

CASE STUDY

Food Waste Reduction Commitment & Upcycling Initiatives

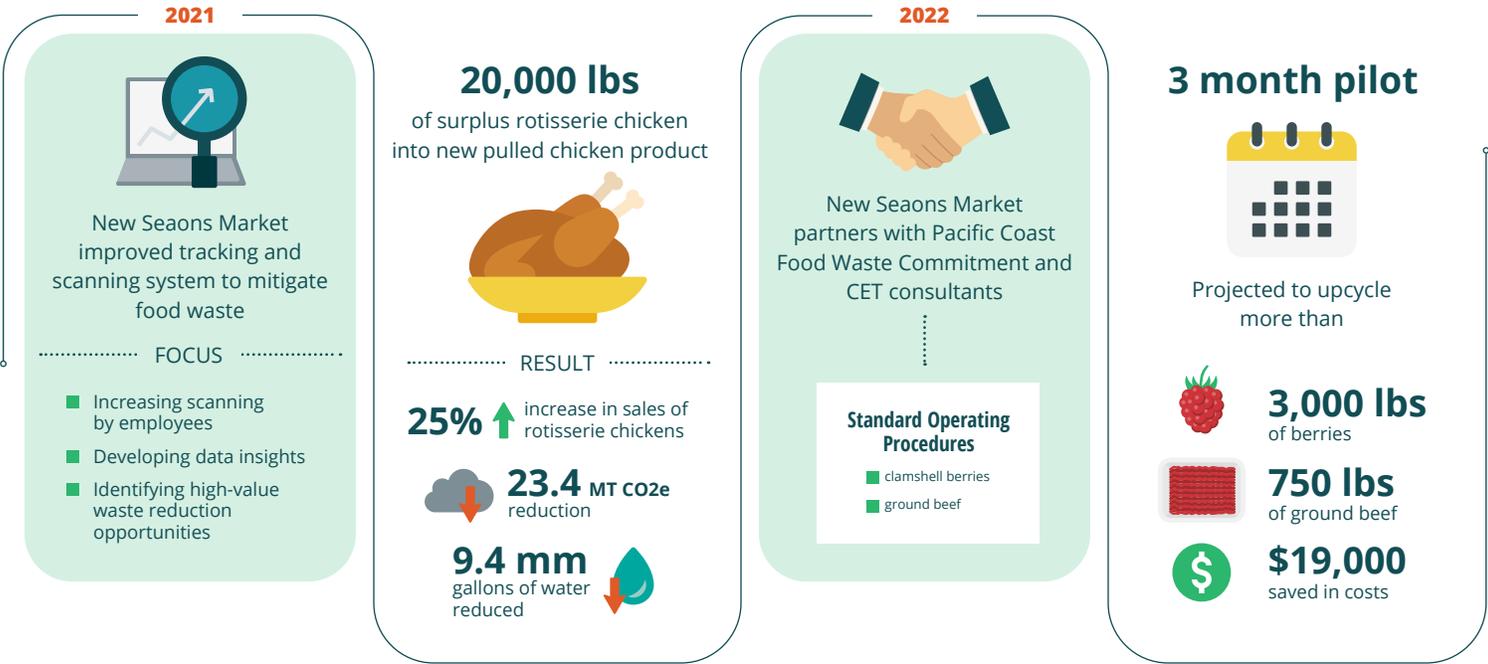
Progress on the Path to Cut Food Waste in Half by 2030



