Developing a Food Waste & Food Rescue Map in WA

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- Currently teach:
 - o ENVH 111: Environment & Health Connections
 - ENVH 441/541: Food Protection
 - **o** ENVH 442: Zoonotic Diseases & Their Control
 - ENVH 473/584: Environmental Health Policy & Practice
- Former Food Safety Specialist at the Washington State Department of Health
- Former EHS at Thurston County Public Health & Social Services



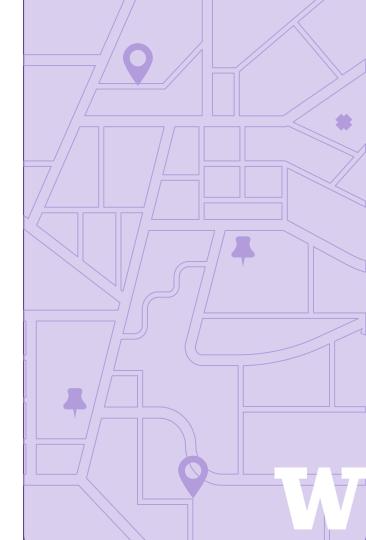
Background on Food Loss & Waste



Food Rescue Ecosystem Map



What You Can Do to Help







WHAT IS "WASTED FOOD"?

WASTED FOOD: According to EPA, an overarching term to describe food that was not used for its intended purpose and is managed in a variety of ways:



Definition Source: https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics

DIGGING DEEPER INTO WASTED FOOD



EXCESS FOOD

- Food that is donated to feed people
- AKA "surplus food"



FOOD WASTE

- Food not consumed that is discarded or recycled
- Examples: plate waste, spoiled food, inedible food



FOOD LOSS

- Unused product from the agricultural sector
- Examples: unharvested crops

Definition Source: https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics

Environmental Impacts of U.S. Food Waste: FPA

What resources go into a year of food loss and waste in the U.S.?

*excluding impacts of waste management, such as landfill methane emissions



Greenhouse gas emissions of more than 42 coal-fired power plants

Enough water and energy to supply more than 50 million homes





The amount of fertilizer used in the U.S. to grow all plantbased foods for U.S. human consumption

An area of agricultural land equal to California and New York



Why Care About Wasted Food?

ENVRIONMENTAL BENEFITS



- Save resources: land, water, energy, and labor
- > Reduce greenhouse gas emissions & methane from landfills
- > Return nutrients to the soil





Why Care About Wasted Food?



ECONOMIC BENEFITS

- > Waste less, spend less
- > Pay less for trash pickup
- > Receive tax benefits by donating



Why Care About Wasted Food?



SOCIAL BENEFITS

- > Feed people, not landfills
- > Build cleaner communities
- > Create job opportunities



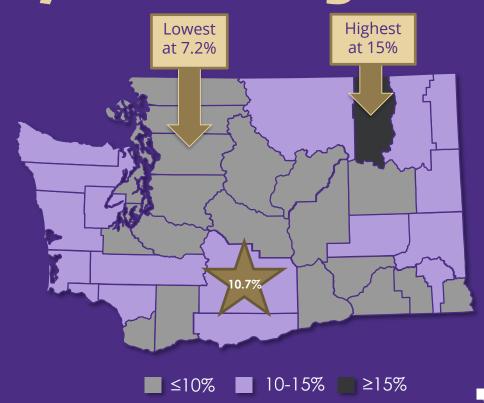


Food Insecurity in Washington

Did you know?

688,170

Washingtonians (or 8.9%) were food insecure in 2021





W

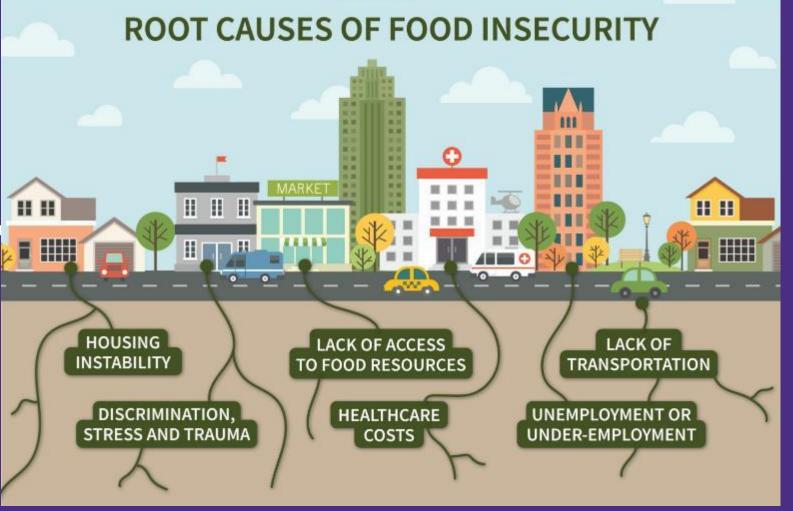


Image Source: https://www.harvesters.org/about-harvesters/our-programs/food

What Can We Do About It?

- **1. PREVENT** the amount of food wasted
- 2. **RESCUE** edible food that would otherwise be wasted and feed people
- **3. RECOVER** inedible food materials for productive uses animal feed, etc.

