

# *Restaurant Food Waste Action Guide*



2018



**ReFED**

Rethink Food Waste  
Through Economics and Data



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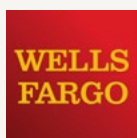
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## ABOUT ReFED

ReFED is a collaboration of over 50 private, nonprofit, and public-sector leaders committed to reducing food waste in the United States. The organization engages stakeholders throughout the food system to implement solutions, envisioning a future where combatting food waste is a core driver of business profits, job creation, hunger relief, and environmental protection.

## PROJECT TEAM

The development of the Restaurant Food Waste Action Guide was led by ReFED, including Chris Cochran, Eva Goulbourne, Chris Hunt, and Angel Veza.



Technical support provided by Eunomia Research and Consulting, Inc. including Mark Hilton, Sarah Edwards, Camilla Durrant, and Alice Walton.



Graphic design by Ocupop, including Abby Lindstrom, Michael Nieling, and Jason Reimer.



## INDUSTRY PARTNERS

This guide was developed in partnership with the Food Waste Reduction Alliance and its members to accelerate waste reduction activities across the food industry. The Food Waste Reduction Alliance contributed valuable insights, data, and industry perspectives to inform the analysis and solutions presented in the guide.



Special thanks to the following companies for providing examples and thoughtful input: A&W Restaurants, Inc., Chick-Fil-A, Darden Restaurants, Haven's Kitchen, McDonald's Corporation, The Regional Restaurant, White Castle System, Inc., and Yum! Brands.

# ABOUT THE ROADMAP

In 2016, ReFED published *A Roadmap to Reduce U.S. Food Waste by 20 Percent* ([refed.com/roadmap](https://refed.com/roadmap)), the most comprehensive analysis of U.S. food waste and solutions conducted to date. ReFED now works with food businesses, foundations, investors, innovators, and policymakers to implement food waste solutions at scale, putting us on the path to achieving the USDA/EPA goal of cutting food waste in half by 2030.

- The *Roadmap* shows a path to a 20% reduction of food waste through 27 cost-effective, scalable solutions. These solutions would reduce food waste by 13 million tons annually, generating \$100 billion of cumulative economic value over the next decade.<sup>1</sup>

## ANNUAL BENEFITS GENERATED BY ROADMAP SOLUTIONS

 [Learn more at refed.com](https://refed.com)

  
**\$2B**  
Business Profit

  
**\$6B**  
Consumer Savings

  
**1.8B**  
Meals Recovered

  
**15K**  
Jobs Created

  
**1.6T**  
Gallons Water Conserved

  
**18M**  
Tons Greenhouse Gas Emissions Reduced

## ABOUT THE RESTAURANT FOOD WASTE ACTION GUIDE

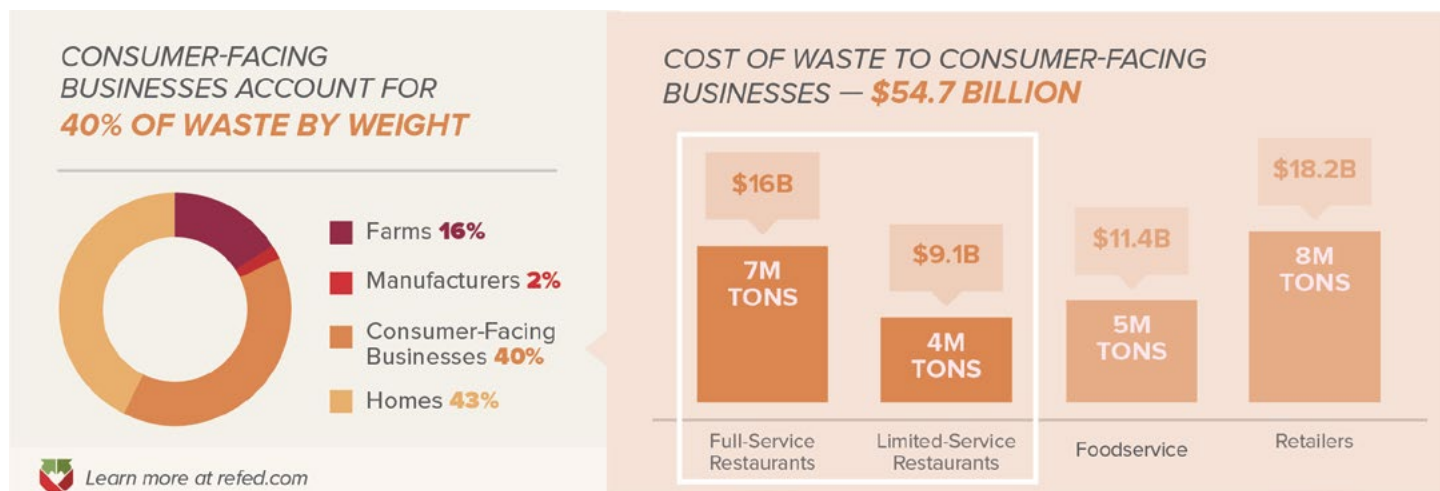
This *Guide* is a how-to resource based on interviews with sustainability and operations teams at restaurants of varying sizes, a review of businesses' processes and operational data, and interviews with food recovery organizations and ReFED's Advisory Council.

The *Guide* is designed for restaurant sustainability directors, owners, and others in leadership roles in the U.S. restaurant industry who are involved in creating or monitoring food waste reduction strategies. It provides an overview of the national food waste challenge, presents opportunities for companies to address it while improving business outcomes, and identifies action-oriented solutions, tools, and best practices.



# THE OPPORTUNITY

- According to *The Roadmap*, the United States currently spends over \$218 billion growing, processing, transporting, and disposing uneaten food. While the amount of food waste in America is staggering, it presents a unique opportunity to reduce business costs, increase consumer savings, and create major social and environmental benefits.
- Each year, 52.4 million tons of food is sent to landfill, while an additional 10.1 million tons remains unharvested on farms, totaling roughly 63 million tons of annual waste.<sup>2</sup>
- The U.S. restaurant sector generates 11.4 million tons of food waste annually (7.3 million tons from full-service restaurants and 4.1 million tons from limited-service restaurants), the full cost of which is more than \$25 billion.<sup>3</sup>
- The benefit-to-cost ratio of food waste reduction efforts in the restaurant industry is compelling: for every dollar invested in food waste reduction, restaurants can realize approximately \$8 of cost savings.<sup>4</sup>



## FINANCIAL VALUE

- Restaurants could realize an additional \$620 million in profit potential per year by adopting prevention solutions such as **Waste Tracking & Analytics**.<sup>5</sup>
- Food costs can represent 28% to 35% of sales in restaurants; capturing pre-consumer food loss can offer a critical boost to profitability.<sup>6</sup>
- Pre- and post-consumer food waste accounts for as much as 4.2% of total sales in an average restaurant (the majority in post-consumer waste).<sup>7</sup> In all-you-can-eat settings the figure can be far higher.<sup>8</sup> Therefore, there is a clear source of potential savings for any company without a mature prevention program.
- Restaurants have the opportunity to increase recycling programs and partnerships, by implementing solutions like Centralized Composting, Anaerobic Digestion, and On-Site Processing, which would result in the diversion of 2.6 million tons of waste from landfills and reduce CO<sub>2</sub> emissions by 1.9 million tons.<sup>9</sup>

## REPUTATIONAL VALUE

- Food waste is gaining public attention, providing restaurants with the opportunity to leverage waste-reduction efforts to enhance their reputation with guests, employees, and investors. A survey conducted by the National Restaurant Association of 1,300 chefs found that “food waste reduction” was a “Top 10 Concept Trend” in 2017.<sup>10</sup>
- Active employee involvement in such programs can result in increased engagement, retention, and overall job satisfaction.
- Consumers are starting to consider food waste when choosing a restaurant. A study by Unilever revealed that 72% of U.S. diners care about how restaurants handle food waste, and 47% would be willing to spend more to eat at a restaurant with an active food recovery program.<sup>11</sup>
- Increased media coverage of food waste including a feature in *Last Week Tonight* with John Oliver, CBS Evening News’ coverage of restaurants using imperfect produce, and the 2017 documentary *Wasted!*.

# CHARACTERISTICS OF THE RESTAURANT INDUSTRY

With more than one million locations in the United States and many different menu concepts, there is no “one-size-fits-all” fix for reducing food waste in restaurants. A limited-service restaurant — where customers pay before they receive their food and often eat off premises — can generate less food waste than a full-service restaurant, where chefs create specials and seasonal menus and where raw ingredients are often cut, trimmed and prepared onsite.

In addition, many restaurants lease rather than own their buildings, often giving a landlord decision-making power over waste reduction efforts like the amount of available space for food waste containers or choice of hauler.

Other factors, including the lack of available composting or anaerobic digestion infrastructure or staff turnover rates, can present challenges. Engagement and awareness at the corporate, restaurant, and franchise (if applicable) levels on the benefits of food waste reduction can help integrate best practices into the culture of the business, meet sustainability goals, and improve staff motivation and retention.<sup>12</sup>

To organize this *Guide*, ReFED divided restaurants into three categories:



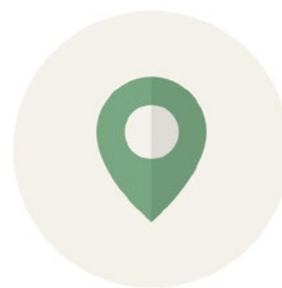
## CORPORATE

Corporate restaurants (including franchisors if applicable) have regulatory structures, policies, and procedures that govern operation and branding. Successful waste-reduction strategies for these operators tend to connect corporate growth with food waste prevention strategies, so that the time and work spent implementing food waste strategies are in line with corporate profitability goals. Corporate restaurant businesses usually benefit from economies of scale and have resources to provide employee training and make infrastructure investments. If the business is franchised, the corporate team can often play an invaluable role in educating franchisees about the financial and reputational benefits of implementing food waste solutions. This can be a highly effective way to motivate franchisees to reduce waste and meet sustainability goals.



## FRANCHISEE

Franchisee restaurants are independent businesses that have the right to operate under the franchisor brand. Day-to-day operations such as staff training are the franchisee’s responsibility. Because of this, the franchisor usually cannot mandate waste reduction efforts by a franchisee, except through certain license agreement provisions (e.g., specifying certain ingredients and portioning) and joint procurement arrangements (e.g., sourcing “imperfect produce”) or other incentives (e.g., reduced purchasing costs, tax benefits, reputation in the community). As independent operators, franchisees may find the guidance for independent restaurants in this report useful.



## INDEPENDENT

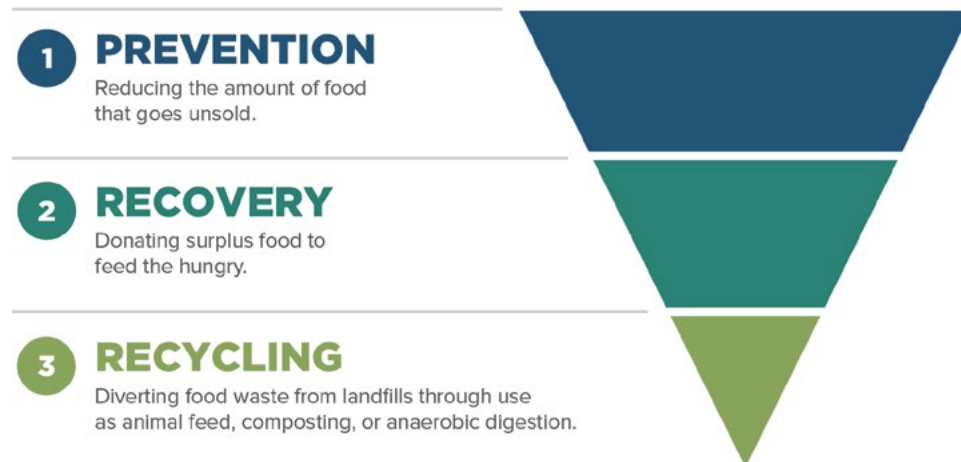
Independent restaurants can be single establishments or multi-unit operations. These restaurants have the freedom to act alone, without corporate or shareholder oversight, but often possess fewer resources to tackle food waste. Many, however, have the flexibility and freedom to work with farms and outside groups to implement creative food waste solutions such as using imperfect produce on their menu or rotating dishes to accommodate seasonal produce. Efforts are often launched by empowering an employee passionate about reducing food waste and a program is built organically over time.

# SOLUTIONS OVERVIEW

ReFED has identified 15 solutions for restaurants to reduce food waste (eight from the *Roadmap* and seven that are modified or emerging solutions identified as being well suited to restaurants.) For more details on each of these solutions, see Appendix A.