NEW SEASONS
MARKET

Executive Summary

- 1** In 2021, New Seasons Market improved its tracking and scanning systems to better mitigate food waste hotspots across its 18 (19 as of 2022) stores. The grocer’s new tracking system made it easier to prevent waste by focusing on increased scanning by employees and developing data insights aimed at improved order management, as well as identifying new high-value waste reduction opportunities, such as upcycling. Actions that prioritize source reduction and feeding surplus food to people rank highest on the [EPA Food Recovery Hierarchy](#), and maximize the environmental, financial, and social benefits of New Seasons’ food waste reduction efforts.
- 2** Since 2021, New Seasons Market’s upcycled pulled chicken program has turned more than 20,000 pounds of surplus rotisserie chicken (which would have otherwise been composted) into a new pulled chicken product—resulting in new revenue in pulled chicken and a 25% increase in sales of rotisserie chickens, as well as a reduction of 23.4 MT CO₂e and 9.4 million gallons of water.
- 3** In 2022, New Seasons Market partnered with the Pacific Coast Food Waste Commitment (PCFWC) and Center for EcoTechnology (CET) consultants to create a new upcycled pilot standard operating procedure (see Appendix) and develop new upcycling concepts for surplus clamshell berries and ground beef. The program was designed to extend the value of the original items, reduce waste, and minimize inputs (labor hours and costs).
- 4** Over a proposed three-month pilot period, these measures are projected to upcycle more than 3,000 pounds of berries and 750 pounds of ground beef. This would save New Seasons at least \$19,000 in costs.



Introduction

New Seasons Market (NSM) is a grocery chain based out of Portland, Oregon, with 19 stores in the Pacific Northwest. In 2000, NSM was founded by three families who were intent on connecting their neighborhood with the farms that grew the food they ate. Today, NSM stays true to this commitment by sourcing high-quality, organic, and local foods; donating to more than 1,000 local organizations; and investing close to \$1,000,000 per year back into the neighborhoods and region it serves.

As part of its sustainability commitment, NSM has launched a series of initiatives to reduce food waste and signed on to the [Pacific Coast Food Waste Commitment](#) (PCFWC)—a pledge to help reduce food waste across the region in half by 2030. As a PCFWC signatory, the grocer shares its challenges, progress, and successful practices to help other organizations to accelerate their own food waste reduction. This case study will highlight NSM’s food waste tracking improvements and upcycling efforts, as part of its effort to develop higher-value and more circular solutions to surplus food in their stores.



New Seasons Market: Food Waste Tracking Improvements

To better understand and address food waste, NSM began to overhaul its product tracking system in 2021 to help overcome inconsistent store standard operating procedures (SOPs) that made it difficult to accurately estimate the quantity and content of its food waste. Once the grocer signed on to the PCFWC and began examining its waste generation more closely, the initiative to enhance its waste tracking system, as well as to support staff training on waste tracking and prevention gained momentum.

Its updated waste tracking program was first launched in prepared foods—the department with the greatest waste reduction potential. The tracking program's focus was to: (1) standardize Universal Product Codes (UPCs); (2) accurately scan all waste items to designated waste codes; and (3) create new codes for previously untracked items.

With its new food waste data infrastructure in place, NSM then worked to provide its prepared foods staff with incentives to encourage scanning waste items appropriately. These incentives included free lunches, complimentary swag items, and \$10 gift cards. By year's end, the prepared foods department saw an overall increase in scanned waste items and more accurate food waste estimates, which then enabled targeted discussions around how to best address its highest shrink (wasted items).

Having improved the quality of its scanned data, NSM next developed data visualization and analysis tools for its buyers and managers to improve their ordering accuracy and to help prevent food waste in the process. To equip its teams on how to best act on this data, NSM created a customized weekly summary report for each store, as well as a purchasing insight tool to help stores estimate their inventory and waste at a four-hour frequency.

The net result on food waste from the tracking system and staff training improvements was two-fold. It enabled NSM to:

- 1 Improve the accuracy of its ordering and prevent more food waste
- 2 Gather the necessary data and insights to examine trends in surplus food, uncover waste hotspots, and explore new high-value opportunities for food waste reduction (such as upcycling)

From Data to Action on Upcycling Rotisserie Chicken

Upcycling involves repurposing edible food surplus into new products or meals. Upcycling projects can yield financial benefits from both avoiding disposal costs and increasing sales by taking previously discarded items and finding new ways to elevate their value.