Food Recovery Hierarchy



Distribution of Wasted Food Generation

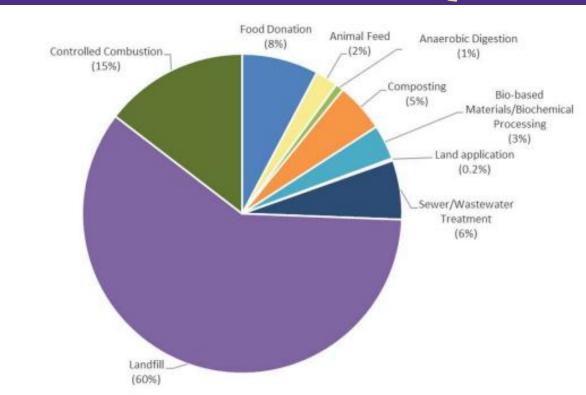
According to the 2019 EPA Wasted Food Report:

- 40% Households
- 28% Restaurants
- 13% Grocery
- 6% Wholesale
- 2% Hotels
- 2% K-12 Schools



Food Wasted at Retail, Food Service and Residential Sectors - Nationally

- > 60% Landfill
- > 15% Controlled Combustion
- > 8% Food Donation
- > 6% Sewer/WastewaterTreatment
- > 5% Composting



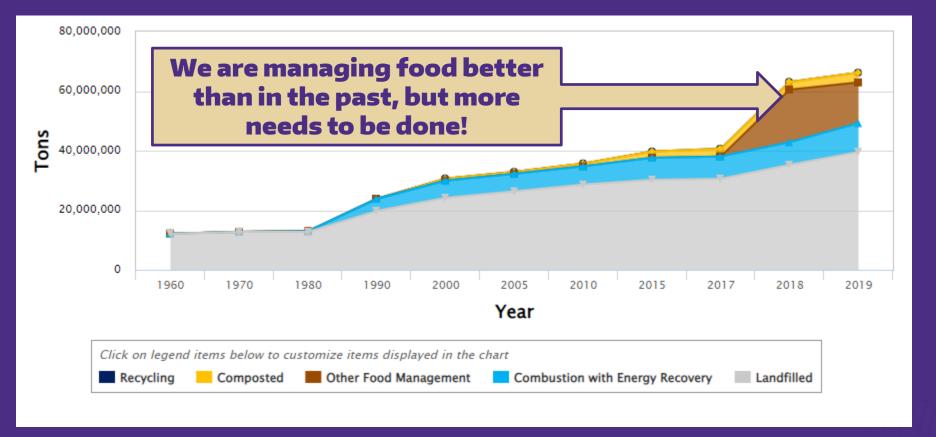
2019 Wasted Food Estimates - National



Donation	7.76%
Animal Feed	2.29%
Bio-based Materials	3.53%
Anaerobic Digestion	0.81%
Composting	4.99%
Land Application	0.21%
Controlled Combustion	14.57%
Landfill	59.84%
Sewer/ Wastewater Treatment	6.00%

Source: https://www.epa.gov/system/files/documents/2023-03/2019%20Wasted%20Food%20Report_508_opt_ec.pdf

Waste Management from 1960-2019



Washington Food Waste Reduction Goals

1,158,746 tons of edible and inedible food waste is generated annually in Washington 2015 Baseline Data



By 2025, we will:

Rescue **78,012 tons** of edible food waste for human consumption

By 2030, we will:

Reduce edible food waste by at least **195,032 tons** (50%)

Reduce total annual food waste by at least **579,373 tons** (50%)

Use Food Well WA Plan

30 Recommendations to meet statewide food waste reduction goals:

- > 4 Federal policy
- > 9 State policy
- > 4 Funding
- > 2 Public education
- > 11 Infrastructure development



The Use Food Well Washington Plan

To address food waste and wasted food in Washington, the 2019 Washington Legislature unanimously passed the Food Waste Reduction Act, now codified as RCW 70A-205-715. ©

The law established statewide food waste reduction goals, relative to 2015 levels, including a focus on reducing the amount of wasted edible food. We are required to establish baseline data to annually track progress toward the statewide food waste reduction goals, along with drafting a food waste reduction plan to meet the 2030 goals.

We developed the 2015 baseline data, and further defined the edible food waste reduction goal, resulting in the following statewide food waste reduction goals:

Goal 1: Reduce food waste generated by 50 percent by 2030

Goal 2: Reduce at least half of edible food waste by 2030

We were also tasked to develop and implement a



wasted food

Implementation: Washington Center for Sustainable Food Management



- > Center is housed within the Department of Ecology
- Operational date of January 1, 2024
- > Purpose is to help coordinate statewide food waste reduction efforts

Washington Center for Sustainable Food Management

Tasked with:

- > Coordinating food waste reduction efforts
- > Distributing grants
- > Collecting data
- Promoting federal, state & local government collaboration



Washington Center for Sustainable Food Management



Serves as a "one-stop shop" for businesses

- Website with resources:
 Waste reduction information
 & guidance for food
 businesses and consumers
- > Promotional materials to educate businesses about waste reduction options





