



**Beyond the Plate:**  
**Turning Food Waste from a Cost to an Opportunity**  
*Insights from The ReFED Catalytic Grant Fund*  
*2023 Restaurant Open Call*

## Food Waste: A Hidden Cost of Doing Business

In the fast-paced restaurant industry, food waste has traditionally been seen as an unavoidable expense. But in reality, wasted food means wasted money, lost efficiency, and missed opportunities to enhance guest experience. Reducing food waste isn't just good for the planet—it's a smart business move that improves profitability, streamlines operations, and strengthens a restaurant's reputation in an increasingly sustainability-conscious market.

From full-service restaurants managing plate waste to fine dining establishments battling ingredient spoilage to quick-service restaurants dealing with overproduction, every segment of the industry faces unique challenges. These hurdles are compounded by tight profit margins and operational pressures, making practical, effective solutions a necessity.

In 2023, [ReFED](#), in collaboration with [Toast.org](#), launched an open call through the Catalytic Grant Fund to uncover and scale food waste solutions tailored to restaurants. After reviewing nearly 100 applications from organizations across the globe, six grantees were selected and received catalytic grant funding to help them grow their impact in transforming food waste from a financial burden to an opportunity for restaurants across the nation.

## Find the Right Solution for Your Restaurant

This paper explores solutions tailored to four common restaurant scenarios:

- The Fine Dining Establishment
- The Establishment with Multiple Locations
- The Local Establishment Wanting to Give Back
- The Establishment Navigating Organics Waste Bans

### The Fine Dining Establishment

Fine dining restaurants are known for their commitment to quality and innovation, often sourcing rare and exotic ingredients from around the world—persimmons from Israel, finger limes from Australia, or strawberries from Japan. Given the high cost and perishability of these ingredients, maintaining their freshness is a top priority. However, chefs face significant challenges that can lead to unnecessary food waste, including:

- **Perishability of High-Value Ingredients** - Specialty ingredients typically have short shelf lives, requiring precise handling and storage. They are also significantly more sensitive to temperature and humidity fluctuations, which can degrade their quality quickly.
- **Limited Storage Space** - Refrigerated walk-ins in fine dining kitchens located in urban settings are often small due to space constraints. This creates challenges like insufficient space to store all ingredients, forcing chefs to prioritize what can be refrigerated, and inefficient organization, which can cause misplaced or forgotten items that spoil.

- **Inflexible Supplier Schedules & Minimum Order Requirements** - Specialty suppliers often have set delivery schedules, which may not align with the restaurant's needs, and they typically impose minimum order quantities for specialty ingredients, which can exceed what the restaurant can use before spoilage. Combined, this can lead to overstocking during slower periods or understocking during busy times, forcing the restaurant to compromise on freshness and increasing the risk of waste and financial strain.
- **Operational Pressures** - High-intensity environments in fine dining kitchens can lead to mistakes, such as improper storage or over-ordering. Additionally, staff may lack training in handling specialty ingredients, leading to premature spoilage. Busy schedules also make it challenging to monitor inventory closely and ensure optimal storage practices.

Ultimately, the spoilage of perishable ingredients can lead to significant financial losses, compounded by thin profit margins in the restaurant industry. These losses are particularly painful in fine dining, where the cost of ingredients is a major investment in delivering exceptional quality to guests. This demands a new type of solution that can alleviate this challenge and manage the freshness of food items.



**For fine dining restaurants looking to better maintain their products, Prism could be a game-changer.** Prism is a refrigerated storage unit with multiple customizable compartments designed to extend the shelf life of exotic fruits and vegetables. Unlike traditional refrigeration, Prism's modular system allows chefs to store perishable ingredients in optimized conditions, reducing spoilage and food waste while freeing up valuable walk-in space.



Prism's specialized compartments can dramatically increase the longevity of fresh ingredients, for example:

- Apples last 3-8x longer
- Berries last 3-4x longer
- Leafy Greens last 2x longer
- Pomegranates last 8x longer
- Star fruit last 1.5x longer
- Rambutan last 2x longer
- Peaches last 2x longer
- Passion Fruit last 2x longer

During the pilot of the first Prism prototypes, chefs expressed strong interest in owning at least three units to support their ingredient storage needs. One participating chef stated, "Prism containers would cater to basically everything you could imagine for our use." Prism estimates that fine dining restaurants can achieve a return on investment within 9-12 months. Depending on the size of the restaurant and the types of ingredients purchased, restaurants that use Prism could save between \$2,000 and \$2,800 annually through reduced food waste and lower ingredient purchasing costs. By preventing the spoilage of expensive, hard-to-source ingredients, Prism helps fine dining restaurants preserve quality, reduce waste, and improve financial sustainability—allowing chefs to focus on delivering an exceptional dining experience without the burden of unnecessary losses.