Even before NSM's data overhaul, the grocer was upcycling surplus food in its daily operations—routinely turning surplus bread into crostini and breadcrumbs, meats into kabobs and stews, cakes into parfaits, and more. After implementing its new waste tracking system, NSM identified a new upcycling opportunity with rotisserie chickens.

NSM used to compost all rotisserie chickens that were not sold after a certain timeframe, given its original packaging could not maintain the chicken's temperature long enough for the chicken to be safely repurposed. To address this issue, NSM worked with packaging suppliers to procure a container that could keep the chicken at a consistent and food safe temperature for hours at a time. This new packaging then allowed NSM staff to display rotisserie chickens for three hours and to upcycle any unsold units by repurposing them into pulled chicken.

The net result of the initiative was less waste, more rotisserie chicken options from late afternoon into dinnertime for customers, and increased overall use and sales of the product. The initiative provides a clear example of how food waste reduction techniques can benefit a business's bottom line while reducing its environmental impacts.

By the numbers, the initiative to date has:

- Decreased the percentage of rotisserie chicken waste from **7.5% (2021) to 6.7% (2022)**
- Upcycled more than **20,000 pounds of rotisserie chicken** since the initiative started in November 2021
- Avoided more than **23.4 metric tons of CO2 emissions¹** (or 58,000 driven miles²)
- Saved **9.4 million gallons of water³**
- Produced a high sales volume product for customers

¹ [EPA Waste Reduction Model \(WARM\)](#)

² [EPA Greenhouse Gas Equivalencies Calculator](#)

³ [Grace Communities Foundation Water Footprint Calculator](#)

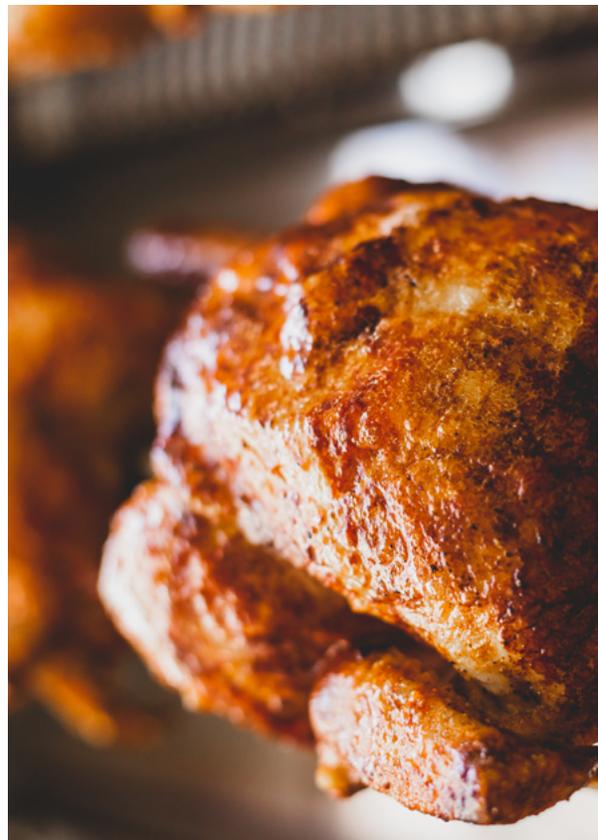
Pulled Chicken Upcycling Program

January – October 2022 Impact

Units of Rotisserie Chicken Upcycled	15,000
Pounds of Rotisserie Chicken Upcycled	20,000
Hot Rotisserie % Increase in Sales	25%
Greenhouse Gas Emissions (MTCO ₂ e) Avoided	23.4
Gallons of Water Saved	9,360,000

While these solutions may appear quick and straightforward to implement, it's important to note the degree of procedural planning, approvals, training, and packaging changes (in the case of rotisserie chicken) that was required for this upcycling initiative to become operational and successful.

To make the pulled chicken program a SOP, NSM first consulted its food safety experts to design a step-by-step protocol that followed time and temperature guidelines and laid out a tracking procedure. They then created an upcycled UPC for the pulled chicken to track the quantities repurposed and sold. Both the rotisserie and pulled chicken could be sold in the prepared foods department, making for a straightforward tracking procedure.



