with Waste Management to take a group of store employees to the landfill to see what could have been salvaged. [View their Solid Waste Study.](#)

The National Restaurant Association's Conserve program created short videos discussing how restaurants can conduct a waste audit: [Perform a Waste Stream Audit](#), and how good inventory management can help reduce waste generation: [Inventory Food and Track Waste](#). Many restaurants have had success with the measurement and tracking tools provided by the company Lean Path. For restaurants looking to reduce food waste, check out Conserve's cut [food waste page](#) to help get you started.



GETTING STARTED: BEST PRACTICES TO KEEP FOOD OUT OF LANDFILLS *(CONTINUED...)*

ESTABLISH STANDARD OPERATING PROCEDURES

Documented processes and procedures allow for a consistent approach for employees to follow. Having clear rules of engagement related to food safety standards, quality guidelines and traceability requirements in the event of a recall can give stakeholders confidence in taking action to avoid the landfill.

Members of FWRA have graciously provided examples of how they have approached developing standards. Further details can be found at these links:

Restaurant:

- [A restaurant example courtesy of Darden Restaurants and their collaboration with the Food Donation Connection](#)
- [The National Restaurant Association's Conserve program on how restaurants can donate surplus food.](#)

Retail:

- [Retailer guidelines courtesy of Wegman's](#)

Manufacturer:

- [A manufacturer example courtesy of DelMonte](#)
- [General Mills Joins USDA Food Waste Challenge](#)

GETTING STARTED: BEST PRACTICES TO KEEP FOOD OUT OF LANDFILLS *(CONTINUED...)*

DEVELOP AND/OR STRENGTHEN RELATIONSHIPS

Moving beyond transactional relationships into collaborative partnerships with donation agencies, waste providers, and other diversion partners will enable more confidence in diversion decisions and better access to viable options and new ideas. **Here are two great examples of partnerships that broke down barriers and delivered results in the community:**



One is illustrated by the Darden Harvest program which is described by the [news story](#) on Rock Center.



Another example is YUM Brands and their collaboration with [Food Donation Connection](#).

Below are some great examples from Walmart, Kroger, and ConAgra Foods.

Walmart developed a partnership with Quest Resource Management Group to aggressively tackle their issues with organic waste. Walmart discusses those efforts in this case study: [“Walmart Organics Case Study”](#) and Kroger has adopted a “Donate All” policy as described in [“Kroger Donate All Narrative.”](#)

Looking for solutions to deal with bulk semi-finished goods once thought of as waste, manufacturer ConAgra Foods found a partner in Forgotten Harvest, a non-profit food rescue organization that is also a Feeding America network member. See details in the case study of a [ConAgra Foods and Forgotten Harvest partnership](#) to “rescue” meat snacks, providing 3.1MM pounds of protein to those in need since starting the program in June, 2012.





SOLUTIONS TO DONATION BARRIERS

The [most recent FWRA survey](#) found that the retailers and manufacturers responding donated more than 290 million pounds of food - but disposed an estimated 1.2 billion pounds. The restaurants responding donated over 29 million pounds but saw significant barriers to increasing donation. So how can we donate more? And why aren't we?

One of the questions asked by FWRA in the survey was related to what may be holding companies back from donating more food. More than three-quarters (77%) of respondents indicated that there are barriers, either internal or external, that prevent their company from donating more “unsaleable” food.

The following table outlines the specific types of barriers that companies reportedly face. The most common barrier highlighted by each sector is bolded:

TYPES OF BARRIERS	MANUFACTURING	RETAIL & WHOLESALE	SMALL RESTAURANT COMPANIES	LARGE RESTAURANT COMPANIES
Transportation constraints	63%	42%	78%	78%
Liability concerns	50%	67%	67%	67%
Insufficient storage & refrigeration at food banks	50%	50%	67%	56%
Regulatory constraints	50%	17%	56%	56%
Insufficient on-site storage & refrigeration	38%	33%	22%	44%

One of the key liability concerns reported was maintaining proper chain of custody and generally having confidence that donations are handled safely to reduce risk to the donor. Three of these other areas (transportation, storage and refrigeration constraints) can be boiled down to overcoming supply chain challenges. One other area of concern increasingly being discussed that was not identified in the Assessment survey is the effect of use by and sell by date coding practices.

