

FOOD WASTE REDUCTION TRAINING

REDUCING WASTE IN THE KITCHEN



USFOODWASTEPACT.ORG

This training has been designed with you and your team in mind. To make it as impactful as possible, here are some questions to answer.

- Could you look at your company's and/or your client's websites and gather its commitment towards food waste?
- How does this translate in your operations?
- What level of priority does your organization give to reducing food waste?
- How has food waste impacted your team's daily work?

Now, look at your operations' last month of food waste tracking data:

What were the most wasted foods?

What was the total volume of food wasted?

What was its value?

How many hours of work do you think you could have saved if you hadn't prepared that food?

What are your top loss reasons?

Where do you waste the most food?

By gathering this information and sharing it throughout the next three weeks, you will make this training more personal and tangible for your team.

1. WHY IS IT IMPORTANT TO REDUCE FOOD WASTE?

WEEK 1**Introduction to Food Waste and Sustainability****WASTE FACT**

40%

of the food supply at the retail and consumer levels in the US is **NEVER EATEN**.

It represents **133 BILLION LBS** or **\$161 BILLION** worth of food each year.

This comes from the latest estimates from the USDA's Food Waste FAQs found at usda.gov/foodwaste/faqs.

QUESTION TO THE TEAM

Can you tell what other resources are wasted, beyond food?

- **140 million acres agricultural land** – an area the size of California and New York combined.
- **5.9 trillion gallons blue water** – annual water use of 50 million American homes. Blue water is drinking water.
- **664 billion kWh energy** – annual energy use of 50 million U.S. American homes.
- **778 million pounds pesticides and 14 billion pounds fertilizer** – enough to grow all the plant-based foods produced each year for people in the US.

We can help: Welcome to the FoodWISE Contest!

WHAT'S THE CONTEST ABOUT?

Finding innovative and practical ways to cut down on food waste. Whether it's a new recipe that uses more parts of the food, a clever hack for storing to keep it fresh longer, or a process change that helps us work smarter, your ideas can make a real difference.

HOW TO PARTICIPATE

- 1 Think of an idea:** Look around, think about the waste you see every day and come up with a smart solution to reduce it.
- 2 Give us some details on how you would implement it.** Need help? Ask your team leader to help you strengthen your idea.
- 3 Submit your idea:** Fill out the paper submission form.
- 4** You can submit as many ideas as you want!

WHY YOUR PARTICIPATION MATTERS

By participating, you are directly contributing to our environmental goals and helping us create a more sustainable and efficient workplace. It's a chance to bring out the leader in you, to show your creativity, and to make a positive impact.

FOODWISE CONTEST

IDEA SUBMISSION



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FULL NAME

EMAIL

LOCATION DETAILS

WHAT IS YOUR FOOD WASTE IDEA?

WHERE DOES THIS IDEA APPLY?

- ☐ Central Kitchen
- ☐ Dining Hall
- ☐ Other (Specify below)

AT WHICH STEP OF THE OPERATIONS DOES THIS APPLY?

- | | |
|--|--|
| <input type="checkbox"/> Storage | <input type="checkbox"/> Trim/prep |
| <input type="checkbox"/> During service | <input type="checkbox"/> End of service |
| <input type="checkbox"/> Shoulder period | <input type="checkbox"/> Other (Specify below) |
| <input type="checkbox"/> Menu engineering | |
| <input type="checkbox"/> Reception of food | |

ANY OTHER INFORMATION YOU WOULD LIKE TO PROVIDE?



These materials were produced by the R&DE Stanford Food Institute for the U.S. Food Waste Pact, an initiative of ReFED and World Wildlife Fund.



2. OUR COMMITMENTS TO REDUCING FOOD WASTE



USFOODWASTEPACT.ORG

WEEK 1

Introduction to Food Waste and Sustainability

WASTE FACT

TARGET, MEASURE, ACT

In 2023, ReFED and WWF created the U.S. Food Waste Pact, a voluntary agreement that aims to help food business reduce waste in their operations through precompetitive collaboration.

Visit usfoodwastepact.org to learn more.

QUESTION TO THE TEAM

What are the methods to reduce food waste in food service operations?