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## The Establishment with Multiple Locations

Restaurants with a successful concept often expand to multiple locations to gain wider brand recognition, reach untapped markets, and establish a strong local or regional presence. Expansion can also create cost efficiencies, such as bulk ingredient purchasing, streamlined marketing, and shared administrative expenses. Once an operational model is proven, it becomes easier to replicate processes, training, and supply chains. However, managing multiple restaurant locations adds a layer of complexity that makes food waste prevention even more challenging. At any given moment, an issue at one location—whether equipment failure, inconsistent procedures, or staff miscommunication—can result in significant losses. Without real-time oversight, these problems can go unnoticed until food has already been wasted. Key challenges that could contribute to food waste across multiple locations include:

- **Equipment Failures & Unexpected Repairs** – With several kitchens to oversee, aging or malfunctioning refrigeration units, ovens, and HVAC systems can fail without immediate detection, leading to food spoilage, emergency repairs, and operational disruptions.
- **Inconsistent Cool-Down Cycles** – Differences in cooling and storage procedures across locations increase the risk of improper handling, temperature fluctuations, and unnoticed equipment malfunctions, resulting in preventable food loss.
- **Staff Turnover & Training Gaps** – High employee turnover and variations in training make it difficult to maintain consistent food safety protocols across locations, raising the risk of spoilage, compliance issues, and inefficiencies.



**Implementing smart monitoring systems and proactive communication tools like [ConnectedFresh](#) enables owners and operators to quickly detect issues and notify on-site staff to take corrective action.**

Using sensors and AI, ConnectedFresh identifies and flags issues with food safety and aging equipment before they escalate. Their suite of 24/7 monitoring solutions leverages off-the-shelf smart sensors enabled with LoRaWAN (a low-power, wide-area networking protocol) and integrates with AI and machine learning to provide real-time insights and predictive analytics.

Luna Grill, a fast-casual Mediterranean restaurant chain, partnered with ConnectedFresh to enhance its cooling process and prevent unnecessary food waste. Previously, staff manually monitored temperatures over a six-hour cool-down window to meet FDA compliance standards. This process was time-intensive and left room for human error, which could result in improper cooling and increased food waste. With ConnectedFresh's Automated Cool Down Logs, Luna Grill significantly improved efficiency while reducing waste. What once required continuous manual monitoring now takes less than five minutes of active staff time, allowing team members to focus on customers while ensuring food safety.

"We recently partnered with ConnectedFresh to enhance our cooling log process and modernize how it's completed. ConnectedFresh took the manual labor and potential for human error out of the process. What used to take an average of 20 minutes per cooled ingredient now takes less than 5 minutes, saving us thousands of hours across our restaurants," shared Maddie Ahrens, Director of Culinary & Restaurant Excellence, Luna Grill.

By automating cool-down monitoring and providing immediate notifications for temperature issues, Luna Grill has reduced unnecessary food waste and improved operational consistency across its locations. The simplicity of ConnectedFresh's platform allowed for quick implementation with minimal training, ensuring long-term success in waste prevention.

### The Local Establishment Wanting to Give Back

Chefs are passionate about feeding people, so the last thing they want to see is food going to waste—especially when over 47 million Americans face food insecurity. Donating surplus food not only reduces waste but also gives chefs a sense of pride and purpose, knowing they are contributing to hunger relief efforts. For many, food donation is an extension of their respect for ingredients, ensuring that high-quality food is used to nourish people rather than ending up in the trash. Despite the clear benefits, food donation remains a major challenge for restaurants, largely due to operational, logistical, and regulatory barriers:

- **Operational Complexity & Logistical Barriers** - Staff must be trained on proper donation protocols, adding another layer of complexity to already demanding roles. It also takes staff time and resources to package surplus food appropriately, often during busy or understaffed periods. Moreover, many donation processes require restaurants to deviate from their standard operating procedures, making it challenging to incorporate seamlessly into daily operations.
- **Regulatory and Liability Concerns** - Ensuring that donated food meets food safety requirements can be complex and time-consuming, as restaurants must properly label, handle, and store items to avoid liability. Although protections exist, like the U.S. Good Samaritan Food Donation Act, some restaurants still avoid donating food out of fear of liability.
- **Need for Scalable Solutions** - Many food rescue organizations operate regionally, limiting food donation options for restaurants that are part of national chains. Additionally, smaller food rescue organizations may not have the capacity to provide reliable and frequent pickups due to a heavy reliance on volunteers, leading to wasted food that could have been donated.
- **Limited Incentives** - While some tax benefits exist for food donation, they often do not fully offset the costs of staff time and resources involved in the process. Without an easy, cost-effective system, donation remains an underutilized solution.