LIABILITIES AND MAINTAINING PROPER CHAIN OF CUSTODY

There are many solution providers who are experts at maintaining the proper chain of custody for donated food. One group, Feeding America, is a nationwide network of food banks that secures and distributes food and grocery products to help feed more than 37 million people in America each year. More than 500 national partners across manufacturing, retail, growing and shipping industries donate food such as fresh produce, meat, grains and dairy as well as frozen and canned foods, grocery items and personal care products to Feeding America to benefit people struggling to put food on the table.

Another organization, Food Donation Connection (FDC), works with food service companies to donate surplus food. FDC provides an alternative to discarding surplus wholesome food by linking foodservice locations to local hunger relief agencies, allowing food to be donated and consumed. FDC facilitates these donations by maintaining an efficient donor-facing communication, data collection and reporting system. FDC has coordinated the donation of 380 million pounds of prepared food to those in need since 1992. In 2014 alone, 15,000 restaurants donated 40 million pounds to 8,700 agencies through the FDC network. These are just two examples of expert partners with national scope. Your local food bank is likely a member of one of these networks or another partner.

Often a dedicated employee or a strong partnership with a donation organization are all it takes to spur innovation. [Campbell's Soup](#) took excess peaches in New Jersey and turned them into peach salsa through a partnership with Food Bank of South Jersey.

When some passionate employees at Hannaford (which is owned by parent company [Delhaize](#)) turned their attention to food donation, the company saw a 30% increase in food donation in just a few months.

Similarly, [Weis Markets](#) made incredible improvements in their food donation program by looking across stores for best practices.

See how the food service company [Sodexo](#) found innovative ways to donate food through their partnership with Food Recovery Network.

Liability Concerns and Recalls

Addressing the concern of liability for donated food, the U.S. is one of the only countries to offer federal protections for good-faith food and grocery donations to food banks through the [Bill Emerson Good Samaritan Act](#). Another good way to limit liability is to establish a documented business relationship with a respected food donation organization.

Recalls are another concern for donors and another opportunity to work with expert partners to overcome the barriers that recalls present. For example, donations through Feeding America are reported, monitored and available by request of the donor. Should a recall occur, this system helps ensure recipient food banks are effectively notified. Please see [this recall flow chart](#) to see the flow of information.

Donated product is made available to and distributed only through contracted food banks and agencies. The Feeding America compliance and capability team ensures the Feeding America contract is upheld at all food banks and member distribution sites. The team performs regular on-site audits and additionally works to strengthen and build capacity across the network to better serve donors and to enable the distribution of more good, safe food to those in need.



SOLUTIONS TO DONATION BARRIERS *(CONTINUED...)*

OVERCOMING SUPPLY CHAIN CHALLENGES

Often a lack of supply chain resources (i.e. trucks, refrigerators) is cited as a major reason for not donating more food. This is another instance where partnering with an expert solutions provider can overcome challenges, often in creative ways.

For example, the Feeding America network services every county in the United States and has over 14 million sq. ft. of warehouse space, including over 800,000 sq. ft. of freezer space and nearly 700,000 sq. ft. of cooler space. The network has a fleet of more than 1,700 trailers, which are complemented by outside trucking partners. The organization's national supply chain team works to maximize food and grocery item donations to the network through logistics optimization.

Food banks can be excellent partners in problem-solving, so contact your local food bank or donation partner if you have product that you think could be donated but are not sure of logistics. Partners on the ground can often find an innovative solution to get food to those in need.

On a more local level, food banks traditionally pick up product at no cost to the donor but welcome delivery. **Cooperation** among distributors and donors can also lead to innovative partnerships to deliver more donated food to those in need. Additionally, many food banks have repack facilities, which means that large quantities of food can be donated and then repacked and properly labeled at the food bank into smaller quantities that a household can use.





SOLUTIONS TO DONATION BARRIERS *(CONTINUED...)*

USE BY / SELL BY DATE PRACTICES

Best intentions often result in good food being discarded instead of donated due to being overly cautious. In most cases, code dates are based on expected quality standards, not necessarily risks to food safety.