- **Source Reduction:** Produce, buy, and serve only what is needed. Source reduction can be achieved at any stage of the supply chain, and source reduction options should be exhausted before other pathways are considered.
- **Donation and Upcycling (transforming food waste into new human food products):** These strategies have the closest benefits to source reduction. However, up to 40 percent of donated food may be wasted, and these solutions require further resources.
- **Feeding Animals:** It can displace the production of traditional animal feed (e.g., growing soy, corn or barley).
- **Composting:** It improves soil health, sequesters carbon, and displaces some use of chemical fertilizers.

(See poster on the EPA Wasted Food Scale)

What solutions are we implementing within our day-to-day work?

SOURCE REDUCTION

- **Accurate Demand Forecasting:** Use historical data to predict the number of meals to produce, and order appropriate quantities of food.
- **First In First Out System:** Rotate stock so that older products are used first to prevent spoilage.
- **Storage Best Practices:** Ensure food is stored at the correct temperature to prolong freshness, and maintain optimal humidity levels to prevent spoilage of fruits and vegetables.
- **Food Preparation Best Practices:** Appropriate portion sizes, using all parts of foods, and design menus that can incorporate leftover ingredients.

UPCYCLING

- **Repurpose overproduction in other dishes:** For example, create menu specials that allow to use short shelf-life foods.
- **Convert food waste into new products:** For example, create juices from imperfect fruits or use vegetable scraps to make stocks.

FOOD DONATION

- When our operations have excess safe-to-eat food available, our food donation program provides this food to hunger relief agencies. We donate thousands of pounds of food each year to non-profit organizations.



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3. WHERE DOES **FOOD WASTE** OCCUR IN RESTAURANT OPERATIONS?

WEEK 1

Introduction to Food Waste and Sustainability

WASTE FACT

In 2023, **MORE THAN 45%** of the total surplus in the foodservice sector was generated by full-service restaurants, and nearly **70% OF THE TOTAL SURPLUS CAME FROM PLATE WASTE**, or customers not eating what they have taken or been served.

This comes from the latest estimates from ReFED, which can be found on the "Restaurants & Foodservice Stakeholder Recommendations" page at <https://refed.org/stakeholders/restaurants-and-foodservice/>.

QUESTION TO THE TEAM

What are the most wasted foods in the U.S.?

- Produce: 43.7%
- Prepared Foods: 20.2%
- Dairy & Eggs: 12.7%
- Dry Goods: 9.5%
- Fresh Meat & Seafood: 4.6%
- Ready-To-Drink Beverages: 3.8%
- Breads & Bakery: 3.2%
- Frozen: 2.3%



Source: All estimates come from the latest data from ReFED, which can be found in the [Food Waste Monitor](#) in the [ReFED Insights Engine](#) at insights.refed.org.

What are our current waste points?

BACK OF HOUSE / PRODUCTION



Selection process



Quality check at delivery



Storage



Processing



Storage

FRONT OF HOUSE / CONSUMER



Meal time



Leftovers

4. TIME TO REFLECT

WEEK 1**Introduction to Food Waste and Sustainability**

As we have seen this week, food waste is a complex problem and many actors, including our team, are working to solve it. Here is a little quiz to help us reflect on what we discussed and prepare for the next phase of our training. Don't forget to submit your ideas for the FoodWISE contest.

Let's get creative and turn our ideas into actions, to help reduce waste and preserve our planet. We can't wait to see your amazing ideas!

SUBMIT YOUR IDEA

Ask your manager about the idea submission form, and submit as many ideas as you'd like!

1. WHAT PERCENTAGE OF FOOD AT THE RETAIL AND CONSUMER LEVELS IS NEVER EATEN IN THE U.S.?

- ☐ 20%
- ☐ 30%
- ☐ 40%
- ☐ 50%

2. WHAT ARE THE MAIN RESOURCES WASTED BEYOND FOOD?

- ☐ Land and water
- ☐ Energy and pesticides
- ☐ All of the above
- ☐ Only land

3. WHICH OF THE FOLLOWING IS A METHOD TO REDUCE FOOD WASTE?

- ☐ Over-ordering ingredients
- ☐ Source reduction
- ☐ Ignoring expiration date
- ☐ Disposing of leftovers