Building on NSM's Upcycling Successes

With a new data dashboard to track top wasted items and a successful rotisserie chicken model, NSM began to explore additional opportunities to upcycle surplus foods. To begin this process, NSM partnered with the PCFWC and the nonprofit, Center for EcoTechnology (CET). CET analyzed NSM's shrink data across departments to determine which items had the highest loss (in terms of money and volume), and which had the greatest opportunity for upcycling (based on wasted dollar amount, wasted percentage and waste volume).



To validate its approach, CET next met with NSM department leads in produce, meat, seafood, cheese, bakery, and prepared foods. Department experts brought up important logistical considerations (for example, how every store's produce team would not have the capacity to repurpose items) and tips to minimize the impact on staff and their existing responsibilities. These conversations quickly highlighted the need to land on solutions that could work across all stores to avoid disrupting existing staff processes, increase store participation, and maximize food waste reduction.

Following this data analysis and series of interviews, it was determined that the meat and produce department leads were best positioned to identify specific items to upcycle, and that items would be transferred to the prepared foods department to be repurposed into new products. Part of the justification was that the prepared foods department:

- 1 Has the resources and equipment (with a kitchen in every store) to repurpose produce and meat items; and
- 2 Doing so could help to reduce the amount of outside ingredients that prepared foods would need to order.

With participating departments identified, NSM worked with CET and Jonathan Deutsch (of [Drexel Food Lab](#)) to develop several possible upcycled recipes. The proposed recipes accounted for labor hours, costs, and flexibility considerations to align with existing procedures. While keeping food safety compliance front of mind, the recipes were also designed to extend the value of the original items and thereby reduce waste.

After evaluating all recipe options, the NSM team ultimately decided that surplus clamshell berries from the produce department could be repurposed as a topping option at salad bars, and that surplus ground beef (which NSM grinds in-house) could be transformed into taco meat. The key considerations behind these decisions were that:

- Both berry and beef upcycling offer new value to customers while limiting new labor requirements.
- Fresh strawberries, blueberries, and raspberries are great salad additions as-is, and can simply be scanned and transferred to the salad bar with minimal extra work needed from staff.
- A savory taco meat upcycled from surplus ground beef has a high potential for sales and waste reduction, given how popular convenient animal proteins have been among NSM customers historically.
- Taco meat provides staff with flexibility in that it could be added to the prepared foods department’s hot bar and/or individually packaged for the grab-and-go section.

The surpluses of strawberries (typically sold in clamshell containers) and one variety of ground beef over a three-month period are presented below. The data represent surplus across all NSM stores and show the number of surplus items and the cost to NSM if these items were wasted. In addition to the new potential revenue from these products, NSM stands to save almost \$1,000 in disposal costs each quarter (see Appendix for more details) by upcycling these foods.

Surplus & Cost across all NSM stores			
February – April 2022			
Item	Surplus (lbs.)	Cost of Wasted Items (Based on Unit Cost)	Estimated Annual Disposal Cost
Strawberries	2,936	\$13,760	\$752.34
5% Lean Ground Beef	744	\$5,730	\$233.62

Environmental Impacts of Beef Production

Meat production contributes significantly more to greenhouse gas emissions than the production of produce, baked goods, and other items. Due to the environmental impacts of meat production and the rising cost of meat, reducing meat waste is a priority for New Seasons.

The surplus ground beef that could be upcycled by New Seasons throughout a year requires around **5.2 million gallons of water**⁴ and emit **29.68 metric tons of CO₂-equivalent greenhouse gas emissions**⁵ during production.

Upcycling this volume of beef (instead of composting it) avoids generating an additional **40.62 metric tons of CO₂ emissions annually**⁶.