Developing a Food Rescue Ecosystem Map



Traditional Hunger Relief Organizations

> Food Bank

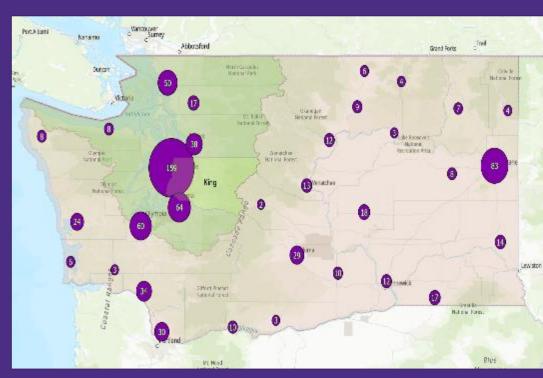
- Organization that collects and distributes food to hunger-relief charities
- Act as food storage and distribution site for a specific region
- Usually do not give out food themselves

> Food Pantry

- Organization that distributes food directly to those in need
- Food most often includes grocery type items that are later cooked at home

> Meal Program

- Organization that distributes food directly to those in need
- Food most often includes prepared or hot meals that are eaten onsite



Non-Traditional Hunger Relief

Micro-pantries

- > Generally small, unattended, open-access food pantries
- Donations are provided by members of the community and generally use a "take what you need, leave what you can" model
- > Some provide shelf-stable goods;

while others provide refrigerated or perishable foods

Statew	vide	
Pantries	s:338	
Fridges	s: 16	

	County	Pantries	Fridges
	King	193	9
	Pierce	32	0
•	Spokane	30	0
	Clallam	21	0
	Snohomish	17	0
	Kitsap	13	3
	Clark	2	3
	Asotin	1	1







Food Rescue Ecosystem Map



- The UFWW Plan recommended developing and maintaining a Washington State map of food flows and food waste reduction opportunities.
- The map will focus on food rescue opportunities, and will collect the best available data from local health jurisdictions, state-agencies, and hunger relief organizations.
- In Autumn 2023, we developed a pilot map looking at Thurston, Benton, and Franklin Counties.



Mapping Methods







Public Health and Social Services



Locations from:

- Cottage foods
- Meat processors
- Milk processing plants
- Milk producers
- Storage warehouses
- Food processors
- Produce Farms
- Thurston County food establishments
- Benton-Franklin food establishments
- WSDA Food Assistance contractors
- **Food Lifeline's locations**
- Mirco-pantries

Addresses



Coordinates



Mapping Methods

4

Categorization

Potential Donors

Retail/Consumer-Facing Businesses

- -Food Establishments
- -Cottage Foods



Manufacturers

- -Food processors
- -Meat processors
- -Milk processing plants



Storage

Food Storage Warehouses



Farm

- -Milk producers
- -Produce farms



Potential Receivers

Micro-pantries



Traditional HROs

- Food banks
- Food Lifeline LocationsWSDA contractors

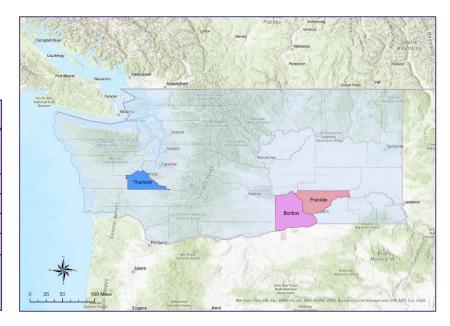




Pilot Results

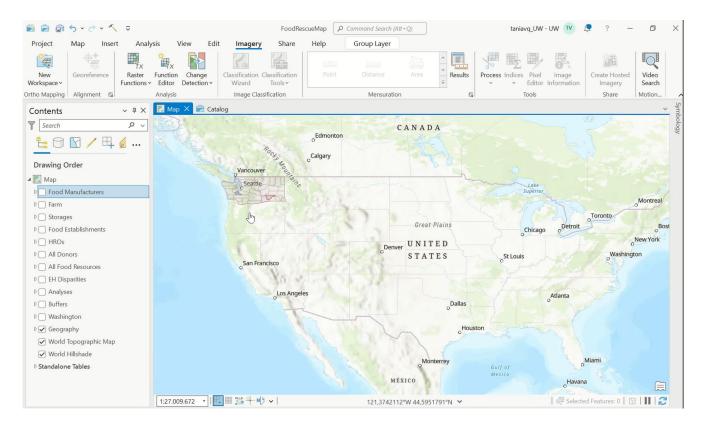
Mapped locations by type per county:

	Benton	Franklin	Thurston
Potential food rescue receivers (HROs)	14	11	58
Manufacturers	47	29	78
Farm	94	117	39
Storage	20	17	20
Food establishments	2386 2710		1115
Total potential food rescue donors (Businesses)			1252





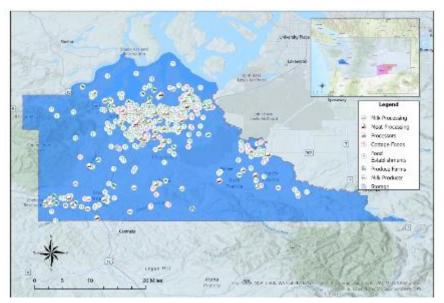
Pilot Map to identify food rescue opportunities in Benton, Franklin, and Thurston Counties (WA)