## FOOD RECOVERY HIERARCHY

ReFED has adapted the Environmental Protection Agency (EPA) Food Recovery Hierarchy framework to categorize the solutions to reduce food waste, prioritizing prevention first, then recovery, and finally recycling, to maximize economic, social and environmental benefits.



### PREVENTION

- Solutions that prevent waste in restaurants have the greatest economic value and net environmental benefit, saving almost 400 thousand tons of waste annually.<sup>13</sup>
- Prevention solutions provide restaurants nearly \$620 million in business profit potential annually.<sup>14</sup>
- Tracking food thrown away could cut food costs by 2 to 6% by increasing awareness of food waste within the company and focusing attention on front- and back-of-house prevention activities.<sup>15</sup>

### RECOVERY

- Restaurants have the potential to divert 390,000 tons of food annually to recovery, the equivalent of 643 million meals.<sup>16</sup>
- Liability protections for food donations exist but education is needed to promote awareness and understanding of the federal Bill Emerson Good Samaritan Food Donation Act, which protects donors and recipients from liability.
- Recent improvements in food donation tax legislation have enhanced the ability of food businesses to claim deductions. The 2015 Protecting Americans from Tax Hikes (PATH) Act entitles eligible food businesses to enhanced deductions.
- In any food recovery program, the type of food served by a restaurant influences the amount of donations. For example, pre-packaged food is easier to pack and transport, making it simpler to donate than fresh food, which requires controlled labeling, handling, storage, and transportation practices.

### RECYCLING

- While many restaurants do not currently recycle leftover food, there is potential to significantly reduce food waste through this solution category. Restaurants have the opportunity to increase recycling programs and partnerships, by implementing solutions like **Centralized Composting**, **Anaerobic Digestion**, and **On-Site Processing**, which would result in the diversion of 2.6 million tons of waste from landfills and reduce CO<sub>2</sub> emissions by 1.9 million tons.<sup>17</sup>
- Corporate restaurants can sometimes negotiate national or regional contracts with haulers and recyclers, driving market development and securing more competitive pricing.
- Independent restaurants can consult with municipal sanitation departments to locate local recycling facilities and learn which haulers offer food waste recycling services. They can also encourage Business Improvement Districts (BID) to procure food waste recycling services for all restaurants within the BID.



# RESTAURANT SOLUTION MATRIX

The Restaurant Solution Matrix is designed to help restaurants prioritize solutions based on two dimensions:

- **PROFIT POTENTIAL:** the net annual business benefit and/or cost savings of a given solution, not including initial investment.
- **FEASIBILITY:** a combination of the level of effort (e.g., the behavior, systems, and process changes required) and the initial financial capital needed to implement a solution. The lower the level of effort and financial capital requirements, the more feasible the solution.

Due to a variety of factors for each restaurant type, ranging from concept and size to brand requirements and management structure, specific solutions may not apply, and the profit potential and feasibility may vary considerably.

Solutions are sorted into three priority groups, with the first priority solution in the top right box, indicating high profit potential and feasibility. The third priority solutions are on the bottom left of the graph, indicating low profit potential and feasibility but potential importance to restaurants for nonfinancial reasons.

- The solutions with greatest profit potential for restaurants are both Prevention solutions: **Waste Tracking & Analytics** and **Inventory Management & Production Planning**.
- The most feasible solutions (meaning easiest to implement and requiring lowest capital investment), are **Menu Design**, **Portion Choices and Customized Dishes**, **Produce Specifications**, **Optimized Quantities**, **Donation Tax Incentives**, **Donation Liability Education**, **Donation Matching Partnerships**, and **Cooking Oil Recycling**.

*This solutions matrix was developed using a combination of quantitative and qualitative data. It is designed to help the restaurant industry prioritize solutions based on business value, and does not reflect broader societal economic value. Due to a variety of factors for each restaurant type, ranging from concept and size to brand requirements and management structure, specific solutions may not apply, and the profit potential and feasibility may vary considerably. The matrix represents the current landscape of the industry, and will evolve over time in response to shifts in innovation, policy, and guest preferences, and as better data becomes available. More details on each solution ranking can be found in Appendix B: Restaurant Solution Matrix Detail.*

## RESTAURANT SOLUTION MATRIX

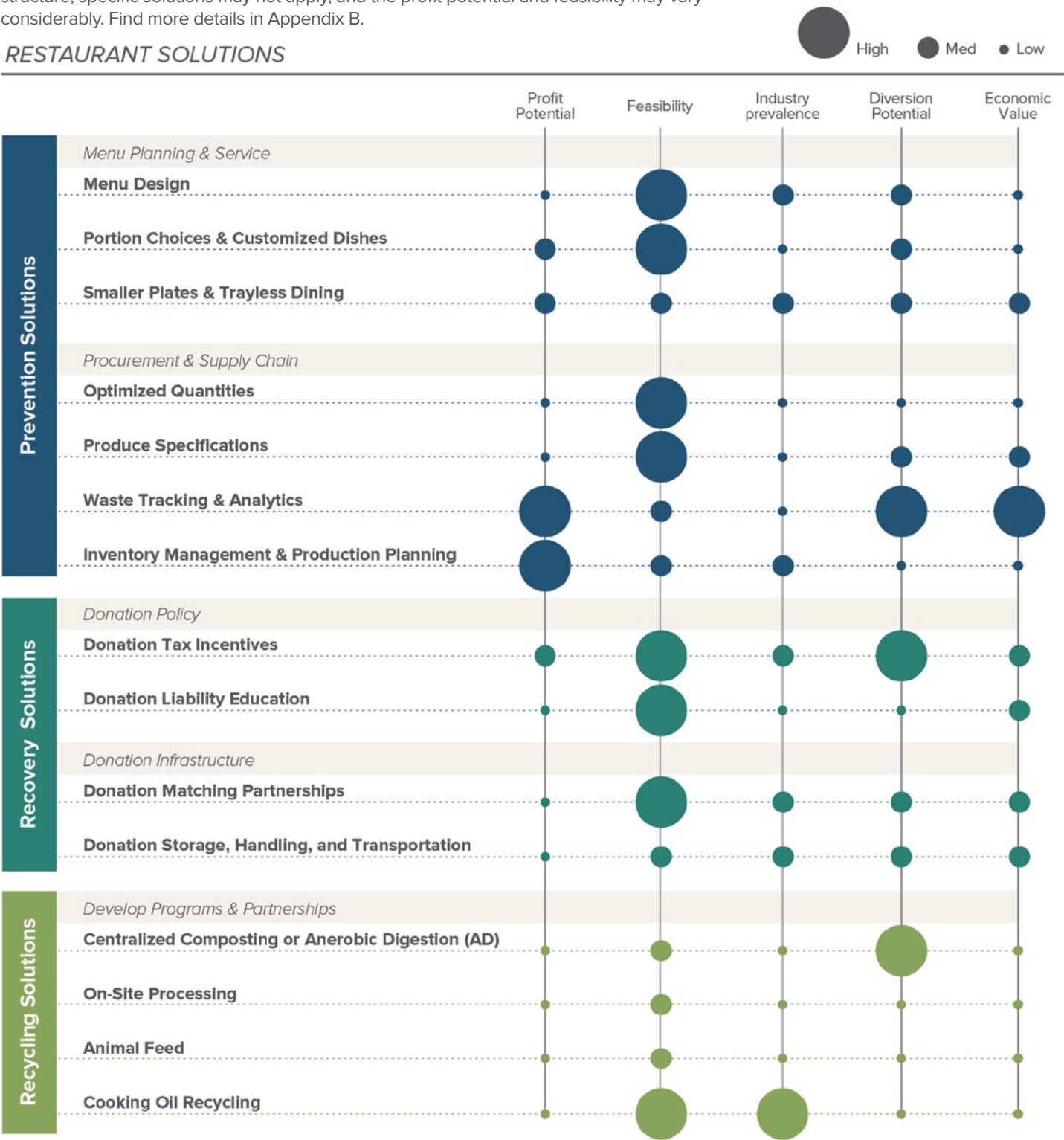
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# SOLUTIONS SUMMARY

This graphic is a summary of restaurant solutions and their dimensions: profit potential, feasibility, industry prevalence, diversion potential, and societal economic value. Due to a variety of factors for each restaurant type, ranging from concept and size to brand requirements and management structure, specific solutions may not apply, and the profit potential and feasibility may vary considerably. Find more details in Appendix B.

## RESTAURANT SOLUTIONS



**PROFIT POTENTIAL:** expected net annual business benefit and/or cost savings that can be earned by investing in a solution after adjusting for the initial upfront investment required.

**FEASIBILITY:** A combination of implementation effort and initial capital requirement.

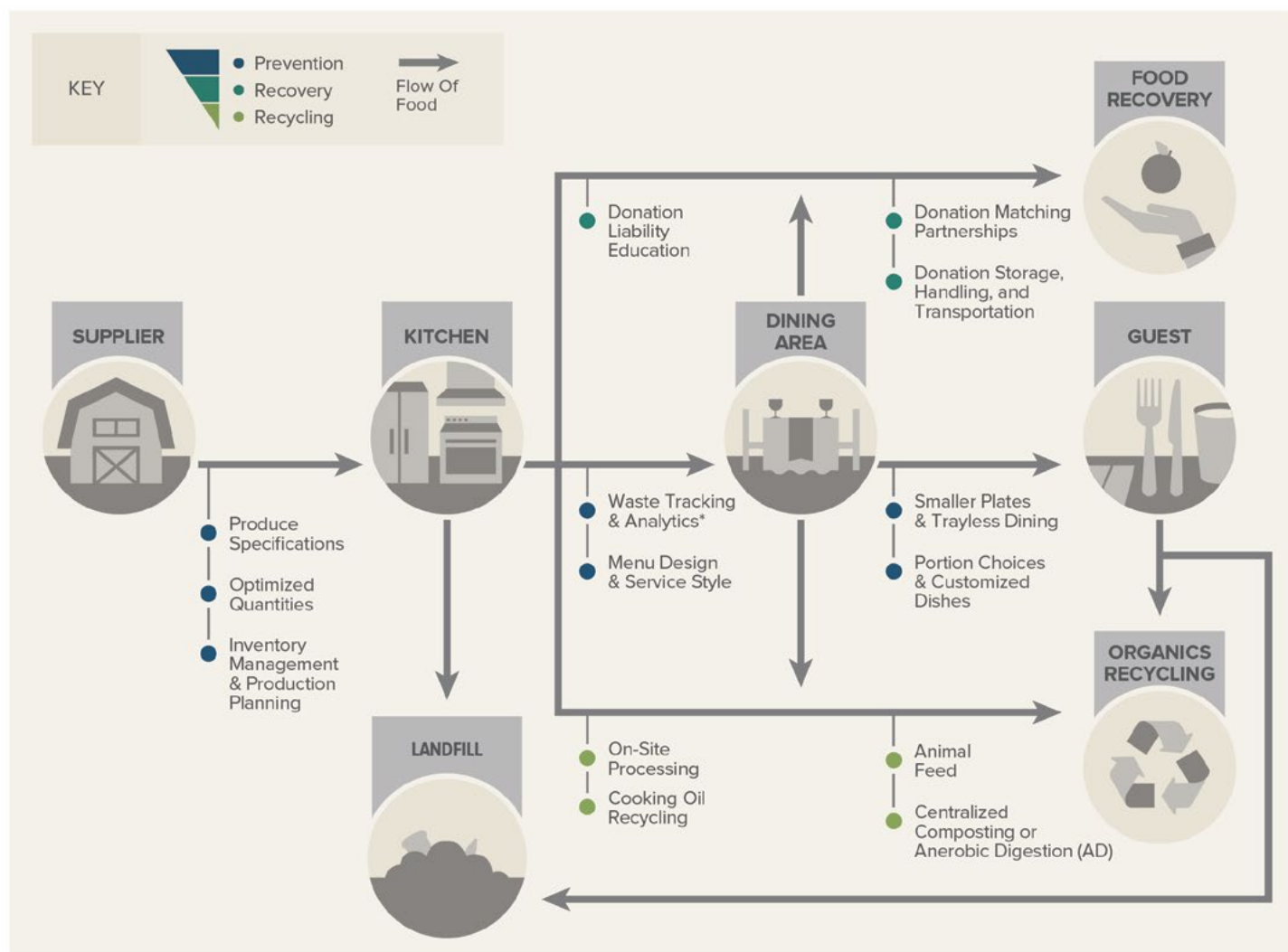
**INDUSTRY PREVALENCE:** estimated percentage of the restaurant industry that has implemented the solution.

**DIVERSION POTENTIAL\*:** portion of all food waste (by weight) that could be diverted from landfill through the implementation of a solution.

**SOCIETAL ECONOMIC VALUE\*:** the annual aggregate financial benefit of a solution to society minus all investment and costs.