⁴ One pound of beef takes about 1,800 gallons of water to produce ([Grace Communities Foundation Water Footprint Calculator](#))

⁵ Producing one kilogram of beef releases 22 kg of CO₂-equivalent greenhouse gas emissions ([NIH.gov](#))

⁶ [EPA Waste Reduction Model \(WARM\)](#)

Lessons Learned & Next Steps

NSM's redesigned waste tracking system and data visualization tools laid a powerful foundation for the company to take a data-driven approach to food waste reduction, which the PCFWC seeks to champion. NSM's upcycled pulled chicken program, and the promising upcycling procedures for berries and beef, take this one step further to show how food waste reduction initiatives serve a business's triple bottom line.

The fact that this planning occurred in the midst of pandemic-induced staffing shortages and a new store opening is a testament to NSM's dedication to reducing its environmental footprint and contributing to a 50% food waste reduction across the West Coast. In 2023, NSM will look to expand its upcycling operations across more departments (via the Upcycled Pilot Framework SOP, see Appendix) and is already discussing ideas for how it might repurpose surplus bread into specialty bread pudding.



Appendix

I Online Resources

- Upcycled Food Foundation
- Drexel Food Lab
- *Throwing Away Food and Money: How Feeding the Connecticut Community Feeds Your Bottom Line*
- EPA Waste Reduction Model (WARM)
- EPA Greenhouse Gas Equivalencies Calculator
- Water Footprint Calculator

II New Seasons Pulled Chicken Procedures

- Pulled Chicken Program SOP

PREPARED FOODS

Pulled Chicken!

Overview:
This is a simple document for rotisserie chicken program on how to breakdown a chicken for repurposing. Please refer to the flow chart provided by food safety for temperature heating and cooling protocol

Version Update: 11.16.2021

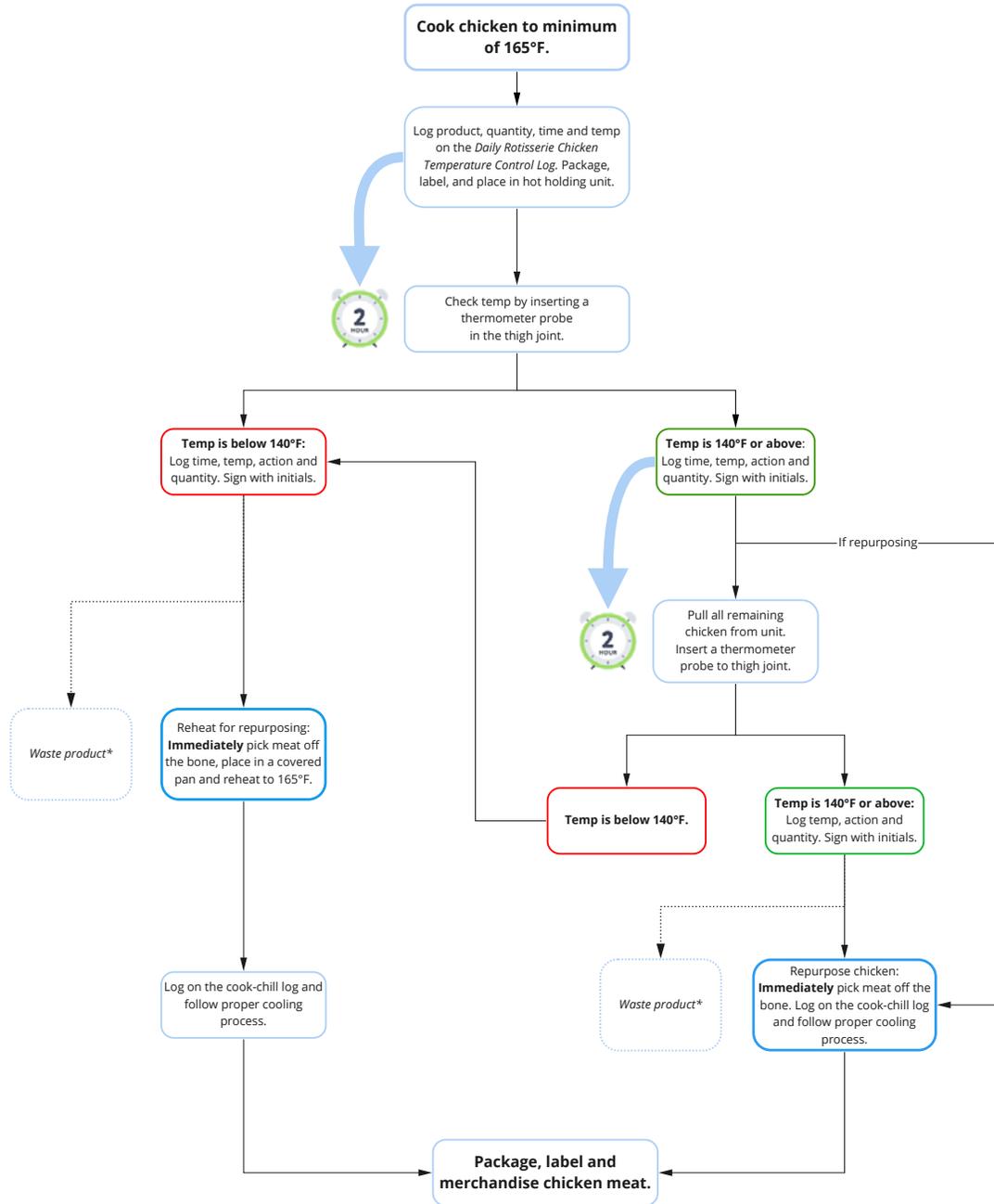
****The meat of the rotisserie chicken should be pulled while still hot, right after reheating or removing from the hot holding unit****