Thurston County

Distribution of potential food donors (food businesses) and hunger relief organizations that could receive food rescue donations

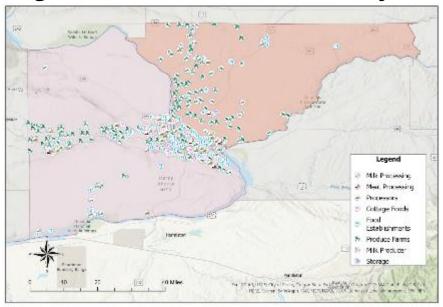


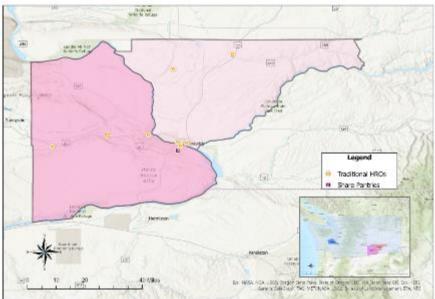




Benton and Franklin Counties

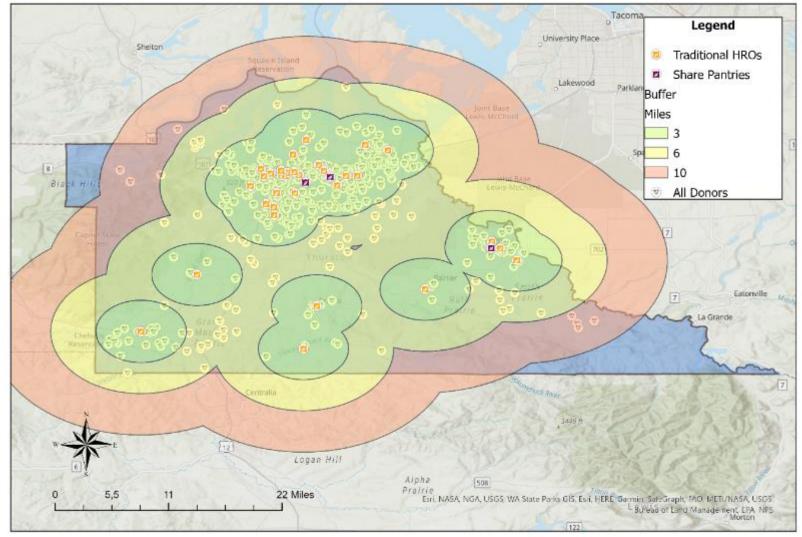
Distribution of potential food donors (food businesses) and hunger relief organizations that could receive food rescue donations



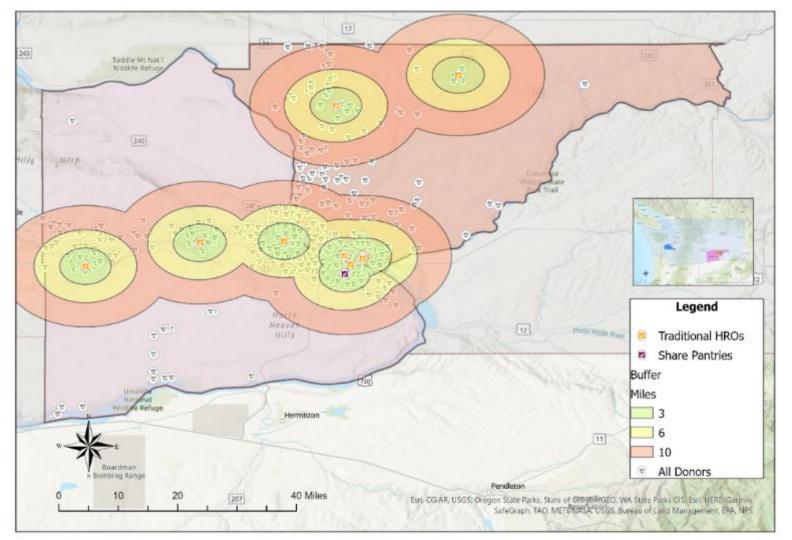




Thurston

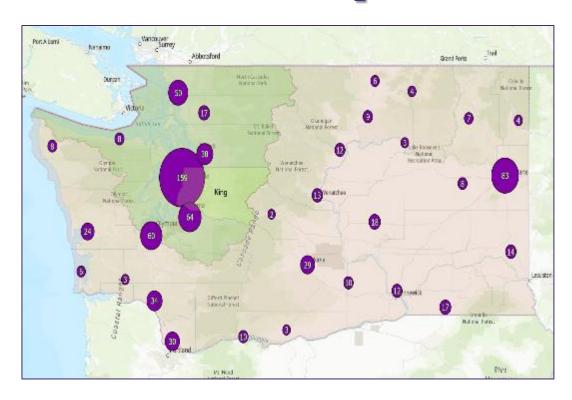


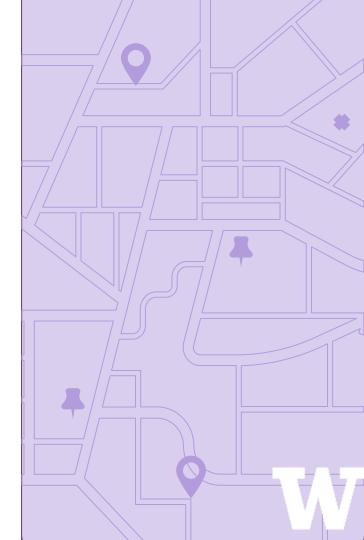




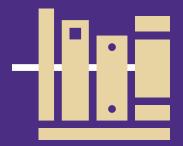


Statewide Expansion





Aim 1



Research & Data Collection

- Identify existing data information gaps published by the 2020 Washington State Food Waste Management Evaluation.
- > Using our pilot project, validate the EPA Excess Food Opportunities Map.