*\* Rankings are based on findings from the Roadmap. Any potential benefits would be considered society-wide, not just within the scope of the restaurant industry.*

The following graphic shows the flow of food through the restaurant supply chain, highlighting the opportunities to implement solutions to avoid and reduce unnecessary waste.



#### STAKEHOLDERS WITHIN SUPPLY CHAIN

#### DEPARTMENTS\*

- Sustainability
- Foundation
- Sales, Finance
- Legal
- Distribution & Logistics
- Procurement

#### FACILITY TEAMS

- Culinary
- Facilities Management
- Food Safety
- Front of House
- General Manager

#### EXTERNAL STAKEHOLDERS

- Food Recovery Organizations
- Guests
- Organics Recyclers
- Suppliers
- Waste Management Providers

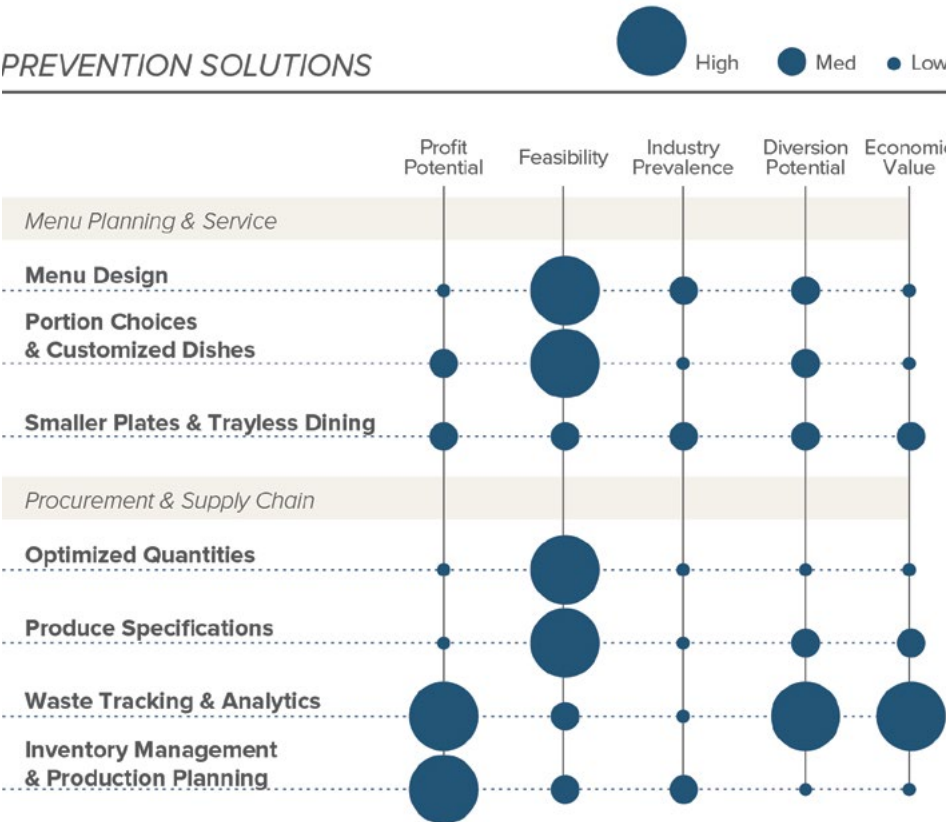
**\*Waste Tracking & Analytics:** Outside of the kitchen, restaurants can track food waste data through sources including food donation or waste hauling receipts. This data can then be used to further improve other prevention initiatives such as Optimized Quantities, Inventory Management & Production Planning, and Menu Design & Service Style.

**\*Departments:** While this ecosystem is a representation of the flow of food at a restaurant and the opportunities to reduce and divert food from landfills, the listed departments are an essential part of implementing successful food waste reducing initiatives.

# PREVENTION SOLUTIONS

## THE CURRENT LANDSCAPE

The full cost of food, including purchases, preparation, and disposal costs, to restaurants averages approximately \$4,000 per ton.<sup>18</sup> Based on a survey conducted by the National Restaurant Association, nearly half of restaurant operators track food waste as a prevention method,<sup>19</sup> but there is still an opportunity to do more, especially in capturing post-consumer food waste. Prevention solutions are not only some of the most cost-effective but can also be easier to implement without having a negative impact on the guest experience.



Each solution ranking can be found in Appendix B: Restaurant Solution Matrix Detail.



## KEY INSIGHTS

- Solutions that prevent waste in restaurants have the greatest economic value and net environmental benefit, saving almost 400 thousand tons of waste annually.
- Prevention solutions provide restaurants nearly \$620 million in business profit potential annually.
- Tracking food thrown away could cut food costs by 2 to 6% by increasing awareness of food waste within the company and focusing attention on front- and back-of-house prevention activities.



## Menu Planning & Service

Across all restaurant concepts, guests leave, on average, 17% of the food on their plate.<sup>20</sup> This presents restaurants with the opportunity to influence post-consumer waste through service style and menu design.

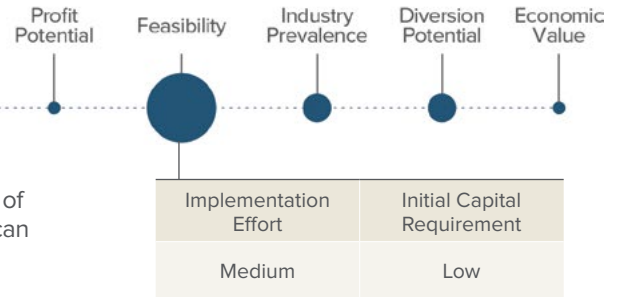
### MENU DESIGN

#### BENEFITS

By designing menus with food waste reduction in mind—reducing the number of ingredients and repurposing food prep trim and overproduction—restaurants can increase their bottom line.

#### BEST PRACTICES

- Minimize the range of ingredients used across dishes to maximize opportunities for cross-utilization; use different parts of a single ingredient in multiple menu items. For example, a culinary team can use the white parts of leeks in a potato leek soup and the dark green parts in a charred leek and tangerine dish. Similarly, seek out opportunities to repurpose food prep trim and overproduction in other dishes.
- Train all new culinary team members in optimizing food preparation, batch cooking, specific portion sizes, cross-utilization and repurposing of food trim and excess food; indicate in recipe books how many portions should be delivered from packaged ingredients and/or how much yield a cook should expect to get out of a product.
- For restaurants that display foods (e.g., pastries): put out just enough product throughout the day to make it visually appealing for guests but do not overstock. Adjust food production levels based on what is leftover at the end of the day.
- Incorporate ingredients from standard menu items into specials or “limited-time offer” promotional items to reduce over ordering of limited-use food items.
- Systemize these best practices in operation and training manuals.



### DESIGNING MENUS WITH “NO WASTE” IN MIND



At Haven's Kitchen in New York, the beverage team led the initiative to use leftover kitchen prep trim such as lemon peels for cocktails. This gave rise to the increased use of trim to enhance the beverage menu, like Bloody Marys with kale stems, and initiated guest conversations about food waste reduction. Due to the program's success, a dedicated space in the walk-in was created for food trim to be used in bar service. For Haven's Kitchen, whole-product utilization is a creative and cost-effective method of reducing food waste and a unique value addition to the dining experience.



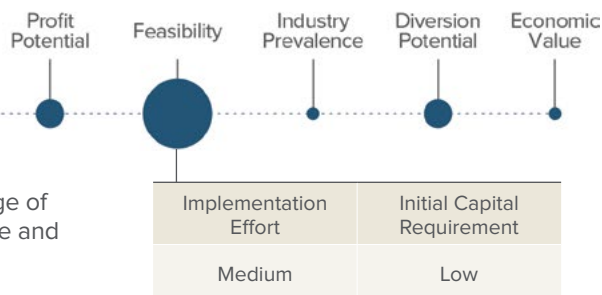
## PORTION CHOICES & CUSTOMIZED DISHES

### BENEFITS

Offering multiple portion choices (e.g., a regular and a “lite” choice) and a range of alternative sides allows guests to choose the meal that best suits their appetite and taste, reducing post-consumer waste.

### BEST PRACTICES

- Provide smaller amounts of a standard menu item (e.g., fries at a burger establishment), with the option for refills. Guests receive exactly what they want while restaurants prevent surplus waste.
- Offer a range of sides with mains and clearly indicate on menus what can be swapped out for other options (e.g., sweet potato fries for regular fries) so that guests are served the side that they are most likely to consume.



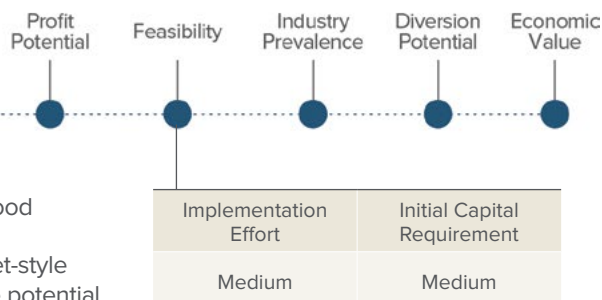
## SMALLER PLATES & TRAYLESS DINING

### BENEFITS

Psychologically, plate size can influence consumers’ perception of how much food should be on their plate. Providing guests with smaller-sized plates reduces the amount of food diners leave uneaten, on average 17% of their meals.<sup>21</sup> For buffet-style operations, **Smaller Plates** can reduce waste by 20%.<sup>22</sup> **Trayless Dining** has the potential to prevent 18 thousand tons of food waste—the equivalent of 30 million meals.<sup>23</sup>

### BEST PRACTICES

- Communicate to guests the reasons for plate size change; reassure them that there is an option for refills. Explain to guests the positive impacts of **Smaller Plates** and **Trayless Dining** (e.g., meals saved, reduced water use).
- Before investing in new plates, try renting them to demonstrate the cost benefit before committing to it as a permanent solution.



## THE IMPACT OF SMALLER PLATES ON CONSUMER WASTE

Cornell research on food psychology found that consumers given larger bowls took 16% more than those with smaller bowls.<sup>24</sup> Because consumers generally find a 70% fill rate to be “visually pleasing,” smaller plates can reduce the amount of food consumers serve themselves and prevent unnecessary post-consumer food waste. Research also shows that the average child eats only about 60% of what he or she serves themselves (far less than adults), meaning that smaller plates are even more important for children.<sup>25</sup>



## Procurement & Supply Chain

When working with suppliers, restaurants can explore options including **Produce Specifications** and pack size variations such as split packs for smaller restaurants. These options provide tremendous opportunity to decrease food waste and cut costs.

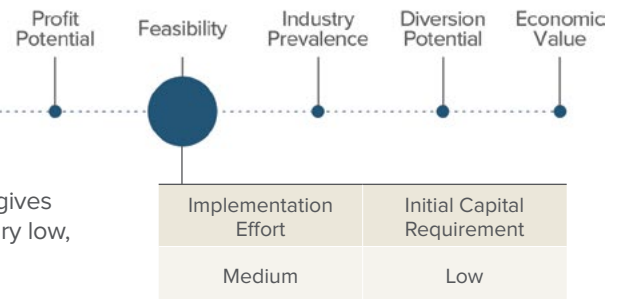
### OPTIMIZED QUANTITIES

#### BENEFITS

Working closely with suppliers and using food waste data to inform ordering gives restaurants the ability to: adjust pack sizes and order quantities, keep inventory low, minimize food waste, and order fresh food on a regular basis.

#### BEST PRACTICES

- Engage with suppliers and negotiate deals best suited to the restaurant's menu and number of guests. In addition to varying pack sizes, this could include smaller minimum order quantities.
- Use quality control assessments to share regular feedback with suppliers about product quality and specifications to improve ordering accuracy.
- Explore supplier packaging design options that will increase shelf life and maximize the amount of product used. Some companies are moving toward flexible packaging that makes it easier to extract the entire content. Consider packaging recyclability as well.
- Independent restaurants are sometimes too small to exert influence over suppliers, resulting in orders that are too large for their needs (e.g., a minimum order for potatoes is 50 pounds, but the restaurant only needs 25 pounds). Work closely with suppliers and strive for increased flexibility in ordering.
- Corporate restaurants can leverage their buying power with suppliers and switch to appropriate pack sizes and order quantities, as well as adopt mechanisms to provide waste-reduction feedback from restaurant to procurement teams and buyers. Encourage buyers to reduce food waste by basing incentives on both lowest costs procured and satisfying site-flexibility needs.
- For franchise models, optimize quantities and create positive marketing opportunities with centralized purchasing on behalf of franchisees, and with corporate-level category managers who develop relationships with suppliers. Make deals that encourage innovative packaging and other improvements.