1. Remove skin from breasts. Pull breasts off, make sure that the wishbone is removed.
2. Remove rib cage from leg/thigh portion and discard. There is no need to pick the wings. Remove skin from thighs and pull chicken from bones. Legs maybe overcooked and may not have the quality to repurpose. Use your best judgement.
3. A pulled rotisserie chicken should always contain both breasts and thighs picked free of skin, bone and cartilage. Sometimes leg meat if the quality is still present.
4. Pull large pieces of meat apart for quick cooling. Search through meat again for any missed pieces of bone or cartilage. Cool to 40°



■ Rotisserie Chicken Hot Holding Temperature Control Flow Chart

Hot Holding Temperature Control Flow Chart:
Rotisserie Chicken



*Wasting product should take place only if time does not allow for proper repurposing or due to quality issues.

Revised: November 2021

III Upcycled Pilot Framework SOP, created by CET

New Seasons Upcycled Pilot Standard Operating Procedure Sample

PURPOSE: New Seasons Market is committed to finding a solution to surplus foods that consider labor implications while maximizing the impact and value of food currently wasted. This document is intended to serve as a standard operating procedure for piloting upcycled products made from surplus foods.

Version Update: 7/8/2022

Preliminary Pilot Parameters

- PCMs develop proposals for Risk Team
- Identify types of items to pull from originating departments to create upcycled product
- Decide volume of items needed to create upcycled product
 - Set minimum and maximum volume that could be used by the receiving department
- Develop schedule (days of the week and times) for items to be pulled from originating department and transferred to receiving department
- Establish handling, transporting, and storage procedures following food safety standards
- Determine need for associated costs
 - Originating department to sell items at cost, at a discounted cost, or no cost
 - Price to sell upcycled product to customers
- Create PLU and signage for upcycled products offered in prepared foods
- Create a tracking system for pilot
 - Items pulled from originating departments tracked for pilot
 - Upcycled product sales
 - Upcycled product shrink
 - Labor hours
- Explore obtaining upcycled certification for upcycled products

New Seasons Upcycled Pilot Standard Operating Procedure Sample

During Pilot

■ Originating Team Steps

- [INSERT SCHEDULE] For items to be pulled from originating department and transferred to receiving department
- Pull surplus items from display or storage to be repurposed using food safety and quantity specifications