There is not a universally accepted rule or definition for this distinction; however there is a best practice for companies to establish allowable code date extensions on a product by product basis. By establishing an approved date extension process with a trusted food bank or organization like Feeding America, a considerable amount of food that may not be desirable for sale at full price can still be acceptable for donation under certain conditions of use. While considering extensions, it's also a good idea to [look at every step across the distribution channels](#) for areas where losses may occur and allow for planning for recovery of those losses.

DIVERSION BEYOND DONATION

Thinking about the Food Recovery Hierarchy mentioned on page 10, eliminating waste is a top priority, followed by feeding people, via donation or other means. The hierarchy also gives us some guidance on how to direct materials not suitable for feeding people to higher material value than dumping in a landfill to decompose. Those other methods for “recycling” food waste are discussed here.

“RECYCLING” FOOD WASTE

In the value hierarchy, if materials are not suitable for feeding people, the next highest value is feeding animals. This strategy for organic waste management is highly evolved among many food manufacturers and is often a source of revenue for production facilities. In some cases, these strategies are so well defined, the organic materials are no longer considered “wastes”, but instead classified as “by-products” or “co-products”. One such example would be “mill feed” from flour mills. Given the high demand for refined, white flour in the United States, flour mills are tasked with removing bran and germ from wheat in the milling process. While there is some demand for those ingredients for human consumption, considerably more bran and germ are produced than needed. But they do not go to waste. Wheat bran and germ have high nutritional value and are routinely sold as important commodities for use in pet food production as well as for livestock feed. Similarly, in the business of beer production, one of the “by-products” is dry distillers grains (DDGs) – the residual solids left over from the fermentation process. These DDGs are commonly used as a component of cattle feed, mixed in with other grains, like alfalfa, and served up to animals at feed lots.

Practices for manufacturers to direct organic “by-products” to animal feed vary widely depending on the type of facility being operated, the diversity of products being produced and access to reputable outlets who can handle the organic materials. Not all facilities produce high volume, consistent outputs like the mill feed and DDGs described above. In some cases, food wastes such as trimmings from a vegetable or fruit processing facility can be collected in bulk and sold or donated to pig farmers for feeding directly to their animals. In other cases, waste materials may require further processing, such as heat treatment, or blending with other ingredients to produce a safe and suitable animal feed. A couple of keys to success in recycling food for animal feed:

- Know your materials – what is the make-up and mass you are trying to recycle for feed?
(See waste characterization tips above!)
- Identify **reputable** service providers – whether it be a local pig farmer or a large animal feed processor – do your diligence and document acceptable practices. Even if you are giving it away, there is monetary and reputational risk to doing it wrong. Protect yourself and your business partners by treating this practice like any other business transaction.
- Put the materials out for bid. It’s surprising how much demand there can be to displace agricultural commodities with organic materials considered in-edible by humans. In addition to avoiding landfill fees, there is opportunity to deliver topline revenue.
- Consider collaborating with other facilities in your area to aggregate volume, reducing transportation costs and potentially creating more economies of scale.

Opportunities for recycling food wastes to animal feed are not limited to food manufacturers. Retailers and restaurant/foodservice operators may also consider this as a reasonable recycling strategy, just generally on a much smaller scale and likely in a more local context. In addition to reducing food to landfills and the potential to generate revenue, this practice can also create good will in the local community by building and enhancing relationships among farmers and business owners.

See this example of [Walmart’s Quest program](#) with Organic Matters in Orlando, Florida.
[See this Kroger case study, too.](#)



DIVERSION BEYOND DONATION (CONTINUED...)

RECOVERING ENERGY FROM WASTE MATERIALS

Another way to recycle food waste is to repurpose it for industrial uses, such as rendering and energy recovery. Collection and reprocessing of fats and oils is a fairly standard practice for restaurants, retailer and food manufacturers with well-developed logistics and value streams to recover used cooking oils. Often, these reprocessed oils are converted into biofuels that can be used for cars and trucks.