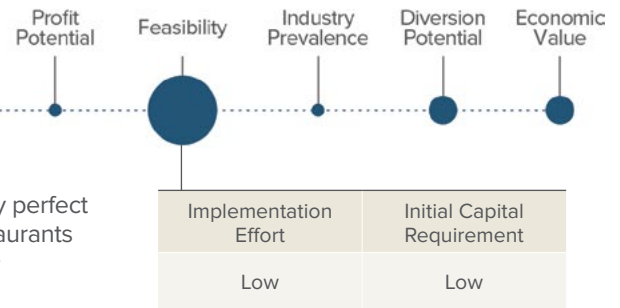
## PRODUCE SPECIFICATIONS

### BENEFITS

Off-spec produce, used as a lower-cost substitute for retail-grade, cosmetically perfect food, lowers input costs without sacrificing quality in a restaurant setting. Restaurants can realize \$132 million annually in cost-savings by using imperfect produce.<sup>26</sup>

### BEST PRACTICES

- Introduce **Produce Specifications** that consider food waste reduction, such as acceptance of imperfect produce and pre-trimmed fruits and vegetables. Integrating imperfect produce should always meet a restaurant's food safety and quality standards.
- Consider setting up pilots to partner with individual farmers and distributors to assess the financial benefit of utilizing imperfect produce.



*Large corporate restaurants carry significant buying power and can influence market trends when it comes to the wider acceptance and use of off-spec produce.*



## Production Efficiency

Understanding where, how, why, and what food is wasted will help the development and implementation of food waste prevention programs.

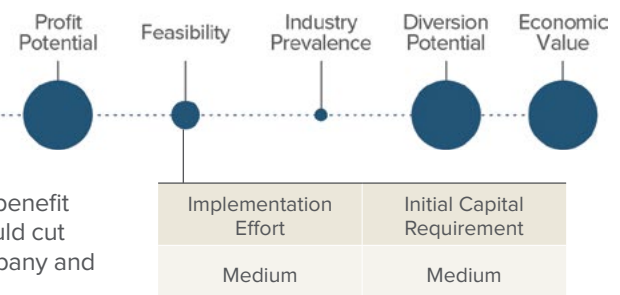
## WASTE TRACKING & ANALYTICS

### BENEFITS

**Waste Tracking & Analytics**, out of all solutions, offers the greatest business benefit to restaurants, almost \$266 million per year.<sup>27</sup> Tracking food thrown away could cut food costs by 2 to 6% by increasing awareness of food waste within the company and focusing attention on front- and back-of-house prevention activities.<sup>28</sup>

### BEST PRACTICES

- Conduct a food waste audit to establish a baseline. Strong data makes the case for investing in food waste prevention efforts and wins buy-in from the executive team and restaurant staff.
- Consider waste tracking systems that capture: the weight, type (e.g., fruits or vegetables), and source (e.g., spoilage or overproduction) of food waste, and use the information to improve kitchen operations (e.g., reduce prep trim and overproduction). Some waste tracking systems will convert the data into cost (money lost) based on the amount and type of food waste.
- Track both pre- and post-consumer food waste and use that data to adjust operating procedures, update training materials, and make menu changes.



*For smaller, independent restaurants, waste tracking with pen and paper or a spreadsheet is an alternative to investing in software. For franchisors, explain the business and reputational benefits of waste tracking to franchisees, provide the tools they need, and encourage them to adopt the solution.*

## TRACKING AND PREVENTING FOOD WASTE IN INDEPENDENT RESTAURANTS



At The Regional, a restaurant in Denver, CO, Chef Kevin Grossi and his staff use a low-tech approach to track food waste by calculating the maximum number of portions a shipment should yield and comparing that to the number of dishes actually served. The line cooks pay close attention to portioning food efficiently in order to maximize yield and minimize unnecessary prep trim. The Regional's kitchen manager holds a weekly meeting with line cooks to assess progress and identify discrepancies in over-portioning, which they correct in the following week's service. This practice helps educate staff and foster a zero-food-waste culture.



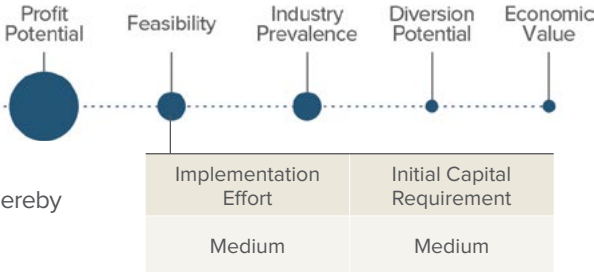
# METHODS OF COLLECTING FOOD WASTE DATA

There are many ways to gather food waste data, from visual bin observations to hauler data to smart scales.

DATA SOURCE	PROS	CONS
 <p><b>WASTE HAULER DATA</b> Request estimated or actual weight of collected waste</p>	<ul style="list-style-type: none"> <li>• Usually free of charge</li> <li>• Provides a consistent record</li> </ul>	<ul style="list-style-type: none"> <li>• Potential for inaccuracy</li> <li>• No details on waste type, content</li> <li>• Labor Intensive</li> </ul>
 <p><b>VISUAL BIN OBSERVATIONS</b> Observe and record, e.g., take photos of waste content</p>	<ul style="list-style-type: none"> <li>• Simple</li> <li>• Low cost</li> <li>• Can be done frequently</li> </ul>	<ul style="list-style-type: none"> <li>• Provides only rough assessment of waste content</li> </ul>
 <p><b>WASTE COMPOSITION AUDITS</b> Sort waste to provide detailed analysis of contents by weight</p>	<ul style="list-style-type: none"> <li>• Reasonably accurate</li> </ul>	<ul style="list-style-type: none"> <li>• Labor intensive/costly</li> <li>• Requires staff training</li> <li>• Provides occasional “snapshot” only</li> </ul>
 <p><b>TALLY SHEETS</b> Use record sheets to record number of bags or bins of waste removed by hauler</p>	<ul style="list-style-type: none"> <li>• Simple</li> <li>• Low cost</li> </ul>	<ul style="list-style-type: none"> <li>• Labor intensive</li> <li>• Less accurate weight data</li> </ul>
 <p><b>WASTE CAPTURE BY KITCHEN STATION</b> Collect food waste in clear bins/tubs at each station; convert volumes to weights</p>	<ul style="list-style-type: none"> <li>• Fairly accurate weight data</li> <li>• Medium level waste categorization</li> </ul>	<ul style="list-style-type: none"> <li>• Manual data entry into online platforms</li> <li>• Labor intensive</li> <li>• Requires more space</li> </ul>
 <p><b>SMART SCALE AND DATA ANALYSIS MONITORING SYSTEM</b> Use an electronic scale linked to a tablet computer with pre-loaded, detailed food waste categorization options</p>	<ul style="list-style-type: none"> <li>• Accurate weight and cost data by category</li> <li>• Online real-time information and reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Upfront capital or lease cost may be involved; this can be offset by strong ROI</li> <li>• Labor intensive</li> <li>• Requires more space</li> </ul>



# INVENTORY MANAGEMENT & PRODUCTION PLANNING



## BENEFITS

Reduces the amount of food that goes unused and minimizes overproduction, thereby increasing savings.

## BEST PRACTICES

- Utilize historic sales data and future considerations (e.g., annual events or “slower seasons”) to improve demand forecasting. This requires collaboration between the front- and back-of-house teams.
- For culinary teams: use waste tracking data to adjust stock ordering and improve production planning.
- Use software systems that go beyond simple inventory management and link demand forecasting with menu plans and recipe ingredient quantities.
- If purchasing inventory management software, use any existing food waste data to highlight the volume of food waste and profits lost to build a business case for the upfront costs. Note that payback on software investments can begin after only a few months. When implementing the new software, adopt Standard Operating Procedures (SOPs) on the use of all operational systems, design training modules, and institute a communications plan to disseminate information from management to the front line in the restaurants, including feedback loops to allow continuous improvement.
- Monitor sales of “limited-time offer” menu items and adjust ordering and supply accordingly to reduce waste and improve the system.

## USING SIMPLE TOOLS TO DIMINISH FOOD WASTE



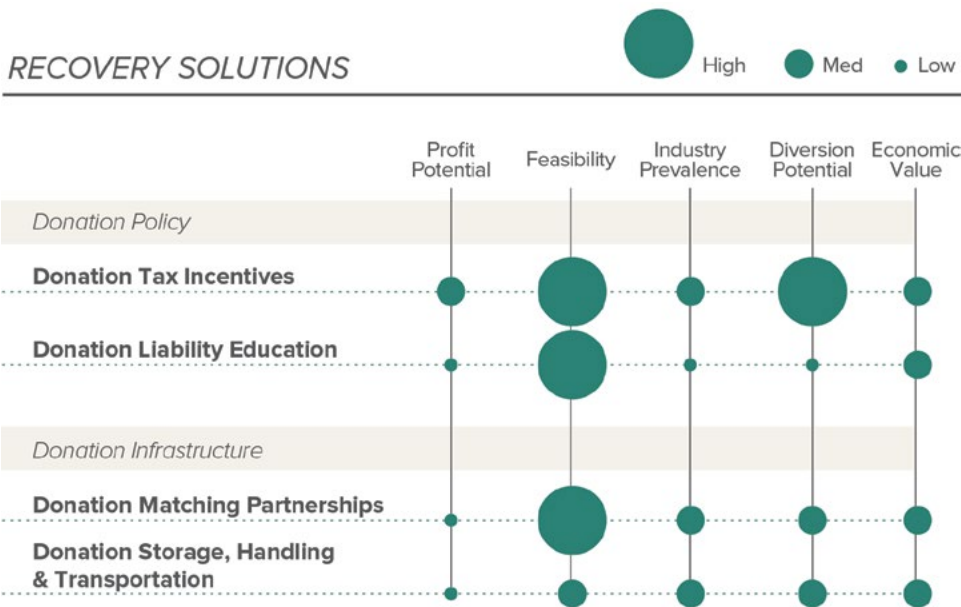
IKEA started the Food is Precious initiative in December 2016 with the aim of halving the food waste by end of August 2020. Smart scales, provided by LeanPath and Winnow Solutions, are being used to measure the food thrown away in the IKEA operations at the IKEA restaurants, Bistros, and Swedish Food Markets. Initially the smart scales are used to create baseline data on how much food is wasted and why. The data helps the co-workers to identify common factors behind food waste and develop actions for prevention and reduction of waste. As of October 2017, over 25% of all IKEA stores have implemented the Food Waste program, preventing almost 270,000 kg of food from going to waste and avoiding over 1 million kg of CO<sub>2</sub> emissions.



# RECOVERY SOLUTIONS

## THE CURRENT LANDSCAPE

Restaurants face several challenges to food recovery, including regulatory constraints, liability concerns, and infrastructure limitations for storage, transport and operational bandwidth. Currently, approximately 22% of restaurants donate leftover food, according to a recent survey conducted by National Restaurant Association.<sup>29</sup> Yet there is a huge opportunity for restaurants to capitalize on allowed tax deductions and serve as a positive contributor to their communities. One of the best ways to address liability concerns is to learn more about the federal Bill Emerson Good Samaritan Food Donation Act, which protects donors and recipients from civil or criminal liability short of gross negligence and misconduct.



Each solution ranking can be found in Appendix B: Restaurant Solution Matrix Detail.



## KEY INSIGHTS

- Restaurants have the potential to divert 320,000 tons of food annually to recovery, the equivalent of 643 million meals.
- Liability protections for food donations exist but education is needed to promote awareness and understanding of the federal Bill Emerson Good Samaritan Food Donation Act, which protects donors and recipients from liability.
- Recent improvements in food donation tax legislation have enhanced the ability of food businesses to claim deductions. The 2015 Protecting Americans from Tax Hikes (PATH) Act entitles eligible food businesses to enhanced deductions.
- In any food recovery program, the type of food served by a restaurant influences the amount of donations. For example, pre-packaged food is easier to pack and transport, making it simpler to donate than fresh food, which requires controlled labeling, handling, storage, and transportation practices.

# FOOD RECOVERY GET-STARTED PLAN



## 1. DETERMINE DONATION POTENTIAL AND THE BUSINESS CASE FOR CHANGE

Use waste tracking procedures to record and monitor surplus food amounts, focusing on food types and quantities. If using a spreadsheet, include functions that can be easily calculated: money saved from potential collection and disposal fees, number of meals saved, and potential tax benefit.

Take time to understand tax deductions available for food donation provided under Internal Revenue Code 170(e)(3) (the Code). The Harvard Food Law and Policy Clinic provides a step-by-step guide on how to qualify for, claim, and calculate deductions. (For more information, see p. 34.)

Collaborate with food donation organizations, which can often initially provide spreadsheets to track surplus food suitable for donation and determine operational needs. (For more information on how to calculate enhanced tax deductions, see p. 19.)