Figure 1. Project Scope Boundaries Figure 2. Washington State Food Waste and Wasted Food Management Pathways (tons) Food Donation: 49,082 Edible Wasted Food **Example Sources Inedible Food Waste Management** - Farms: 6,407 Management Landfill: 930,254 Controlled combustion: 39,792 -Manufacturing: 1,585,100 Agriculture Products: 2,914 Composting: 164,198 Animal Feed: 1,494,583 Manufacturers Compostin Landfill Consumer Facing Businesses: 645,415 In-scope FWM entities are those that manage food after its Bio-based materials: 48,413 primary intended consumption point, excluding disposal. Residential: 499.89 For each entity, we will gather: Land Application: 2,618 (Values in Tons) 1. Food sources & destinations, and proportionality of each Anaerobic digestion: 5,765 Consumer-facing 2. What food is being measured and how Businesses Industrial Uses 3. Current capacity and barriers to growth Food Donation Flow Food Waste Disposal Flow Food Recovery Flow *FWM = food waste management Prepared by Cascadia Consulting Group, Inc., and Partners

Washington State Food Waste Management Evaluation

May 26, 2020

for Washington State Department of Commerce

Aim 2

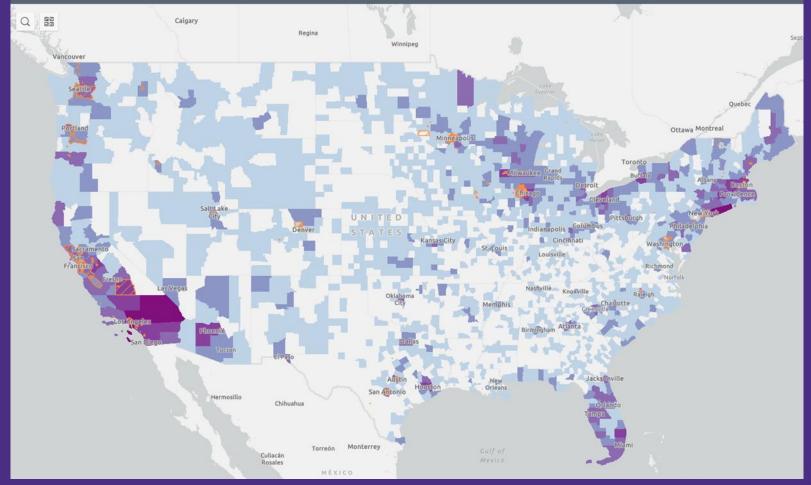


Generate Mapping Tool

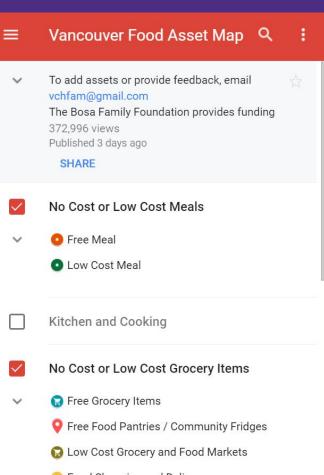
- > Using data from the EPA Excess Food Opportunities Map, local health jurisdictions, state-agencies, and hunger relief organizations.
- > Identify potential audiences for the map (internal vs. external)

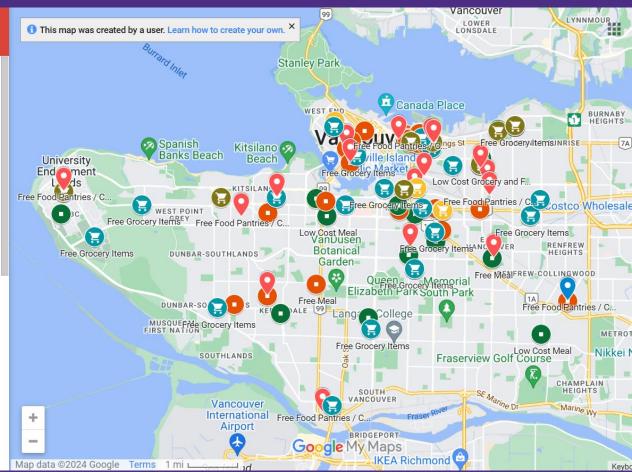


EPA Excess Food Opportunities Map



Source: https://experience.arcgis.com/experience/793a7912cb184f7792fc02a9bac4192b





Aim 3





Focused Survey & Interviews

- > Online survey to most organizations in the hunger relief sector to:
 - Assess capacity & infrastructure needs
 - Validate mapping data
- > Focused interviews with select HROs:
 - Assess mapping tool
 - Determine usefulness to this sector
 - Identify map components that should be incorporated to increase functionality

WASHINGTON STATE FOOD WASTE MANAGEMENT EVALUATION

Appendix B: Hunger Relief Interview Guide

This interview guide received revisions from Katie Rains (WSDA), Kyle Merslich (WSDA), and Trish Twomey (WA Food Coalition) in February 2020. Due to disruptions caused by the COVID-19 pandemic during this evaluation's timeframe, it was never administered. The goal behind creating this guide was to collect information about the three core research areas of this evaluation from a sample of hunger relief organizations of each function (food bank, food pantry, and meal program) and geography (urban and rural, east and west) in Washington State. It is intended to be administered digitally as an email attachment or verbally as a phone survey.