See this example that talks about how biofuels are made from used oil from [200+ restaurants in Atlanta](#).

Another example is from Aramark who helps their foodservice customers with [solutions to used oil](#).

A third example is from McDonald's which is also [recycling cooking oil](#).

Other energy recovery options in the US include things like fermentation to produce ethanol. Some organic wastes with high sugar content are very useful feed stocks for ethanol production and also generate a valuable by-product, still bottoms, that can be used as compost or for animal feed. This technique was piloted by [Wegmans Food Markets with a company called Epiphery](#) and Wegmans Organic Farm and shows real promise.



DIVERSION BEYOND DONATION *(CONTINUED...)*

RECOVERING ENERGY FROM WASTE MATERIALS

Other industrial uses include recovering energy from waste materials. The most widely used technology in the US is anaerobic digestion (A/D) which converts organic materials in controlled conditions to create methane gas that can then be used to power boilers, turbines for electricity or converted to compressed natural gas to fuel trucks. In some cases, these A/D systems can be vertically integrated and on site at a production facility, like the one at ConAgra Foods' [sweet potato processing facility](#) in Delhi, LA. In other cases, A/D systems can be in central locations where inputs can include both food wastes and manure from [dairy and animal production](#), potentially amplifying the ability to generate energy.

Retailers are also leveraging A/D systems. Kroger's West Coast banner, Ralphs/Food 4 Less, powers their Compton, California, distribution center with electricity generated from unsold organics, such as inedible food and food waste. This innovative resource-recovery system can convert more than 55,000 tons of unsold organics into renewable energy. Ralphs/Food 4 Less stores backhaul organics that are unsuitable for sale or donation to the distribution center. They are then combined with wastewater from the on-site food-manufacturing plant and introduced into the 2-million gallon on-site anaerobic digestion tank, which converts the carbon in the material to biogas. This renewable energy is then converted into electricity, offsetting a portion of the distribution center's energy demand. By recycling unsold organics in this manner, Kroger is able to reduce costs, generate clean energy on-site, recycle valuable nutrients for use on local farmlands, cut the number of miles they haul waste, and avoid sending organic materials to the landfills. [See this video for a look behind the scenes.](#)

In other cases, A/D systems can be in central locations where inputs can include both food waste and manure from dairy and animal production, potentially amplifying the ability to generate energy. The Innovation Center for US Dairy is leading the way on this front. The Dairy Power/Biogas Capture and Transport project is focused on realizing the significant potential of anaerobic digester systems for U.S. dairy farmers by helping put 1,300 methane digesters on dairy farms by 2020. Working with regional and national programs, the project addresses existing barriers, such as technology and financing.

[Click here for a highlight of how Kroger is collaborating with the innovation center with this aim in mind.](#)



DIVERSION BEYOND DONATION (CONTINUED...)

REDIRECTING ORGANIC MATERIALS

The last line of defense from food waste going to landfill is to redirect organic materials for composting or other soil treatments, like direct land application. Composting is generally limited to places where industrial facilities can handle food waste and is a good solution for inconsistent or mixed streams that are not suitable for the higher value streams noted previously.

Facilities that are permitted to handle food waste with other organics, like yard waste, generally have more controls in place for making compost and have a higher value output. For example, Publix has a strategic relationship with a Waste Management compost facility in Lakeland, FL.

Another example is the work of Laura Wood Habr, owner and operator of Croc's 19th Street Bistro in Virginia Beach, Virginia. Laura said her decision to recycle food waste has resulted not only in lower disposal costs, but also reduced purchasing and labor costs. Last year, she was able to launch a [restaurant composting pilot](#) program in Virginia with the help of a grant from the U.S. Environmental Protection Agency.

Caterers are getting in the composting game as well: [see details](#) on how one upscale caterer, Affairs to Remember, leveraged composting to improve their reputation and grow their business.

Lastly, check out [this great video](#) about how the town of Ashland, Oregon is using composting to reduce landfill waste and save money in the process.



The National Restaurant Association also has resources on composting restaurant food waste, such as [this video](#).