For corporate leaders, support restaurants by providing clear guidelines on staff and management time required, potential reputational benefits, and additional resources.



## 2. CONSIDER THE POLICY LANDSCAPE

Take time to become familiar with both the Bill Emerson Good Samaritan Food Donation Act, which provides liability protection, and the Protecting Americans from Tax Hikes (PATH) Act passed in December 2015, which allows enhanced tax deductions for food donations.

The fact sheet from Harvard Food Law and Policy Clinic provides a comprehensive overview of the liability protection the Bill Emerson act provides. (For information on where to find the fact sheet, see p. 34.)

Understand local safe handling and safety procedures, which often differ even within states.



## 3. IDENTIFY FOOD DONATION RECOVERY PARTNERS

Consider partnering with a food donation matching organization. Often, they will: identify an appropriate food donation recipient based on when and what the restaurant can donate, assist in picking up and transporting the food, help restaurants realize enhanced tax deductions, and ensure the nonprofit follows all applicable food safety guidelines. (For more resources on food donation matching organizations, see p. 34)

In corporate settings, provide resources to help restaurants choose a food donation partner. One example is a checklist tool specifying: types of surplus food produced, collection times, transportation infrastructure, processes and procedures in place for safe delivery of food, and information needed from the food donation organization to make tax deduction claims.



## 4. IMPLEMENT THE PROGRAM

Adopt and demonstrate a food safety culture around recovered food. Develop and implement procedures that ensure food is prepared, stored, transported, and served in a manner that reduces the risk of causing foodborne illness. Train employees on safe food handling practices using National Restaurant Association's ServSafe courses and examination to help minimize food safety hazards in any donated foods. For more information, go to [servsafe.com](http://servsafe.com).

To facilitate timely collections, strive to establish a strong, positive relationship with donation partners and encourage open communication. For large national brands, it is a best practice to dedicate staff and/or a small team to champion an organization-wide donation program.

For corporate restaurant leaders, consider managing tax donation claims through central tax/accounting departments to ensure the proper documentation is received from corporate restaurants and the food donation partner. If possible, provide restaurant operators with a spreadsheet or online platform that will convert the donated food quantities to meal equivalents. Encourage sharing this information with guests to realize reputational benefits.



## 5. REVIEW AND UPDATE

To successfully maintain a food recovery program, regularly assess the program's effectiveness, reevaluate partners and processes, and update procedures as necessary.

Because staff turnover is a challenge for most restaurants, make food donation procedures a mandatory part of training.

For all restaurant types, share success stories and number of meals rescued to encourage participation from operators and staff and to strengthen brand with guests.



## Food Donation Policy

A sound understanding of food donation policies is necessary to implement a successful food donation program and to realize the enhanced tax deductions. Food donation programs can also be a tool to track where and how to prevent food waste elsewhere in the business.

### DONATION TAX INCENTIVES

#### BENEFITS

Tax deductions provide a financial incentive by making food donations more cost effective.

Internal Revenue Code 170(e)(3) (the Code) provides enhanced tax deductions to businesses to encourage donations of fit and wholesome food to qualified nonprofit organizations serving the poor and needy.

The PATH Act, federally known as the 2015 Protecting Americans from Tax Hikes, entitles eligible businesses permanent access to enhanced deductions. A donating business's total annual charitable deductions are capped at different rates, depending on what type of business makes the donation. For example, C-corporations generally cannot deduct more than 10% of their taxable income for the year, except when the corporation has donated food that can increase its deduction up to 15%. In contrast, a non-C-Corporation business can receive a total charitable deduction (for all food and other eligible donations) up to 30% of the business's taxable income for the year.<sup>30</sup> Businesses can deduct the lesser of either twice the basis value of the donated food or the basis value of the donated food plus one-half of the food's expected profit margin (i.e., the profit margin the donor would expect to capture if the food were sold at its fair market value).<sup>31</sup> The basis value is the amount the business paid for the product or the cost of producing it.

With the expansion of the deduction in 2015 all businesses, regardless of size or incorporation status, can take the enhanced tax deduction when donating food to a 501(c)(3) nonprofit. The enhancements to the deduction help offset some of the costs of labor needed to separate and store food for donation—as well as time spent communicating with food donation organizations.

#### BEST PRACTICES

- Use food donation to measure and manage surplus food.
- Food donation tracking combined with the visual reminder of surplus food held for pick up can result in the adjustment of items prepared for pick up, resulting in less unsold food.

*In franchisee operations manuals, include information on how to benefit from enhanced deductions. Explain how to calculate fair market value, direct costs, and profit margin.*



Implementation Effort	Initial Capital Requirement
Low	Low

### CALCULATING THE FINANCIAL BENEFIT OF FOOD DONATION

Darden Restaurants, which has donated surplus food since 2003 in partnership with Food Donation Connection, recently reached the marker of 100 million pounds of food donated. Food donations are tracked and managed internally by Darden's tax department, then reported out to brand teams. Through independent research, Darden discovered a significant reduction in its percentage of food donation since the donation program was implemented, indicating a correlation between food donation and food waste prevention at the source. For instance, at Darden brand Olive Garden, average annual donations decreased by 30% over the past ten years.



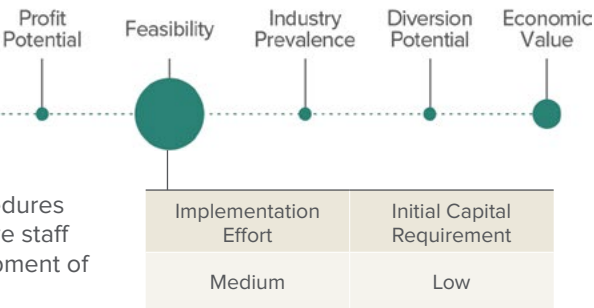
# DONATION LIABILITY EDUCATION

## BENEFITS

Developing education materials and training for staff on food donation procedures and liability can win buy-in from staff, build staff pride and loyalty, and improve staff retention rates. Food donation organizations can also assist with the development of these materials.

## BEST PRACTICES

- Prepare simple presentation materials for staff on facts to address liability myths. (For resources, see p. 34.) Note that the Bill Emerson Good Samaritan Food Donation Act is federal law, and states cannot have a lower level of protection for donors. Some states provide even greater liability protections, and/or additional tax breaks that complement those at the federal level—use ReFED’s Food Waste Policy Finder ([refed.com/policy](https://refed.com/policy)) to identify existing liability protections and tax incentives in every state.
- Develop a donation toolkit that: sets out why donation programs benefit the restaurant and addresses any concerns or misperceptions of how it impacts operations, summarizes protections provided by the Good Samaritan Act, and details a step-by-step process required to find a recovery partner. Note that food can be safely delivered to or collected by the recovery partner.
- Work with your donation partner to identify opportunities to publicly highlight your commitment to food donation and to your community.



## EDUCATING AND EQUIPPING FRANCHISES FOR SUCCESS

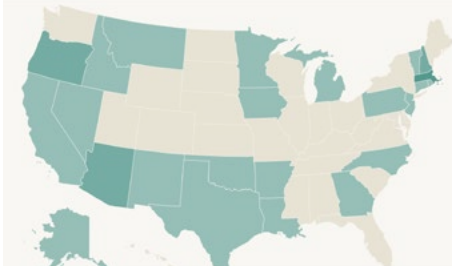


Since Chick-fil-A restaurants are independently owned and operated, food waste diversion programs are managed at the franchise level. To empower franchisees to address food waste, the Chick-fil-A corporate sustainability team educates its franchise operators on liability protection and safe handling, and equips them with the tools and resources to prevent food waste. For instance, Chick-fil-A hosts regular regional meetings with operators to help them kickstart programs to rescue surplus food in their restaurants, through a partnership with Food Donation Connection. This engagement has increased the number of restaurants that donate, and as of September 2017, over 320,000 meals have been served to feed the hungry.

## ReFED RESOURCE



Visit [refed.com/policy](https://refed.com/policy) to learn more about food waste policy.







## Food Donation Infrastructure

Strong food donation infrastructure can protect businesses from liability and streamline the donation process.

### DONATION MATCHING PARTNERSHIPS

#### BENEFITS

Donating matching organizations can quickly match surplus food to a recipient organization and relieve the burden on chefs and general managers of having to coordinate pickups.

#### BEST PRACTICES

- Ideal donation matching organizations offer the following services:
  - Connection to a local recipient such as a food bank or soup kitchen.
  - Transportation services and flexible pickup times.
  - No minimum donation requirements.
  - Categorize value by food type and track donated food; provide documentation required to maximize tax deductions.
- Where “best before” dates are displayed on food, provide staff with clarity on food safety standards for donation. The U.S. Food and Drug Administration lists recommended storage time limits for manufactured foods, and the National Restaurant Association’s ServSafe Certified Food Protection Examination will help employees understand how to safely handle food.
- Some potential partners include: 412 Food Rescue, Copia, Feeding America, Food Donation Connection, Food Recovery Network, MealConnect, and Rescuing Leftover Cuisine. (For additional resources, see p. 34.)



Implementation Effort	Initial Capital Requirement
Low	Low

### HOW DONATION MATCHING ORGANIZATIONS HELP RESTAURANTS INCREASE SAFE FOOD DONATIONS

Food donation organizations work with donors on a local or national scale to assist in the launch of food donation programs. A reputable donation matching organization will often:

- Help source surplus food for non-profit organizations
- Work with the restaurant to develop best practices in storing and handling food donations
- Provide food safety training material for the program
- Assist in transporting food for donation
- Ensure food safety training requirements are being met after program launch, and work with the restaurant to maximize participation

### SCALING FOOD DONATIONS THROUGH STRATEGIC PARTNERSHIP



Yum! Brands, comprised of Taco Bell, KFC and Pizza Hut, is currently the only restaurant company within the U.S. Food Loss and Waste Champions Coalition, a commitment to reducing food waste 50% by 2030. Since 1992, Yum! Brands has been donating surplus food through its Harvest program in partnership with Food Donation Connection, an organization founded by a former Pizza Hut employee. To date, KFC has donated almost 80 million pounds of food globally and Pizza Hut recently reached a milestone of 100 million pounds donated. The combined efforts helped Yum! surpass \$1 billion in the fair market value of wholesome, surplus food donated.

DONATION STORAGE, HANDLING, AND TRANSPORTATION



BENEFITS

Ensures that maximum quantities of rescued food safely reach those in need.

BEST PRACTICES

- Develop, implement, and train employees on food safety procedures that include:
  - Details of what can and can't be donated.
  - Handling, loading, and transport requirements for salvaged food. This is vitally important for prepared and perishable food where specific temperature requirements will need to be met to ensure food safety.
  - Labeling obligations, including safe storage temperature, reheating information, and ingredient information where required by the local health agency.
  - Food preparation and storage requirements that are in accordance with the FDA's Food Code and labeling requirements, and applicable state and local rules and ordinances.
  - Food safety transport requirements covering cleaning of vehicles for food transportation.
  - Ensure that there is at least one person in charge present during all hours of operation and consider someone who is a certified food protection manager.
- To help staff, produce visual aids to simplify food donation handling. Reinforce practices during daily communications and training.
- If food is being hauled longer distances, ensure vehicles can meet cold storage requirements so that donated food remains outside of the temperature danger zone. For short-distance transport, thermal blankets can be used to transport hot food, and insulated pouches or coolers can be used for frozen foods. (For additional resources, see p. 34.)
- Check to make sure drivers are trained in food safety and maintain the appropriate certificate such as ServSafe Manager.

*For larger corporate chains or through partnership with distributors, consider leveraging existing supply vehicles to backhaul recovered food to central facilities.*

LEVERAGING HIGH QUALITY STANDARDS TO ENSURE FOOD IS DONATED SAFELY



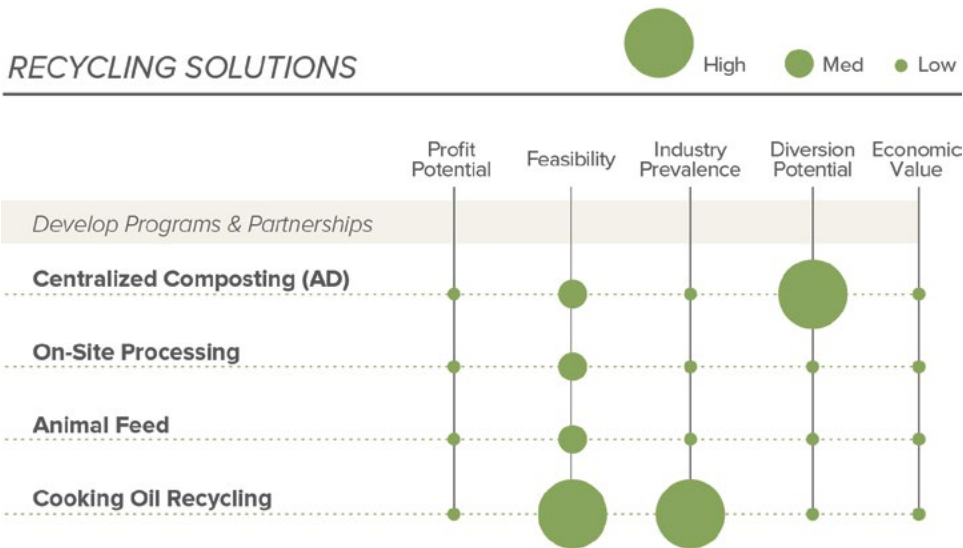
Because White Castle maintains rigorous food safety procedures in its bakeries and food facilities, off-spec items, while they cannot be sold, are welcomed by food recovery organizations since they are packaged and safe to eat. In 2016, the company donated over 19 tons of off-spec food from its frozen food division to nearby food banks that had the capacity to pick up donations.