4. WHAT IS SOURCE REDUCTION IN FOOD WASTE MANAGEMENT?

- ☐ Donating surplus foods
- ☐ Producing, buying, and serving only what is needed
- ☐ Composting food scraps
- ☐ Feeding animals with leftovers

5. WHAT ARE THE BENEFITS OF COMPOSTING?

- ☐ Improves soil health
- ☐ Sequesters carbon
- ☐ Displaces some use of chemical fertilizers
- ☐ All of the above

6. HOW DOES THE FIRST IN, FIRST OUT (FIFO) SYSTEM HELP IN REDUCING FOOD WASTE?

- ☐ By rotating stock so that older products are used first
- ☐ By purchasing new products first
- ☐ By ignoring older products
- ☐ By disposing of older products

7. WHAT ROLE DOES ACCURATE FORECASTING PLAY IN FOOD WASTE REDUCTION?

- ☐ It helps in ordering appropriate quantities of food
- ☐ It increases food waste
- ☐ It ignores historical data
- ☐ It leads to overproduction

5. INVENTORY MANAGEMENT: FIFO METHODS (FIRST IN, FIRST OUT)

WEEK 2

Best Practices for Reducing Pre-Consumer Food Waste

WASTE FACT

Solutions that refine product management would divert an estimated

3M TONS OF FOOD WASTE

from landfill. That's equivalent to

5B MEALS.

This is according to the latest estimates from ReFED which can be found on the "Refine Product Management" page at <https://refed.org/action-areas/refine-product-management/>.

QUESTION TO THE TEAM

FIFO in practice

- How do you use FIFO in your daily tasks?
- What challenges do you face when following FIFO procedures?
- What improvement or reduction in food waste have you seen using FIFO?
- How do you make FIFO work?
- How can we enhance the FIFO process in our operations?

Managing FIFO for Different Types of Food

FIFO principles apply differently to various categories of foods based on their storage requirements, shelf life, and handling practices. Here's how FIFO should be tailored for different types of foods:

CATEGORY OF FOOD	LEVEL OF RISK IF USE DATE IS PAST	RECOMMENDED INVENTORY CHECK FREQUENCY
Dairy and meat	High	Daily
Prepared foods	High	Daily
Fresh produce	Medium	Daily
Frozen foods	Medium	Weekly
Beverages	Low to medium	Monthly
Dry goods	Low	Monthly

6. PROPER STORAGE TECHNIQUES TO EXTEND FOOD FRESHNESS

WEEK 2**Best Practices for Reducing Pre-Consumer Food Waste****FOODBORNE DISEASES**

The CDC estimates that each year roughly

1 IN 6 Americans gets sick

128,00 ARE HOSPITALIZED and

3,000 DIE of foodborne diseases.

This comes from the latest estimates from the CDC, which can be found on the CDC's website at <https://www.cdc.gov/restaurant-food-safety/about/index.html>.

QUESTION TO THE TEAM

What techniques do you use to extend food freshness?

Remember **FRESHR** techniques to keep produce fresh:

- F** First In, First Out (FIFO) and proper inventory management.
- R** Regulate Temperature, refrigerating perishable items and freezing foods for long-term storage.
- E** Ethylene Management, by separating ethylene-producing fruits from ethylene-sensitive items
- S** Storage Containers to keep out air and prevent oxidation.
- H** Humidity Control to maintain optimal moisture levels for different types of produce.
- R** Right Location, Store dry goods in the pantry and items like potatoes, onions, and winter squash in a cool, dark, and well-ventilated space like a root cellar.

What makes food go bad?

TEMPERATURE

It directly affects the growth rate of spoilage microorganisms and enzymatic activities. Most perishable foods require refrigeration or freezing to maintain freshness.

MICROORGANISMS

The presence and growth of bacteria, yeast, and molds are causing food spoilage. Effective microbial control through sanitation and proper handling is essential.

OXYGEN

It leads to oxidation and support the growth of aerobic microorganisms. Managing oxygen levels through packaging techniques can significantly extend shelf life.

WATER ACTIVITY

Foods with higher water activity spoil faster. It can be managed through drying or adding preservatives.