REDUCING FOOD WASTE GENERATION

As noted several times throughout this guide, limiting or reducing waste generated is really the most important strategy for dealing with food waste. FWRA is exploring best practices and opportunities to help industry reduce waste in the first place and new solutions present themselves all the time. This is why the guide is updated annually, to provide new case studies and solutions every year. Here are just a few examples of how companies are already working to reduce their food waste footprint.

One way to prevent food waste is to keep perishables fresh and safe during transport to retail locations. Kroger uses “reusable plastic containers”, or “RPCs” to prevent perishables from being bruised or crushed during transport. By doing this Kroger has offset the raw material economic and environmental cost of over 60 million cardboard boxes, which traditionally produced a lot of shrink.

In the manufacturing environment, there are a number of factors that can cause the generation of waste, and they can generally be classified in three primary buckets:

- **Waste by Design:** Where a product is developed and specified to have some kind of loss involved. These design decisions can be a result of meeting consumer demands or expectations, food safety reasons or other factors. For example, canned tomatoes are almost universally peeled and seeded before packaging, that residual tomato material (skins & seeds), also known as pomace, is considered a design loss in tomato processing. Fortunately it makes a really good animal feed! Opportunities for reducing design wastes often rely on challenging consumer norms and expectations to get more out of raw material inputs. For example, [ConAgra](#) strategically changed the way they transitioned from one pudding flavor to another in a manufacturing facility, creating blended flavors rather than waste product while flushing the manufacturing line from one flavor to another. The mixed-flavor pudding is now donated, reducing manufacturing loss and getting food to those in need.
- **Yield Losses:** Where routine situations occur that prevent the use of all of the raw materials purchased for use in production. These situations can be acute events such as a loss in transportation due to damage or spillage of incoming raw materials or due to forecasting errors that result in materials going bad or being too old to use. They can also be chronic and ongoing due to inefficient or poorly designed processing equipment or procedures that can cause losses during manufacturing. Often the biggest opportunities for waste reduction are when those chronic losses can be identified and targeted.

- **Quality Losses:** Where losses occur due to failure to meet specifications for food safety or quality standards. In the most extreme, these can result in product recalls where a food safety risk is evident. Quality losses are generally evident in finished goods that are not suitable for sale, so they can be the most costly to deal with. For one, manufacturers have already invested in all of the raw material, package, labor and plant inputs to create a product that cannot be sold. In addition, once a product is packaged, it is more difficult to separate the food and the packaging to be able to recycle the materials, so these are more likely to be disposed of in landfills. Quality losses are preventable with good quality systems, training and ongoing monitoring of quality standards

In all cases described above, food manufacturers have enormous opportunity to improve bottom line profitability by reducing the generation of waste. Each pound of waste generated represents a pound of raw material that was purchased with the intent of creating a product that would generate revenue. So reducing waste means companies get more of what they pay for and have more product to sell.

In the food service environment, companies should practice the following three requirements in unison:

- **Supply Chain:** Whatever goes into a restaurant or food service facility should be designed to be 1) reusable, 2) recyclable OR 3) compostable. If any component of an item sent into a restaurant does not fall into one of these three categories, there is no option but to discard it - resulting in waste.
- **Operations:** Restaurant staff should be provided with 1) as many reusable food prep and guest service items as possible, 2) convenient and clearly marked storage containers in which to place the recyclable and compostable materials and 3) comprehensive training on processes and material types.
- **Facilities Management:** Hauling services or reverse logistics should be available at the restaurant(s) to haul away 1) items for reuse, 2) recyclables and 3) compostable material.

Food service organizations and restaurants have opportunities to reduce their costs, engage their guests, and demonstrate a commitment to their local community by reducing the amount of waste sent to the landfill. Actions taken by restaurants allow them to demonstrate leadership and show their employees and other stakeholders their commitment to reduce waste and help the environment.

Examples:

Aramark's successful ["trayless dining"](#) program which has reduced food waste.

Another example is from the University of Missouri which is [reducing food waste on campus.](#)

Food Marketing Institute has developed [The Food Keeper](#), an app that contains valuable storage advice to help consumers maintain the freshness and quality of foods they purchase as well as to improve food safety and optimize their food dollars.



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