# RECYCLING SOLUTIONS

## THE CURRENT LANDSCAPE

Restaurants have already demonstrated a commitment to recycling and reusable product packaging—72% report purchasing some packaging and supply products made of recycled material, and 30% purchase at least some compostable products.<sup>32</sup> However, many restaurants are not yet composting food waste, highlighting an opportunity for restaurants to begin food recycling programs.<sup>33</sup>

Significant barriers to recycling remain. Despite the recent adoption of several state-level landfill bans on food waste and municipal organic waste recycling laws (which may lead to more recycling opportunities for restaurants), many areas still lack recycling options. Other barriers to recycling include lack of control over hauler arrangements, lack of needed space inside and outside premises, and the possibility of attracting pests.



Each solution ranking can be found in Appendix B: Restaurant Solution Matrix Detail.



## KEY INSIGHTS

- While many restaurants do not currently recycle leftover food, there is potential to significantly reduce food waste through this solution category. Restaurants have the opportunity to increase recycling programs and partnerships, by implementing solutions like Centralized Composting, Anaerobic Digestion, and On-Site Processing, which would result in the diversion of 2.6 million tons of waste from landfills and reduce CO<sub>2</sub> emissions by 1.9 million tons.
- Corporate restaurants, can negotiate national or regional contracts with haulers and recyclers, driving market development and securing more competitive pricing.
- Independent restaurants can consult with municipal sanitation departments to locate local recycling facilities and learn which haulers offer food waste recycling services. They can also encourage Business Improvement Districts (BID) to procure food waste recycling services for all restaurants within the BID.

# FOOD RECYCLING GET-STARTED PLAN



## 1. DETERMINE THE FEASIBILITY AND BUSINESS CASE FOR RECYCLING

Check to see if your city has a zero-waste goal and how a recycling program at your restaurant could leverage available resources.

To build a case, restaurants can use waste tracking procedures to record and monitor recyclable food waste. Restaurants can use food waste data when discussing the feasibility and costs of recycling with haulers, recycling companies, and/or municipal sanitation departments.

In corporate settings:

- When no external recycling solution is available, consider on-site processing. On-site processing equipment should be built into restaurant design and development where possible. If sites are considering retrofitting equipment, provide a tool that includes details on space and permitting requirements and a cost-benefit assessment to determine feasibility.
- Provide restaurant operators with guidance on budget costs and savings associated with different recycling solutions. This could include details on internal and external bin costs, staff time needed to manage the recycling project, and hauler costs and savings. For additional support, designate a person within the corporate head office whom restaurants can contact if a challenge arises.



## 2. IDENTIFY PARTNERS

Municipal sanitation departments can often offer assistance on finding a local service provider.

When working with hauling managers, confirm what items the recycling facility will and will not accept (e.g., compostable cutlery) and the consequences of food waste contamination. Some facilities accept soiled paper and compostable cutlery, making separation easier for the front-of-house staff.

Biocycle's composter search portal (see p. 34 for more information) identifies local recycling options by zip code.

Corporate restaurant leaders can support operators by: providing guidance on finding a hauler; supplying questions to ask to ensure reliable, legally compliant, and fixed-price service; providing standard contracts or a list of key clauses to be included in contracts with recycling facilities (e.g., requirements for tonnage data or annual performance reviews). If the company owns the restaurants, consider national contracts for recycling services to standardize pricing and reduce management time.



## 3. IMPLEMENT THE PROGRAM

When implementing the food recycling program, develop a manual or toolkit that includes: training material on what can and can't be recycled, advice on choosing internal and external bins, and standardized signage for the program. Restaurants can collaborate with their hauler on these items or request support from municipal sanitation departments.

Clearly label bins for composting, recycling, or landfill and post signage with instructions and visuals of items that should go into each bin for employees and guests.

Measure the impact of food recycling using spreadsheets or an online platform to record the amount of food diverted from landfills, the financial savings, and the environmental benefits. Use this information in marketing materials and to motivate guests and staff.



## 4. REVIEW AND UPDATE

Maintain and improve a food recycling program by regularly assessing effectiveness, reevaluating partners and processes, and updating procedures.

Maintain close communication with the hauler to discuss contamination, service reliability, and performance.

Since staff turnover is often a challenge, make food recycling procedures a mandatory part of training. This can prevent organics from being contaminated and rejected by the recycling facility.



## Develop Organics Recycling Program & Partnerships

Diverting food waste from landfill can result in reduced pickups, potentially lowering the cost of hauling. Composting also presents an opportunity to engage customers and strengthen the restaurant's brand. Some recycling solutions, such as using food waste as animal feed, can result in cost neutrality.

### CENTRALIZED COMPOSTING OR ANAEROBIC DIGESTION (AD)

#### BENEFITS

Professionally managed off-site facilities create marketable products. Across the U.S., approximately 500 composting facilities<sup>34</sup> and 40 to 50 centralized AD facilities accept food scraps. Further potential exists in the estimated 250 smaller AD systems installed on farms to digest manure.<sup>35</sup>

#### BEST PRACTICES

- Take time to research composting facilities and regional organics recycling laws, specifically in the Northeast and Northwest, which are now the most promising and cost-effective regions.
- Conveniently place kitchen food waste containers to maximize food waste captured. Place small clear containers at each food station rather than in one location to encourage employees to put food trim or leftovers in recycling rather than trash bins.
- Design clear visuals to promote proper organics separation; include images and words showing which items go into each bin. Use color-coded bins, and keep signage consistent. Visuals may be used for both the back and front of house.
  - 85% of consumers say they will sort recyclables at a limited-service restaurant if receptacles are provided.<sup>36</sup> Encourage diners to consume what they order, as research has shown that when diners know food waste is being composted they waste considerably more than those who believe food scraps will be sent to landfill.<sup>37</sup>
  - If the hauler is appointed by a building owner or management company and does not offer a recycling service, look for alternatives that offer recycling options. Obtain pricing information to enable informed discussion with building management about the benefits of switching suppliers. Consider contacting other tenants to understand their views. Information on the U.S. Composting Council website explains the benefits of food waste recycling.



Implementation Effort	Initial Capital Requirement
High	Medium

### CONVERTING PRODUCE TRIM INTO RENEWABLE ENERGY

In an effort to challenge the supply chain, A&W selects suppliers that are eager to participate in sustainable initiatives. A&W partners with Gills Onions, which operates a program to convert onion trim into renewable electricity. Such decisions are initiated at the corporate level, and illustrate the influence restaurants have throughout the food chain.

### CUSTOMIZED MAPS TO IDENTIFY COMPOST FACILITIES



To make implementation of a compost program easier for franchise operators, Chick-fil-A created an infrastructure map highlighting existing compost facilities with local haulers. A map overlay pinpoints Chick-fil-A restaurant locations that could be served by those compost facilities. The map can also be customized with additional layers showing proposed food waste legislation and packaging bans, a helpful tool for visualizing the best areas of the country to target for recycling programs. This has helped operators easily identify locations for testing a back-of-house compost program.





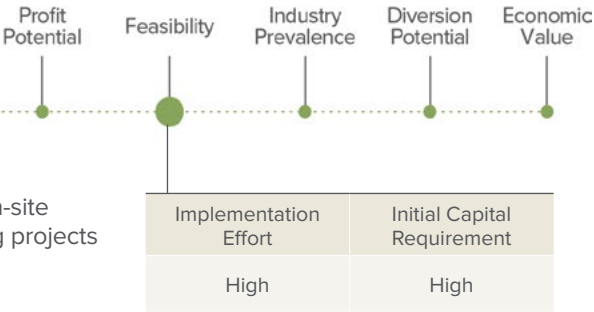
# ON-SITE PROCESSING

## BENEFITS

No hauling and disposal fees (although the upfront and operational costs of on-site processing must be considered). Compost can be used on-site for landscaping projects or vegetable gardens, or be given to local schools or employees.

## BEST PRACTICES

- Find a safe place for on-site composting bins or a composting pile that is protected from harsh weather. Obtain property manager approval.
- Get to know local and state regulations for on-site processing to ensure compliance; choose a supplier that can provide technical support and training. In the initial years of the project, include a maintenance contract with the supplier to reduce operational risks.
- Consider leasing the equipment for a period to test the program’s effectiveness.
- When installing the unit, assign responsibility for operation and maintenance of the equipment and train staff on what can and cannot be processed.



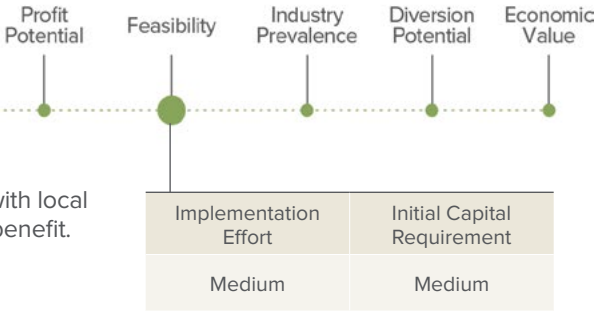
# ANIMAL FEED

## BENEFITS

Restaurants in rural areas can turn food waste into animal feed by partnering with local farmers. This reduces both hauling and disposal costs while providing a local benefit.

## BEST PRACTICES

- Before rolling out this solution, communicate with farms about what types of food they can use and how frequently they can accept food. Refer to Harvard Food Law and Policy Clinic’s guide, Leftovers for Livestock: A Legal Guide for Using Food Scraps as Animal Feed, for detailed information on federal and state law. (See resources on p. 34.)
- Investigate whether any waste haulers can create collection rounds to connect area food waste generators with nearby farms; this will reduce transport costs.
- Corporations can contact suppliers to find out if they can use restaurant food waste as animal feed.



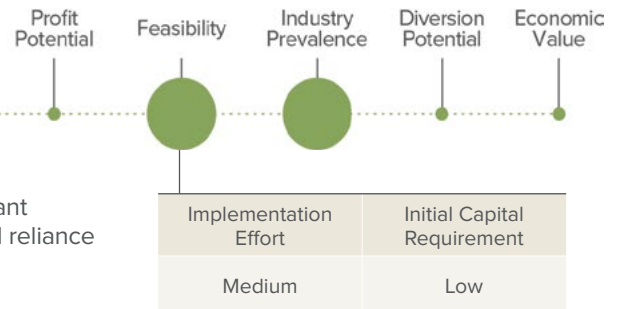
## COOKING OIL RECYCLING

### BENEFITS

There is an active market for used fats, oils, and greases (FOGs) from restaurant kitchens. FOGs are recycled into biodiesel, which reduces carbon impact and reliance on fossil fuels.

### BEST PRACTICES

- Contact the restaurant's oil supplier to find out if it offers a recycling service. Some suppliers collect used oil (including oil captured in grease traps) in exchange for a discount on new oil. Local or municipal government (public works or the department of sanitation) can also supply information on oil recycling companies.
- When collaborating with the oil recycler, discuss how much oil the restaurant is using per day. Often the company will provide guidance on the size of container required. Keep lines of communication open to ensure that pickups occur regularly to keep FOGs from exceeding container capacity.
- Reinforce the program by developing materials that cover not only the "how-to" of recycling oil, but also its monetary and environmental benefits. Posting reminders such as "No Oil" signs above sinks will make the program more successful.
- The National Restaurant Association's toolkit is a useful resource on recycling FOGs. (For information on how to access the toolkit, see p. 34.)



### FUELING A RESTAURANT CHAIN'S DELIVERY FLEET WITH FOGS



To avoid throwing out fats, oils, and grease (FOGs), McDonald's launched its oil recycling program in 2007. In 2013, it collected 3.7 million liters of used cooking oil, which was converted into 3.1 million liters of biodiesel, enough to fuel about 42% of its delivery fleet.