HUMIDITY

Maintaining appropriate humidity levels prevents both dehydration and excess moisture, which can promote microbial growth and spoilage.

PH LEVELS

Foods with lower pH levels are less prone to spoilage. Adjusting pH can help preserve food.

PHYSICAL DAMAGE

Damaged food items are more susceptible to microbial invasion and spoilage. Careful handling to avoid bruising or cutting is necessary.

ETHYLENE GAS

It accelerates ripening and spoilage in certain fruits and vegetables.

LIGHT

Especially UV light, can cause photodegradation and nutrient loss.

7. SMART PREPARATION TECHNIQUES TO MAKE THE MOST OUT OF FOOD

WEEK 2**Best Practices for Reducing Pre-Consumer Food Waste****WASTE FACT****NEARLY 80%**

of food that is wasted in the foodservice sector ends up in landfills, with **LESS THAN 1%** being donated.

This is according to the latest estimates from ReFED, which can be found in the Food Waste Monitor of ReFED's Insights Engine at insights.refed.org.

QUESTION TO THE TEAM**Which parts of food that we typically discard could actually be used?**

- **Vegetable Peels** as chips or added to stocks and soups
- **Broccoli Stems** in stir-fries, salads, or roasted as a side dish
- **Cauliflower Leaves** roasted, sautéed, or used in soups
- **Herb Stems** in pestos, stocks, or finely chopped into dishes
- **Citrus Peels/Zest** in baking, cooking, or as a garnish; peels can be candied or used to infuse liquids.
- **Watermelon Rinds** can be pickled or candied.
- **Chicken, beef, and pork bones** to make bone broth
- **Apple Cores and Peels** to make homemade apple cider vinegar or added to smoothies
- **Stale Bread** turned into breadcrumbs, croutons, or bread pudding

10 Smart Cooking Techniques

Relying on the same cooking techniques can lead to increased food waste and missed opportunities for enhancing flavor. By diversifying the cooking methods used in our kitchen, we can not only improve the taste and texture of dishes but also make the most out of every ingredient. Here are 10 smart cooking techniques that can help reduce food waste and elevate the quality of your meals.

FINE CHOPPING

Small pieces cook evenly and quickly, reducing waste.

BLANCHING

Boil and then ice bath vegetables to preserve color and nutrients.

SOUS VIDE

Slow, precise cooking in a vacuum-sealed bag for even results.

STIR-FRYING

High-heat, quick cooking to retain texture and nutrients.

ROASTING

High-temperature dry heat to caramelize and enhance flavors.

BRAISING

Slow-cook in a small amount of liquid for tender, flavorful dishes.

PRESSURE COOKING

Fast cooking under high pressure to preserve nutrients.

GRILLING

Direct heat for smoky flavor and fat reduction.

FERMENTING

Preserve and transform food with probiotics.

PICKLING

Preserve produce in vinegar or brine for extended shelf life.

DO YOU KNOW ANY OTHER?

8. PORTION CONTROL AND PREDICTING CUSTOMER VOLUME

WEEK 2**Best Practices for Reducing Pre-Consumer Food Waste****WASTE FACT****700%**

Is the difference between the actual average size of a cookie in the U.S. and the recommended size by NIH.

This is from the latest estimates by the National Institutes of Health found at <https://pmc.ncbi.nlm.nih.gov/articles/PMC1447051/>.

QUESTION TO THE TEAM**How can we better forecast our production?**

- What are the most and least popular dishes? Is there any daily, weekly, or seasonal patterns?
- What events are happening in your environment? Is there any special celebration in our institution?
- What external factors could affect our customer turnout, such as weather conditions, local events, or an offsite meeting for most of the customers?
- How do actual sales compare with forecasting and production? How can we refine our forecasting methods?

How do we forecast?**HISTORICAL DATA ANALYSIS AND MENU PLANNING:**

- Analyze past sales records, meal participation rates, and identify trends and patterns.
- Establish regular menu cycles and consider special events, holidays, and seasonal variations.

ENROLLMENT, ATTENDANCE, AND EXTERNAL FACTORS:

- Take into account current student enrollment or total employee numbers, dining plans, and participation in special events.
- Consider the impact of external factors like weather and economic conditions on dining habits.