Food Safety

- » Ensure items were not touched by customers through either remaining packaged or being stored away from customer access
- » Ensure items were not at risk of cross-contact by allergens
- » Ensure items are safe to eat based on use-by, best-by, and sell-by dates and temperature storage conditions
- » Ensure items are not moldy, spoiled, or damaged

Quantity

- » The minimum or maximum number/weight of items that can be repurposed is X items/pounds
- Track the items that will be transferred to the receiving department using specific pilot PLU codes
- Date and label the upcycling pilot items to distinguish them
- Transfer the items to the receiving department or to designated storage area

■ Receiving Team Steps

- Items will arrive from the originating department [FREQUENCY] (ex. weekly, every Wednesday, bi-weekly?) during [TIME] (ex. after 3pm, between 4-7pm, etc.)
 - » Items will be stored in X area (ex. Within the cooler on the shelves designated and labeled for pilot item storage)
- Quality control
 - » Double-check the sell-by/use-by/best-by dates on the items
 - » Check for risk of contamination by damaged packaging, spoilage, etc.
 - » New items should be marked with the date they are received to ensure proper rotation and use within approved time
- Follow or adapt recipe for the upcycled product following food safety instructions. [Further instructions will be inserted here based on individual recipes]

New Seasons Upcycled Pilot Standard Operating Procedure Sample

- If packaged for grab and go, determine shelf life for the new upcycled product and label the product with sell-by, best-by, and/or use-by date(s)
- Display the upcycled product with corresponding ingredient signage
- Tracking
 - » Track when the upcycled product was put on display
 - » Track the sales for the upcycled product
 - » At the end of the upcycled products shelf life, remove all unsold upcycled products from display and track shrink

After Pilot

- Analyze labor, sales, and shrink data to evaluate the success of the pilot
- Note successes and challenges of pilot process and upcycled products
 - Staff and customer comments and/or feedback

IV Upcycled recipes created by Jonathan Deutsch of Drexel Food Lab

Preliminary Upcycling Ideas			
KEY	GREEN = YES	YELLOW = MAYBE	RED = NO
Product	Department	Application	Developer
Salmon Trim/Bellies	Seafood	Burgers	
Salmon Trim/Bellies	Seafood	Meatballs	
Salmon Trim/Bellies	Seafood	Cakes	
Salmon Trim/Bellies	Seafood	Salmon Spread	

Preliminary Upcycling Ideas

Poke Bowls	Deli	Poke Lo Mein for Hot Bar	
Berries (clamshell and seasonal local strawberry)	Produce	Housemade Jam	
Berries (clamshell and seasonal local strawberry)	Produce	Cobbler/Crisp (Hot Bar or Grab and Go)	Existing recipe
Berries (clamshell and seasonal local strawberry)	Produce	Dessert Sauce	Drexel
Berries (clamshell and seasonal local strawberry)	Produce	Smoothie Cubes	
Berries (clamshell and seasonal local strawberry)	Produce	Gummies	
Berries (clamshell and seasonal local strawberry)	Produce	Pastry Fillings	
Berries (clamshell and seasonal local strawberry)	Produce	Parfait	
Beef Patties	Meat	Cooked RTE	
Beef Patties	Meat	Grab-and-Go Sandwich	
Beef Patties	Meat	Chili	
Beef Patties	Meat	Shepherd's Pie	Existing recipe
Ground Beef	Meat	Chili	
Ground Beef	Meat	Cooked Seasoned Crumbles (Taco)	
Ground Beef	Meat	Queso Dip	Drexel
Ground Beef	Meat	Sloppy Joe/Sloppy Jose	Drexel
Ground Beef	Meat	Meatloaf	Drexel
Ground Beef	Meat	Meatballs	
Ground Beef	Meat	Bolognese	

Preliminary Upcycling Ideas			
Bread	Bakery	Seasoned Bread Crumbs (in Meat section)	
Bread	Bakery	Stuffing Mix (Seasonal)	
Bread	Bakery	Bread Pudding	Drexel
Bread	Bakery	Bread Pudding Mix (like Stuffing Mix)	Drexel
Bread	Bakery	Baked French Toast	
Bread	Bakery	Savory Bread Pudding	
Packaged Salads	Produce	As Is (Salad Bar?)	Drexel

V Estimated Disposal Cost Avoidance Calculation

*Estimated Disposal Cost Avoidance

Through upcycling strawberries and ground beef, the grocer could save nearly \$1,000 in disposal costs annually.