Background

The State of Washington is preparing a Wasted Food Reduction and Food Waste Diversion Plan. My team is helping with an evaluation of the surplus food and food waste landscape to inform that plan. For this evaluation, we're studying different types of businesses and organizations that manage food after its primary intended consumption point. These include hunger relief organizations, anaerobic digesters and other industrial processors, compost facilities, and animal feed operations.

We're studying three main areas to build a picture of the state's food waste management system:

- **Flow of Food:** How much food is currently flowing through facilities in the food waste management system, i.e., hunger relief, animal feed, compost, and industrial uses?
- Metrics & Protocols: What is being measured and how is it being measured? What opportunities exist to harmonize metrics and protocols across the system?
- System Capacity: What is the capacity of each entity? What are the barriers to increasing capacity of each entity?

Aim 4



Report on Process & Methodology

- Synthesize findings, record data protocols, and report on research outcomes
- Present findings, map, and methodology to Department of Ecology with recommended future steps



What You Can Do To Reduce Wasted Food

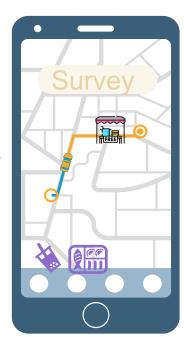
Email Me if Interested!



Emily Hovis ehovis@uw.edu

Participate in a Pilot Project to Survey Food Businesses

- > Identify food businesses that:
 - Are currently donating food
 - Are interested in donating
 - Are not interested in donating & why
- > This will help us identify connections between donors and HROs, as well as potential barriers to donation



SOURCE REDUCTION

CONDUCT A WASTE AUDIT

- > Learn about what flows through your kitchen by measuring the amount and type of wasted food.
- > Know how much and why wasted food is generated to help to create effective food prevention strategies.
- > Help identify wasted food than be avoided.









Guide to Conducting Student Food Waste Audits

A Resource for Schools

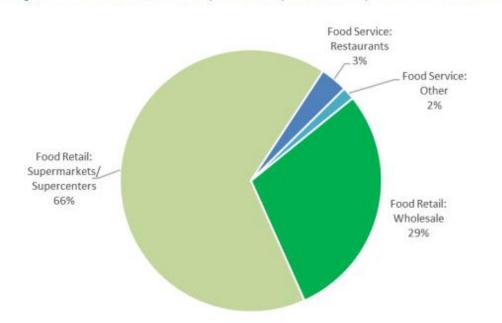






FEED HUNGRY PEOPLE

Figure 9. Food Donation Sources (Food Retail, Food Service, and Residential Sectors) (2019)



BECOME A DONOR

- Collect unspoiled, healthy food and donate to neighbors in need.
- Follow food safety standards to ensure wholesome donations



HOW TO DONATE SAFELY









ank you for working to help facour community! To help reduce the disposal of adible food and confusion Washington State Departments of

tep guide for donating mosts to a pour food safety requisions audions, in ensure donations are wholesome

Food Establishments

- . Regulated under the Washington







FOOD RESCUE Donation Guide - Businesses

Fund establishments and fund processors oftenwant to directe fund to hance relief programming tike food banks, food parties, and resalprograms). There are many benefits to donating food,

- Save money on-disposal costs and reduce wester.
- Suggest your community and help the one in eight Washingtonian that. struggle with food insecurity.
- . Copy edible food out of landfills to reduce greathouse gas and water
- Possible receive tax benefits (sex your accountant for details).

How to Donate

Food can be donated if handled correctly, not previously served, and least at proper temperatures. To donate food to a hunger relief organization. tellow these simple steps:

- a. Mevicin your operations
- dentify the type and quantity of locate or unused food you prepare. Chause you are able to safely recover food for constion by following: this quick and working with your regulatory authority:
- Removementh a local honger robot projects from Powland what four library. accept and also pick-up probelizers times.
- Safety package and more an food at proper temperatures at all times.
- · Confirm rafe temperatures and cooling procedures of all not foce.
- Keep food at proper temperatures (see table or next page).
- Package in chair, food-grade containers.
- . Label with the common name of the food.
- Marcin a designate l'assi ul anérige atori or linever waterwating. pick-up or delivery.
- 4. Transport donated food safely.
- Transport food in a clean valvicie to prevent comamination.
- . Feed feed at proper temporaruses and use refrequenced transport.
- g. Track donated items. Use a donation delivery form or provide this information to the hunger reliaf agency for their records, food source, quartity, type of foods (such as chicken strup, beautis, etc.), and date.



Be Part of the Food Waste Solution!