TECHNOLOGICAL TOOLS AND INVENTORY MANAGEMENT:

- Utilize POS systems and forecasting software to track sales in real time and generate predictive models.
- Set par levels for inventory based on forecasted demand and align with supplier lead times and delivery schedules.

FEEDBACK MECHANISMS AND STAFF INPUT:

- Gather customer feedback and insights from kitchen and serving staff to adjust forecasts based on preferences and satisfaction levels.

9. USING DATA TO IDENTIFY WASTE REDUCTION OPPORTUNITIES

WEEK 3**Waste Auditing and Monitoring****WASTE FACT**

Tracking food waste, in itself, can reduce food waste generation

BY 35%

This comes from the report *Waste-tracking tools: A business case for more sustainable and resource efficient food services* found at <https://www.sciencedirect.com/science/article/pii/S2667378922000499#bib0042>.

QUESTION TO THE TEAM

How can we make food waste tracking easier?

- How can we streamline the waste bin setup to minimize errors? For instance, would reducing the number of pans used for waste collection help?
- Which food categories can we consolidate to make tracking more intuitive?
- In the produce category, what higher-level groupings could we use to simplify tracking while still capturing essential data?
- How can we utilize technology to enhance our food waste tracking process?
- What training or communication methods can we implement to ensure everyone understands the simplified tracking process?

What can data tell us about our waste?

Leveraging data insights to implement best practices can significantly reduce waste. Ask your manager where you can access your food waste data or dashboard for a more in-depth analysis of the data.

TYPE, QUANTITY, AND COST OF WASTED FOODS

Analyzing data can reveal which food items are most frequently wasted, their quantities, and associated costs. This information allows for adjustments in purchasing and preparation practices to minimize waste and reduce costs.

LOSS REASONS AND SOURCES OF WASTE

Data helps categorize waste by identifying where it occurs in the kitchen process, such as during preparation, overproduction, or spoilage. Understanding these specific sources of waste allows for targeted strategies to mitigate waste at each stage.

PATTERNS AND TRENDS OVER TIME

Regularly reviewing waste data trends over time enables the measurement of the effectiveness of waste reduction efforts. It also helps in making data-driven decisions to refine and enhance waste management practices.

What is waste compliance (%)?

Your waste compliance score is dependent on whether you are recording waste on all active service days.

Skipping waste data tracking results in inaccuracies in your total waste because you are left to assume total waste for those days without entries.

Make sure associates know recording waste daily is a requirement.

10. REPURPOSE: CREATIVE APPROACHES TO USE EXTRA FOOD ITEMS

WEEK 3 Waste Auditing and Monitoring

WASTE FACT

Foodservice businesses generate

12.7M TONS

of surplus food annually,
the equivalent of

21 BILLION MEALS.

This is according to the latest estimates from ReFED, which can be found in the Food Waste Monitor of ReFED's Insights Engine at insights.refed.org.

QUESTION TO THE TEAM

How can we creatively repurpose extra food items to minimize waste and maximize value?

- What other dishes or products can we create using leftover ingredients or food byproducts?
- What sustainable practices can we adopt to manage and repurpose food waste?
- How can we involve the entire team in identifying and implementing creative repurposing ideas?
- How can repurposing food waste impact our bottom line?
- How can we leverage technology to repurpose food waste more effectively?

Lack inspiration? Think power dish: an iconic dish with no set list of ingredients.

HAMBURGER

Soft Bun, Garnish

TACOS

Taco Shell,
Veggies, Protein

GRAIN BOWL

Grains, Veggies

SUSHI

Sticky Rice,
Topping

SANDWICH

Two Slices of
Bread, Garnish

FAJITAS

Grilled Ingredients,
Tortillas

PIZZA

Flat Bread with
Crust, Toppings

MAKI

Sticky Rice,
Seaweed, Garnish

SALAD

Greens, Protein,
Fruits, Nuts,
Dressing

BURRITO

Soft Tortilla, Beans,
Rice, Garnish

CURRY

Curry Spiced Stew

RAMEN

Noodles, Creamy
Broth, Toppings

PHO

Noodles, Clear
Broth, Toppings

PASTA

Shapes, Sauce

CEVICHE

Seafood
marinated in
citrus juice

DUMPLINGS/ RAVIOLI

Filled Cooked
Dough

STIR-FRY

Vegetables
quickly pan fried,
Soy-based Sauce

11. ANYTHING BUT THE BIN: OTHER WAYS TO DISPOSE OF FOOD WASTE

WEEK 3**Waste Auditing and Monitoring****WASTE FACT****WASTED FOOD CAUSES****58%****OF METHANE EMISSIONS FROM LANDFILLS.**