# SETTING THE STRATEGY AND APPROACH

Because each restaurant segment is unique, food waste reduction solutions will need sector-specific plans for each client that build on a wider corporate sustainability agenda.



## STRATEGY

Many companies find it useful to define a strategy that outlines goals, activities, and responsibilities when tackling food waste. Any strategy should include senior-level commitment to ensure its successful implementation throughout the organization.

- For corporate restaurants, successful strategies tend to connect corporate growth with food waste prevention strategies, so that the time and work spent implementing strategies are part of achieving corporate goals such as improving efficiency, reducing cost, and embedding sustainability.
- Within franchise models, franchisors can educate franchisees about the financial and reputational benefits of implementing food waste solutions to motivate them to address food waste. Conversely, franchisee leaders can explain these benefits to the company standards board and potentially make food waste reduction a part of the brand's identity.
- For independent restaurants, food waste prevention efforts could start with an employee passionate about reducing food waste. To be most effective, though, that commitment should be communicated and adopted at every level, from chef to kitchen staff to dining room manager to servers.

## FOOD WASTE REDUCTION GOALS ARE MOST LIKELY TO BE MET IF THEY ARE:

### QUANTIFIABLE

Goals are tied to business metrics such as cost, revenue, or growth. They are time-bound, meaning with deadlines or strict time frames attached. For example, some restaurants are setting absolute and net-zero waste goals with support from organizations like the Food Waste Reduction Alliance and the U.S. Food Loss and Waste 2030 Champions.

### DEFINED APPROACH

To achieve goals, there is a clear plan including activities such as piloting food waste measurement reduction technology and other innovations, or employee training.

### PUBLIC FACING

When goals are external with reporting, it increases accountability and the likelihood of completion.

### CONTINUOUS IMPROVEMENT

Goals are reviewed regularly, with strategies adjusted as practices improve. Using performance metrics to enhance tracking can make the process more efficient.

## ALIGNING INCENTIVES IN RESTAURANTS

When food waste reduction goals are not uniformly embraced throughout an organization, the entire program can suffer. For example, when purchasing more expensive compostable plates, make sure the finance department is on board with this initiative to prevent purchasing teams from being penalized for cost increases.





## MANAGING A SUCCESSFUL FOOD WASTE PROGRAM

Food waste typically occurs when no one is directly measuring and managing it and efforts are not company-wide. Reduction strategies are most successful under clear leadership and cross-functional collaboration.

- Food waste reduction efforts in restaurants are likely to need support and investment from multiple departments including procurement, logistics and distribution, sales, HR, operations, and culinary management. Ensuring that each part of the organization understands its role and is rewarded for supporting one another is the key to success.
- Buy-in at the executive level, thoughtful project management, and active monitoring and reporting are also critical to resolve any potential organizational conflicts and to ensure incentives are aligned.
- For any type of restaurant, it is helpful to have a point person accountable for food waste reduction (whether a food waste leader or a “green” champion team) who can oversee all aspects of waste reduction—prevention, recovery, and recycling—and take responsibility for engaging business leaders and external stakeholders such as industry collaborations or NGOs.



## MEASUREMENT AND COMMUNICATIONS

Measuring food waste establishes a baseline that can be used to monitor a restaurant’s progress. This process requires staff training and education and in some cases an investment in tracking and analytics tools.

- Assessing the types of food waste generated in different areas of the restaurant can make prevention, recovery, and recycling actions more effective. Consider using the EPA’s *A Guide to Conducting and Analyzing a Food Waste Assessment* or LeanPath’s *How to Conduct a Food Waste Audit*. (For additional resources, see p. 34.) Data collection on food waste in the supply chain can help restaurant leaders adopt solutions best suited to the business more quickly and confidently. To start, restaurants should have a standard methodology for tracking food waste across the organization, which can help set specific reduction targets. There are a range of tools available to support data collection and reporting such as the EPA’s downloadable Food and Packaging Waste Prevention Tool and Food Waste Management Cost Calculator, as well as the Food Loss and Waste Accounting and Reporting Standard developed by the Food Loss & Waste Protocol. (For additional resources, see p. 34)

### MEASUREMENT IN FRANCHISE MODELS

Currently, 76% of the top 100 chain restaurant units are franchised, and this number is growing.<sup>38</sup> The reduced control corporate leaders have over franchise practices compared to corporate restaurants can make it difficult to implement food waste reduction initiatives, provide food waste data, and implement company or chain-wide solutions.<sup>39</sup> Since franchise license agreements are critical to defining what franchisees can and cannot do, however, data provisions can be made a contractual requirement. This approach is especially useful for new franchisees, as it creates a culture of waste reporting from the outset. Changing existing license agreements can be more difficult. Franchisors do have the ability to motivate franchisees to prevent food waste as a way of gaining cost-savings and reputational benefits. They can also help franchisees select solutions that best match their circumstances, e.g., location and size, and provide guidance via operation manuals on recovery and recycling solutions. Franchisee meetings offer another opportunity to explain the business case for food waste reduction and advocate for best practices among franchisees.



*In limited-service restaurants, educate consumers on separation of waste streams to ensure uncontaminated recycling bins. Use verbal communication, visuals, and clearly labelled color-coded bins.*

## EMPLOYEE AND CUSTOMER EDUCATION

Because restaurants can reduce food waste along the entire supply chain, from supplier to consumer, there is an enormous opportunity to multiply impact, especially through employee and consumer education.

### EMPLOYEE EDUCATION

Inspiring and motivating franchisees or food business employees can make the difference in whether a waste reduction program succeeds.

Staff Training and Communication:

- Cultivate a food waste reduction culture that is embraced by the entire organization, from owner to manager to employees, both front- and back-of-house. Create manuals with well-defined waste management procedures, and hold regular training sessions, “pre-meal” meetings, and awareness-raising activities (e.g., an annual Food Waste Week). Other positive actions can include incentivizing staff by rewarding food waste reduction achievement (e.g., linked to waste tracking) and establishing a formal suggestions structure or other mechanisms for staff to give feedback on waste reduction up the management chain.
- For franchisees, it can be helpful to encourage the sharing of success stories and data on food waste (e.g., from the hauler), which will improve the company’s ability to track and target food waste reduction. Help franchisees identify challenges blocking implementation of food waste solutions so that corporate teams can better support operators.
- Design messaging to suit the audience: franchise and restaurant owners as well as managers will be motivated by cost savings and maintaining brand standards; kitchen managers, head chefs, and front-of-house staff may respond best to environmental arguments and compliance scrutiny.

### GUEST ENGAGEMENT

Because of the trust that exists between restaurants and their customers, restaurants are in a unique position to educate and motivate consumers on food waste. Overall, **Consumer Education** is among the top three solutions featured in the *Roadmap* in greatest economic value per ton.

Try making waste reduction a regular part of staff training. Promote waste-reduction activities consistently throughout menus, signage, and promotional materials. A motivated front-of-house staff will engage more effectively in dialogue with guests about waste-prevention activities (e.g., options to decline items or swap them out for an alternative, smaller plates, or portion sizes with refill options). A well-educated staff will be better able to explain these choices to guests, including how they are tied to food waste reduction and the restaurant’s desire to ensure guest satisfaction. When hiring, look for employees who are interested in and passionate about food waste reduction.

### MOTIVATED CO-WORKERS AS A KEY SUCCESS FACTOR IN FOOD WASTE REDUCTION



IKEA believes that engaged co-workers are a key to the success of the food waste initiative, as the success of the program requires changing behaviors. In order to secure engagement through the organization, IKEA has a dedicated “Country Implementation Responsible” in every market. They are tasked to spearhead implementation in the country and provide relevant support and motivation for other co-workers. Additionally, every store has identified a co-worker to be a “Food Waste Champion” who takes on the extra responsibility of ensuring a good implementation of the initiative and motivates others. This has proven to be a success, and recent surveys show that more than 50% of employees working with the initiative have taken measures to decrease food waste at home and more than 70% are proud of participating in the Food Is Precious initiative.



# THE PATH AHEAD

This *Guide* presents practical solutions for restaurants to take action on reducing food waste. Activity on the three fronts of prevention, recovery, and recycling is achievable by developing and embedding a food waste reduction culture throughout every department of a restaurant operation, and extending it to the consumer.

There is a huge opportunity for the restaurant industry to lead national food waste reduction initiatives. *The Restaurant Food Waste Action Guide* calls upon every restaurant business in America to rise to the challenge and take part in turning food waste from a burden into a valuable resource.

*Together, we can reduce food waste  
by 20 percent in the next decade*

For more details and to join ReFED, please contact us  
at [info@refed](mailto:info@refed).





# CONTRIBUTORS & REVIEWERS

*We thank the following individuals for their feedback and contributions through participation in interviews and reviews of the Guide.*

Andrew Lavers  
A&W Restaurants, Inc.

Thomas McQuillan  
Baldor Specialty Foods, Inc.

Seth Gross  
Bull City Burger & Brewery

Thomas O'Donnell  
Cabrini University

Dawn Rhodes  
Chick-fil-A

Mike Goldblatt  
Copia

Cam Pascual  
Darden Restaurants

Kristine Young  
Darden Restaurants

Patrick Lenow  
Dine Equity

Heidi Minora  
EatWell DC

Evan Hanczor  
Egg Restaurant

Carrie Calvert  
Feeding America

Karen Hanner  
Feeding America

Luis Jaramillo  
Fifty Restaurant

Jim Larson  
Food Donation Connection

Regina Northouse  
Food Recovery Network

Karen Bremer  
Georgia Restaurant  
Association

Jehangir Mehta  
Graffiti Restaurants

David Mawhinney  
Haven's Kitchen

Freyja Frimannsdottir  
IKEA Food Services AB

Vera Mertes Banchereau  
IKEA Food Services AB

Dalia Jurgenson  
Institute for Culinary  
Excellence

Sabrina Sexton  
Institute of Culinary  
Education

Katherine Miller  
James Beard Foundation

Janet Haugan  
LeanPath

Steven Finn  
LeanPath

Claire DiMattina  
McDonald's Corporation

Ian Olson  
McDonald's Corporation

Sarah Vared  
MissionPoint Partners

Jeffrey Clark  
National Restaurant  
Association

Laura Abshire  
National Restaurant  
Association

JoAnne Berkenkamp  
Natural Resources  
Defense Council

Nick Van Eyck  
New York Department of  
Sanitation

Pedro Suarez  
New York Department  
of Sanitation

Anne Maerten  
Starbucks Corporation

Laura Olson  
Starbucks Corporation

Kevin Grossi  
The Regional  
Restaurant

Ashley Zanolli  
U.S. Environmental  
Protection Agency

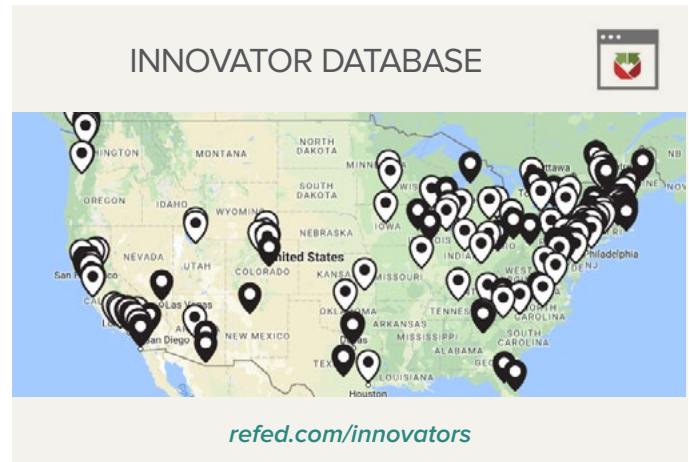
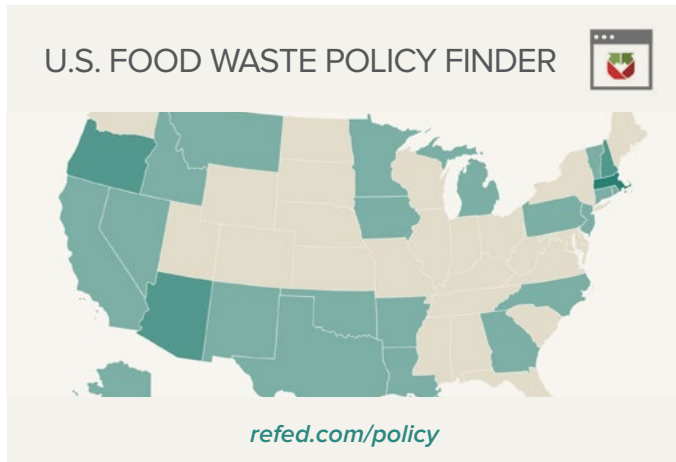
Kevin Smith  
U.S. Food & Drug  
Administration

Shannon Tolliver  
White Castle System,  
Inc.