Here's how:

- Three-month surplus of strawberries and beef = 2,396 lbs. strawberries and 744 lbs. beef
- Projected annual wasted food = 9,584 lbs. strawberries and 2,976 lbs. beef
- 12,560 lbs. of wasted food/year
- At \$157/ton disposal fee⁷, 12,560 lbs./year = \$986/year
- The business could save \$986/year

* This example has been prepared for informational purposes only.

⁷ Seattle tipping fee is \$157/ton according to [Seattle Public Utilities Information](#)

VI Ordering and Waste Habits by Role

New Seasons has an internal interface that allows staff to choose their role and be taken to a page where they can access information about waste data and specific guidance on how to mitigate it.

ORDERING and WASTE HABITS by ROLE STORE LEADERS



Acknowledgments

The PCFWC would like to thank New Seasons Market, The Center for EcoTechnology, Drexel Solution Institute's Food Lab, and Cascadia Consulting Group for their contributions to this case study.



About the Center for EcoTechnology

The [Center for EcoTechnology](#) is a nonprofit that helps businesses transition to a carbon-free future. Our 45-year track record as effective change agents stems from our unique approach: we meet people and businesses where they are, delivering solutions that achieve desired environmental goals and increase access, uptake, and equity while also saving money and improving comfort and health. CET brings industry best practices for addressing wasted food through an extensive history of on-the-ground assistance to businesses and offering solutions that prevent surplus food, recover edible surplus, and divert wasted food from disposal. We believe that better managing wasted food is critical in order to address climate change, feed more hungry people, and grow our economy.

About Drexel Solutions Institute's Food Lab

The [Drexel Solutions Institute's Food Lab](#) works with food businesses around the world to develop recipes and food products that support sustainability, nutrition, and food access. Drexel Food Lab helps businesses incorporate food scraps that would have otherwise been disposed of into creative and tasty saleable products.

About the Pacific Coast Food Waste Commitment

The [Pacific Coast Food Waste Commitment \(PCFWC\)](#) began in June 2016, when the Pacific Coast Collaborative (PCC) entered into the Pacific North American Climate Leadership Agreement and committed to advance organic waste prevention and recovery initiatives to reduce carbon emissions from the region's food waste stream. U.S. leaders in the food industry were invited to collaborate with area jurisdictions in a public-private commitment to cut the amount of wasted food in half by 2030 – a success metric aligned with United Nations Sustainable Development Goal 12.3 and other global, national, and regional commitments. To assist in moving the initiative forward, the PCC established collaborations with ReFED, WRAP, and World Wildlife Fund (WWF) as resource partners to provide expertise, additional philanthropic funding, and capacity for implementation. Cascadia Policy Solutions serves as facilitator for the effort and has provided foundational and ongoing critical support to the PCFWC since its inception.



Signatory Members

As of Fall 2022



About the Pacific Coast Collaborative

The Pacific Coast of North America represents the world's fifth-largest economy, a thriving region of 55 million people with a combined GDP of \$3 trillion. Through the Pacific Coast Collaborative (PCC), British Columbia, Washington, Oregon, California, and the cities of Seattle, Portland, San Francisco, Oakland, Los Angeles, and Vancouver, British Columbia are working together to build the sustainable low-carbon economy of the future. King County in Washington and Alameda County in California have since joined alongside the PCC jurisdictions in signing on to and supporting the PCFWC. Formed in 2008, the PCC has established ambitious goals for reducing greenhouse gas emissions by at least 80 percent by the year 2050 through the transformation of energy systems, buildings, and transportation, and through food waste management – all of which would serve as a model for national and global action.