This comes from the latest estimates from the EPA and can be found in their report *Quantifying Methane Emissions from Landfilled Food Waste* found at <https://www.epa.gov/land-research/quantifying-methane-emissions-landfilled-food-waste>.

QUESTION TO THE TEAM**What is composting?**

- Composting is the natural process of recycling organic matter, such as leaves and food scraps, into a valuable fertilizer that can enrich soil and plants.
- The final product is referred to by farmers as black gold, as it is rich in nutrients and can be used to amend soil. It's kind of like replenishing planet Earth with nutrients by returning its product.

Food Donation 101**IDENTIFYING SURPLUS FOOD**

- **Check Inventory:** Regularly go through your stock and find food that's safe to eat but won't be used soon.
- **Prioritize:** Focus on perishable items with short shelf lives.

ENSURING SAFETY AND QUALITY

- **Meet Standards:** Make sure all donated food is free from spoilage and contamination, and not past its use-by date.
- **Proper Storage:** Keep the food at the right temperature and humidity until it's donated.

PARTNERSHIP WITH FOOD DONATION AGENCIES

- **Build Partnerships:** Connect with local food banks, shelters, and other hunger relief organizations.
- **Schedule Pick-Ups:** Arrange regular times for the organizations to collect the food.
- **Keep Records:** Log each donation, including the type of food, quantity, and where it went.

PACKAGING AND LABELING

- **Use Clean Containers:** Pack food in clean, food-grade containers.
- **Label Clearly:** Include what's inside, the preparation date, and any allergen info. Add instructions for handling and storage.

COMPLIANCE AND LIABILITY

- Adhere to the Bill Emerson Good Samaritan Food Donation Act, which protects donors from liability when donating food in good faith.
- Ensure compliance with all local, state, and federal regulations regarding food safety and donation.

12. RECAP AND REINFORCEMENT

WEEK 3 Waste Auditing and Monitoring

This is the end of the food waste training. Let's reflect on what we've learned:

- **Importance of food waste reduction:** Food waste has an economic, social, and environmental impact.
- **Identifying waste point:** From procurement to disposal, which items are the most wasted, and how we can minimize waste?
- **Best practices for reducing BOH food waste:** Inventory management, storage techniques, preparation techniques, and portion control can help reduce food waste.
- **Waste auditing and monitoring:** Waste tracking, what tools we can use, and what we do with the data we collect are all important parts of making progress on food waste reduction.

Let's get creative and turn our ideas into actions, to help reduce waste and preserve our planet. We can't wait to see your amazing ideas!

SUBMIT YOUR IDEA

Ask your manager about the idea submission form, and submit as many ideas as you'd like!

Brainstorming Time

Use these prompts to start thinking about new ideas to reduce food waste.

Identifying Waste Sources:

- What food items are most commonly wasted?
- Where does most of the food waste occur?

Improving Inventory Management:

- How can we better manage inventory?
- Which ingredients often spoil before use?

Optimizing Food Preparation:

- How can we reduce waste during preparation?
- How can we use food scraps creatively?

Enhancing Portion Control:

- How can we predict demand more accurately?
- How can we ensure consistent portion sizes?

Collaboration and Team Efforts:

- How can we work better together?
- What initiatives can we collectively start?

Promoting Creative Use of Leftovers:

- How can we turn leftovers into new dishes?
- What dishes can we create with surplus ingredients?

Streamlining Waste Tracking and Monitoring:

- How can we improve our tracking system?
- What data would help us reduce waste?
- What tech tools can help reduce waste?

Implementing Donation Programs:

- What surplus food can we donate?
- Who can we partner with for food donations?

Innovative Storage Solutions:

- What storage methods can extend shelf life?
- How can we better organize storage?