Recognizing these challenges, [Food Rescue US \(FRUS\)](#) has developed a solution for restaurants across the nation to make food donation as effortless as fulfilling a delivery order. By integrating a data-sharing feature within their existing web-based food rescue app, FRUS is eliminating logistical barriers and simplifying donation workflows for restaurants. Through a strategic partnership with Toast, FRUS created a dedicated API endpoint that can

integrate directly with restaurant POS systems. This seamless integration will enable restaurants to:

- Create, itemize, and schedule food donations within their existing system—no additional training required.
- Automate donation processes without disrupting standard kitchen workflows.
- Ensure compliance with food safety requirements while maintaining efficiency.

Ezra Rosenberg, the General Manager at Baltimore Markets shared, “The pickups have been smooth. The flexibility to donate different items week to week, including dairy products, makes the partnership extra great for us.”

With this integration, FRUS is transforming food donation from a time-consuming challenge into a seamless, automated process—helping chefs feed more people, reduce waste, and drive meaningful social impact.

## The Establishment Navigating Organics Waste Bans

Across the country, state and local policies are increasingly requiring the diversion of food waste from landfills, including in states like California, Washington, New York, Massachusetts, and Vermont. While these regulations support sustainability and food waste diversion from landfills, they can also introduce new challenges for restaurants trying to comply:

- **High Costs** – Commercial composting services can be expensive compared to traditional waste disposal, and restaurants must also cover the cost of additional bins, training, and storage infrastructure—an especially heavy burden for small or independent restaurants.
- **Operational Complexity** – Proper sorting is crucial, as contamination (such as mixing non-compostable items with organic waste) can result in rejected loads and additional fees. Some regulations also require detailed reporting on waste diversion, adding to administrative overhead.
- **Inconsistent Access to Services** – Composting and anaerobic digestion facilities are not available in all regions, making compliance difficult for restaurants without convenient waste processing options.



**For restaurants seeking a more sustainable and cost-effective alternative to composting or anaerobic digestion, [Afterlife Ag](#) offers an innovative circular economy solution that transforms food waste into valuable culinary ingredients.**

Currently operating in New York City, Afterlife Ag collects food waste from restaurants and upcycles it into premium culinary and adaptogenic mushrooms—such as enoki and lion’s mane—which are then sold back to restaurants. This closed-loop model is unique because restaurants act as both the input (food waste generator) and the output partners (mushroom purchaser)—creating a self-sustaining ecosystem that chefs value.

Since its founding, Afterlife Ag has achieved an impressive 1:1 conversion ratio, meaning every 1 lb of food waste upcycled produces 1 lb of mushrooms—a remarkably efficient and scalable process. Additionally, with a 100% net customer retention rate, Afterlife Ag is proving that restaurants not only benefit from this model but continue to engage with it long-term. The company can produce 300 lbs. of mushrooms weekly in just 100 sq. ft., enabling growth while delivering fresh, local, and sustainable produce within 4 to 6 weeks.



Crave Fishbar, a customer of Afterlife Ag, shared, “Afterlife offers a way for us to at least cover some of the cost for doing the right thing. For them to offer the option for us to buy mushrooms [created from our food waste] at a discounted price is what makes this so appealing to us... it’s something new, something that hasn’t been done.”

Looking ahead, Afterlife Ag plans to expand into other major cities across the U.S., bringing its innovative approach to food waste reduction and circular food systems to more restaurant partners nationwide.

## Transforming Food Waste into Opportunity

Food waste doesn’t have to be an unavoidable cost for restaurants. Innovative solutions like Prism, ConnectedFresh, Food Rescue US, and Afterlife Ag are already helping restaurants reduce waste, streamline operations, strengthen community connections, and improve profitability.

In addition, several organizations provide direct technical assistance to help restaurants implement waste reduction best practices and achieve their sustainability goals. Through the ReFED Catalytic Grant Fund, solution providers like the [Green Dining Alliance](#) and the [Center for EcoTechnology](#) were also identified as key resources for restaurants looking for hands-on support in waste tracking, diversion strategies, and sustainable operations that owners and operators can take advantage of today.

To explore a wide range of proven food waste solutions, from inventory management and enhanced demand planning to kitchen automation and waste tracking, visit [ReFED’s Insights Engine](#) and discover solution providers in the [Solution Provider Directory](#).

Now is the time to turn food waste into an opportunity—one that benefits restaurants, local communities, and the planet.

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*With questions about the ReFED Catalytic Grant Fund and food waste solutions for restaurants, contact ReFED’s Director of Innovation, Angel Veza at [angel.veza@refed.org](mailto:angel.veza@refed.org).*