Food waste is the largest component of our state's municipal solid waste, with edible food making up 8% of overall contage. as noted in the Washington State Department of Ecology 2015-3016 Waste Characterization Study. The Environmental Protection Agency developed a Food Waste Recovery il leterathy imadified vestion below) which lists feeding hungry people as one of the top strategies to prevent and reduce wasted food. Dy dones no adible food from your business, you pay be part of the food wasts solution and help reduce hunger in your community!

The Good Samaritan Food Donation Act

Chapter for Fourgr BCW, also called the "Good Sansarton Food Document Act," offers responsible food dunors protection from criminal and civil liability if the donated food is "apparently pholespine." This means the donor knows the and his been harded with owner! Book safety standards. The act does not release donors or hunger rolef agencies from the daty of acting responsible. Questa with judgment and difigence to make sure donated food is safe and



Donated Food Safety for Businesses

When donating perchable food that regulars temperature control for safety ratio called potentially haspirdous foods, only denote food that has been topt at preser remonstrates. Storing pershapin food between 41°F and 34°F con allow become to grow, which may cause people to get sels. Additionally, any food exprinct to fire, flunding, temperature incidency, in other distressed food most to approved by your regulatory authority before donation. See below for look safety requirements for

Table 1. The following feasts from food establishments and food processors can be denoted if staned in food quale

	Feeds CAN be decated?	Francis CANNOTT be described?
Prepared Food (n.g. sono, resseroles):	Properly cooled and stored at 41% or below, or free ensolid	Foods stored between 41% and 325% Hoods represently souled.
Orilled Perishable, Preparkaged Facult (e.g. delay, julca)	Stored at 42°F or below, or from soils	Foods stored between 42°F and 255°F Demaged or budging packaging
Meat, Poultry, Fish threshor invers	Stoned at 42% or below, or frozen solid	Foods stored between 41°F and 235°F
Fresh Produce : (Whole)	Marchina cool, dry, and dean area	Significant decay.
Fresh Produce (Cut)	Stated at 42% or below	Faces stored between qu'F and agg"F Significant documents
Namperishable Daked Goods	Stored married, day, and clean area	Moley or stalls products
Nonperishanie, Prepackaged Food (e.g. comer, besent)	Standin a cod, day, and dean area	Home toward foods Fairly, severally distraged (dente on seams or bulging south), or bulging years.
Daby Food	Store according to label	Expired Infant formula

Typis modified from Appendix is of the Composite raive Resource for Food Recovery Programs

core made by Freschi from www.flaticos.com

For people with disabilities, this occurrent is are lable on request in other formula. To salored a request, please on 1-800-525-3121.

HOW TO DONATE SAFELY

EGGS IN THE SHELL



EGGS IN THE SHELL **Donations Guide**

Farmer/Producer

Egg producers with less than 3,000 bads must obtain an egg. handler/dealer license to legally donate eggs to an EFC. This license includes an inspection of the facilities used in the handling of the eggs. The facility must include a work prep. designated storage, potable water, a hand-washing station and a refrigerator that are not used as part of the domestic residence.

Processing

Producers must clean and refrigerate eggs in accordance with WSDA's Shell Egg Producer's Guidelines for Off-Farm Sales.

Packages and Labels

Eggs must be in a new package and container bearing a label with the following informetion:

- + The word "eggs," identification of the bird that laid the egg if it was not a chicken ("duck eggs");
- . The cuantity of eggs in the container,
- . The name and address of the ogg producer:
- The statement: "Keep Refrigerated";
- The statement "SAFE HANDLING INSTRUCTIONS: To prevent litness from bacteria: Keep eggs refrigerated. cook eggs until yolks are firm, and cook foods: containing eggs thoroughly"),
- If chicken eggs, the grade and size of the eggs (when properly determined;



ASSISTANCE

LIVESTOCK



The general rule is that all animal products - meet, positry, eggs, etc. donated to an Emergency Food Countration (EFC) must meet the same standards as animal products sold in a retail clare. There are a lew exceptions to this rule for some lower risk toods, Donors and EFOs can take clean to help pourse that a well-intended contribution can be safety delivered to people in need. This quide addresses denotions for Evestock: beef, pork, sheep and

All livestock (beef, park, sheep and goat) destined for setal from a food safety stanspoint a food pantry is considered a retail autiet rest be slaughtered in a USDA impected sleughter facility. Any Eventock that is sold or in the case of a food pantry, given to a chart must be USDA-impected.

There is no exemption to this rule from a food salety standaries.

After slaughter the meet must be cut and wrapped at a USDArespected meet facility or a retail food establishment impacted by a local health jurisdiction for meet processing. The mest will need to be labeled with the common name of the meet such as beet, pork, sheep or goat. The lebel should also contain the Food Safety Impection Services (FSIS) food safety information located in the labeling section to the right.

To the right, you will see a step-bystep guide for donating livestock to an EFO.

LIVESTOCK Donations Guide



Slaughter

Donated I westock must be slaughtered in a USDA-inspected. slaughter facility. If the donation is small (consisting of feur or fewer animals), then a mobile USDA slaughter facility may be an option. Consult a list of USDA-inspected slaughter facilities. in Weshington, which includes mobile fedities: Sacusdagow/ munificectory.