Kai Robertson  
World Resources  
Institute

Jessica Rosen  
Yum! Brands

# ReFED RESOURCES



## OTHER RESOURCES

### PREVENTION

A Strategic Guide on Using Data to Drive Food Loss and Waste Reductions  
[bit.ly/2vRmtUD](https://bit.ly/2vRmtUD)

EPA Food Waste Cost Calculator  
[bit.ly/2xhLQ2S](https://bit.ly/2xhLQ2S)

EPA Food Waste and Packaging Tracking Tool  
[bit.ly/2yMudfc](https://bit.ly/2yMudfc)

EPA A Guide on How to Conduct and Analyze Food Waste Characterization  
[bit.ly/2iugVgW](https://bit.ly/2iugVgW)

LeanPath  
[leanpath.com/free-resources](https://leanpath.com/free-resources)

Unilever's "Wise Up on Waste" App  
[bit.ly/1oUt9NF](https://bit.ly/1oUt9NF)

World Resource's Institute's Food Loss & Waste Protocol  
[bit.ly/1sUtagK](https://bit.ly/1sUtagK)

### RECOVERY

412 Food Rescue  
[412foodrescue.org](https://412foodrescue.org)

Copia  
[gocopia.com](https://gocopia.com)

Fact Sheet from the Harvard Food Law and Policy Clinic  
[bit.ly/2yJdQ2o](https://bit.ly/2yJdQ2o)

Federal Enhanced Tax Deduction for Food Donation  
A Legal Guide  
[bit.ly/2ijN3kK](https://bit.ly/2ijN3kK)

Feeding America  
[feedingamerica.org](https://feedingamerica.org)

Food Donation Connection  
[foodtodonate.com](https://foodtodonate.com)

Food Donation Management Practices  
[bit.ly/2yXzHAe](https://bit.ly/2yXzHAe)

Food Recovery Network  
[foodrecoverynetwork.org](https://foodrecoverynetwork.org)

Food Recovery Verified  
[foodrecoverynetwork.org/frv](https://foodrecoverynetwork.org/frv)

Information on the Bill Emerson Good Samaritan Food Donation Act  
[bit.ly/2fo7ptj](https://bit.ly/2fo7ptj)

Iowa Hunger Directory  
[iowahungersummit.org/en/the\\_iowa\\_hunger\\_directory](https://iowahungersummit.org/en/the_iowa_hunger_directory)

### RECYCLING

BioCycle's Find a Composter  
[findacomposter.com](https://findacomposter.com)

Keeping Food Out of the Landfill: Policy Ideas for States and Localities  
[bit.ly/2gsU6GB](https://bit.ly/2gsU6GB)

Leftover's for Livestock: A Legal Guide for Using Food Scraps for Animal Feed  
[bit.ly/2yJfQVW](https://bit.ly/2yJfQVW)

National Restaurant Association FOGs toolkit  
[bit.ly/2zMH8w6](https://bit.ly/2zMH8w6)

U.S. Composting Council  
[bit.ly/2y3zj7p](https://bit.ly/2y3zj7p)

Waste Dive: Solid Waste & Recycling News  
[wastedive.com](https://wastedive.com)



# APPENDIX A: *Solution Details*

The following table provides a description of each solution and the stakeholders most likely required to engage when implementing a solution.

RESTAURANT FOOD WASTE PREVENTION SOLUTIONS				
SOLUTION CATEGORY	SOLUTION	DESCRIPTION	STAKEHOLDERS	
			INTERNAL	EXTERNAL
<b>MENU PLANNING &amp; SERVICE</b> Design menu and dining experience to reduce pre- and post-consumer food waste	<b>Menu Design &amp; Service Style</b>	Strategically design menus to reduce pre- and post-consumer waste	Culinary, Front of House, Catering & Events, Procurement	Guests, Suppliers
	<b>Portion Choices &amp; Customized Dishes</b>	Provide guests with choices in meal size and content	Culinary, Front of House, Catering & Events	Guests
	<b>Smaller Plates &amp; Trayless Dining*</b>	Adopt smaller plates and remove trays in self-serve, all-you-can-eat dining settings to reduce portion sizes and multiple plates per serving	Culinary, Finance, General Manager, Catering & Events, Front of House	Guests
<b>PROCUREMENT &amp; SUPPLY CHAIN</b> Implement systems and processes to standardize operations, build supplier relationships	<b>Optimized Quantities</b>	Customize order quantities to accurately match demand	Culinary, Procurement, Distribution & Logistics, Front of House	Suppliers, Third Party Hauler
	<b>Produce Specifications*</b>	Adjust specifications to integrate cosmetically-challenged produce as ingredients to prepared food	Culinary, Procurement, Distribution & Logistics	Suppliers, Third Party Hauler
<b>PRODUCTION EFFICIENCY</b> Use Waste Tracking & Analytics data to improve ordering and inventory management, enhance demand and production planning	<b>Waste Tracking &amp; Analytics*</b>	Adopt waste tracking tools and analytics to provide data on wasteful practices to inform behavior and operational changes	Culinary, Front of House, Procurement, Finance	Waste Tracking Software Representatives
	<b>Inventory Management &amp; Production Planning</b>	Optimize ordering and inventory systems to increase accuracy of purchasing and production planning	Culinary, Procurement, Sales, Finance	Suppliers, Third Party Hauler

\* ReFED Roadmap solutions; all other solutions are modified or emerging solutions identified as being well suited to restaurants.<sup>40</sup>



## RESTAURANT FOOD SURPLUS RECOVERY SOLUTIONS

SOLUTION CATEGORY	SOLUTION	DESCRIPTION	STAKEHOLDERS	
			INTERNAL	EXTERNAL
<b>FOOD DONATION POLICY</b> Understand government food donation policies to motivate and enable successful implementation of food donation programs	<b>Donation Tax Incentives*</b>	Take advantage of Donation Tax Incentives, which support donation by offering tax deductions	Finance, Sustainability, Corporate Foundation, Culinary	Food Donation Organizations
	<b>Donation Liability Education*</b>	Educate staff on food donation liability protections and food safety and eliminate fear of negative consequences of donation	Culinary, Front of House, Food Safety, Quality Assurance	Guests, Food Donation Organizations
<b>FOOD DONATION INFRASTRUCTURE</b> Develop programs and partnerships to handle, store and transport donated food	<b>Donation Matching Partnerships</b>	Develop partnerships with donation matching organizations that can connect restaurants with food recipient organizations	General Manager, Legal, Sustainability, Corporate Foundation	Food Donation Organizations
	<b>Donation Storage, Handling, and Transportation</b>	Ensure safe arrival of food at recovery partners' premises, e.g., adapt existing transportation infrastructure to handle donation delivery for dissemination throughout business	Culinary, Front of House, General Manager, Finance	Food Donation Organizations

## RESTAURANT FOOD WASTE RECYCLING SOLUTIONS

SOLUTION CATEGORY	SOLUTION	DESCRIPTION	STAKEHOLDERS	
			INTERNAL	EXTERNAL
<b>DEVELOP ORGANICS RECYCLING PROGRAM AND PARTNERSHIPS</b>	<b>Centralized Composting or Anaerobic Digestion (AD)*</b>	Transport waste to a centralized facility where it will decompose into compost or biogas and digestate	Culinary, Front of House, Facilities Management, Procurement	Organics Recycling Facility, Waste Management Hauler, Suppliers
	<b>On-Site Processing</b>	Implement small-scale in-vessel composting or anaerobic digestion developed for restaurants, which use heat and mechanical power to break down organics relatively quickly	Culinary, Front of House, Facilities Management, Finance, Procurement	Maintenance Suppliers, Permit-Granting Authority
	<b>Animal Feed*</b>	Partner with local farms to divert food waste to animals as feed after it has been heat-treated, dehydrated, and either mixed with dry feed or directly fed	Culinary, Front of House, Facilities Management	Farm, Waste Management Hauler
	<b>Cooking Oil Recycling</b>	Implement program to capture spent fats, oils, and greases (FOGs) to be transformed into biodiesel, an alternative to regular diesel	Culinary, Facilities Management, Finance	Oil Recycler

## APPENDIX B: *Restaurant Solution Matrix Detail*

SOLUTION	PROFIT POTENTIAL	FEASIBILITY		INDUSTRY PREVALENCE	ROADMAP DATA	
					DIVERSION POTENTIAL	ECONOMIC VALUE
Menu Design	Low	High	Implementation Effort: Medium	Medium	Medium	Low
			Initial Capital Intensity: Low			
Portion Choices & Customized Dishes	Medium	High	Implementation Effort: Medium	Low	Medium	Low
			Initial Capital Intensity: Low			
Smaller Plates & Trayless Dining	Medium	Medium	Implementation Effort: Medium	Medium	Medium	Medium
			Initial Capital Intensity: Medium			
Optimized Quantities	Low	High	Implementation Effort: Medium	Low	Low	Low
			Initial Capital Intensity: Low			
Produce Specifications	Low	High	Implementation Effort: Low	Low	Medium	Medium
			Initial Capital Intensity: Low			
Waste Tracking & Analytics	High	Medium	Implementation Effort: Medium	Low	High	High
			Initial Capital Intensity: Medium			
Inventory Management & Production Planning	High	Medium	Implementation Effort: Medium	Medium	Low	Low
			Initial Capital Intensity: Medium			
Donation Tax Incentives	Medium	High	Implementation Effort: Low	Medium	High	Medium
			Initial Capital Intensity: Low			
Donation Liability Education	Low	High	Implementation Effort: Medium	Low	Low	Medium
			Initial Capital Intensity: Low			
Donation Matching Partnerships	Low	High	Implementation Effort: Low	Medium	Medium	Medium
			Initial Capital Intensity: Low			
Donation Storage, Handling, and Transportation	Low	Medium	Implementation Effort: Medium	Medium	Medium	Medium
			Initial Capital Intensity: Medium			
Centralized Composting Or Anaerobic Digestion (AD)	Low	Medium	Implementation Effort: High	Low	High	Low
			Initial Capital Intensity: Medium			
On-Site Processing	Low	Medium	Implementation Effort: High	Low	Low	Low
			Initial Capital Intensity: High			
Animal Feed	Low	Medium	Implementation Effort: Medium	Low	Low	Low
			Initial Capital Intensity: Medium			
Cooking Oil Recycling	Low	High	Implementation Effort: Medium	High	Low	Low
			Initial Capital Intensity: Low			

Each solution has been evaluated along six dimensions: profit potential, implementation effort, extent of upfront capital investment required, industry prevalence, diversion potential, and societal economic value.

## PROFIT POTENTIAL

Expected net annual business benefit and/or cost savings, not including the upfront investment costs.

- **High:** net annual cost savings >2.5% of total food costs
- **Medium:** net annual cost savings of 0.5%-2.5% of total food costs
- **Low:** net annual cost savings of <0.5% of total food costs

## FEASIBILITY

A combination of implementation effort and upfront capital requirement.

### IMPLEMENTATION EFFORT

The extent of procedural updates, staff training, and systems needed to implement a solution.

- **High:** The change can be made with procedural updates and ongoing training, combined with new systems.
- **Medium:** The change can be made with procedural updates and initial training, combined with new systems.
- **Low:** The change can be made with only minor procedural updates and training, but no new systems.

### INITIAL CAPITAL REQUIREMENT

How much upfront financial capital is needed to implement a solution.

- **High:** Upfront capital investment >5% of total annual food costs
- **Medium:** Upfront capital investment is 1%-5% of total annual food costs
- **Low:** Upfront capital investment <1% of total annual food costs

## INDUSTRY PREVALENCE

Estimated percentage of the restaurant industry that has implemented the solution.

- **High:** >50%
- **Medium:** 25%-50%
- **Low:** <25%

## DIVERSION POTENTIAL (FROM ORIGINAL ReFED ROADMAP/COST CURVE)

Portion of all food waste (by weight) that could be diverted from landfill through the implementation of a solution.

- **High** diversion potential means that the solution, if successfully implemented, could divert over 0.5% of all food waste from landfill.
- **Medium** diversion potential means that, if successfully implemented, between 0.1% and 0.5% of food waste could be diverted from landfill.
- **Low** diversion potential means that, if successfully implemented, less than 0.1% of food waste could be diverted from landfill.

## SOCIETAL ECONOMIC VALUE (FROM ORIGINAL ReFED ROADMAP/COST CURVE)

Annual aggregate financial benefit of a solution to society minus all investment and costs.

- **High** economic value means that the solution, if successfully implemented, could create over \$1B of total annual economic value.
- **Medium** economic value means that the solution, if successfully implemented, could create between \$100M and \$1B of total annual economic value.
- **Low** economic value means that the solution, if successfully implemented, could create less than \$100M of total annual economic value.

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