Processing

After slaughter, the meat must be cut and wrapped at a USDAimpected meat facility. Atternatively, if the meat is properly transported between slaughter and processing, the meat may be did and wrapped by a meal processor in a retail food establishment inspected by a local health jurisdiction. For example, a USDA-inspected mobile facility can slaughter an animal and transport the meet to a grocery store with a licensed meat cutter who has volunteered to cut and wrap.

Labeling

The wrapped meet must include, at a minimum: Product name (goat, sheep, etc.); processor's name, processor's address; any and all allergen information; and the following statement

This product was prepared from inspected and passed medi-Some food products may contain bacteria that could cause Alness if the product is mishandled or cooked improperly.

Handling

For your protection, follow these safe handling instructions:

- Keep refrigerated or frozen.
- . Thaw in refrigerator or microwave.



Washington FOOD

Agriculture ASSISTANCE

POULTRY



products - meat positry eggs, etc.

and transportation / storage pro-tices are followed, on EFO can ductor that processes was than a the sales to the ultimate consumer

POULTRY **Donations Guide**



Rancher/Farmer

Poultry must be processed at a USDA-regulated facility or the facility of a food processor licensed to process poultry. Farmers wanting to donate poultry to an EPO but lack access to a USDA-regulated facility may be able to make arrangements. with a food processor licensed by WSDA to process poultry. Contact the WSDA Food Safety Program at foodsglety@cox we gov or (360) 902 1876 for more information.

Retail/Labeling

Consted poultry must be labeled. WSDA has limited labeling requirements which, at a minimum, must include: Product name: processor name: processor's address; any and all allergen Information; and the statement; Exempt - PL 90-492.

USDA inspected product lebeling will include:

Acres of the receipt to medicardied or marked arguments.

Handling

For your protection, follow these safe handling instructions:

- · Keep refrigerated or frozen.
- . Them in refrigerator or microwave.
- Keep rew poultry seperate from other foods.
- Wash working surfaces (including cutting boards), utensits and hands after touching raw poultry.
- · Cook thoroughly:
- Keep hot loods hot.
- Refrigerate leftovers immediately or discard.



Washington

Agriculture ASSISTANCE

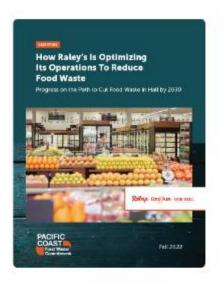




Case Studies







How Raley's Is Optimizing Its Operations to Reduce Food Waste



Using Artificial Intelligence to Reduce Food Waste in Grocery Retail



Institutionalizing a Waste Reduction Culture in Food Manufacturing

- > Shop Smart
- > Store Food Properly
- > Understand Date Labels
- > Donate Edible Food Safely
- > Manage At Home (with Compost)





Shop Smart:

- > Make a list with weekly meals in mind can save you money and time.
- > If you only buy what you expect to use, you will be more likely to eat it all.
- > Look in your refrigerator and pantry first to avoid buying food you already have.
- > Purchase imperfect produce or upcycled products.



Store Food Properly:

- > Properly store fruits and vegetables for maximum freshness; they'll taste better and last longer, helping you to eat more of them before they go bad.
- > Make sure you are <u>properly storing</u> food in your refrigerator.
- > Befriend your freezer and visit it often.

COUNTER.



FRIDGE.



SAVETHEFOOD.COM



Understand Date Labels:

- With an exception of infant formula, if the date passes during home storage, a product should still be safe and wholesome if handled properly until the time spoilage is evident.
- > Spoiled foods will develop an off odor, flavor or texture due to naturally occurring spoilage bacteria.



SUMMARY & NEXT STEPS



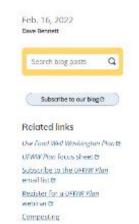
Blog > What We Do >

30 ways to reduce food waste in Washington

Statewide plan calls for policy changes, investments, and education to create a more resilient food system



The only way to make significant reductions in final waste is by exciting together. A sourcestful example of final method from partnerships was the effort in swar Washington grown potators. Pattered, a Washington National Goard Broops help deliver positions at the rections Broop in May 2020, Jaiming the prescript of the CONID-PS panderse, Photo by Drew Points. The Nava Technic pased will purmate set



- > Wasted Food is a Food Insecurity Solution!
- > We are working on how to increase efficiencies to get more food to those who need it
- > Take Action!
 - Personally
 - Professionally



Acknowledgements



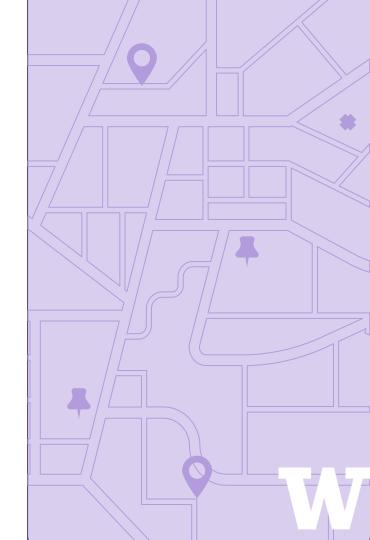






Public Health and Social Services







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Thank you!







WASTING FOOD WASTES EVERYTHING

WATER | LABOR | FUEL | MONEY | LOVE