Preventing the Wasting of Food

Elaine Blatt and Ashley Zanolli

ECOS SMM Workgroup Presentation

September 28, 2017

DEQ
State of Oregon
Department of
Environmental
Quality

Where we're going today

- **Why Wasted Food?**

- **DEQ Prevention Strategy**

- **Foundational Research**

  ✓ Measurement

  ✓ Messaging/Campaigns

  ✓ Food Rescue

- **Where we want to be in 5 years**

DEQ
State of Oregon
Department of
Environmental
Quality

Why Wasted Food?

MORE THAN JUST FOOD

THE U.S. WASTES TONS OF RESOURCES WHEN WE WASTE FOOD

1,250 CALORIES PER PERSON PER DAY
THAT IS HALF OF THE RECOMMENDED DAILY INTAKE FOR ADULTS

19% OF ALL U.S. CROPLANDS
THAT IS MORE LAND THAN ALL OF NEW MEXICO

21% OF U.S. LANDFILL CONTENT
THE NO. 1 CONTRIBUTOR BY WEIGHT

18% OF ALL FARMING FERTILIZER
WHICH CONTAINS 3.9 BILLION POUNDS OF NUTRIENTS

$218,000,000,000
WHICH IS EQUAL TO 1.3% OF THE U.S. GROSS DOMESTIC PRODUCT (GDP)

2.6% OF ALL U.S. GREENHOUSE GAS EMISSIONS ANUALLY
37 MILLION PASSENGER VEHICLES' WORTH

21% OF THE U.S. AGRICULTURAL WATER USAGE
MORE THAN: TEXAS + CALIFORNIA + OHIO

"Wasted Food" or "Food Waste"?

Growing Recognition of the Problem

Relative GHG Impacts

Food Waste Management Activities

Landfill (WARM)

0.54

MTCo2E (Metric ton of CO$_2$ equvalent)

1.0
0.5
0
-0.5
-1.0
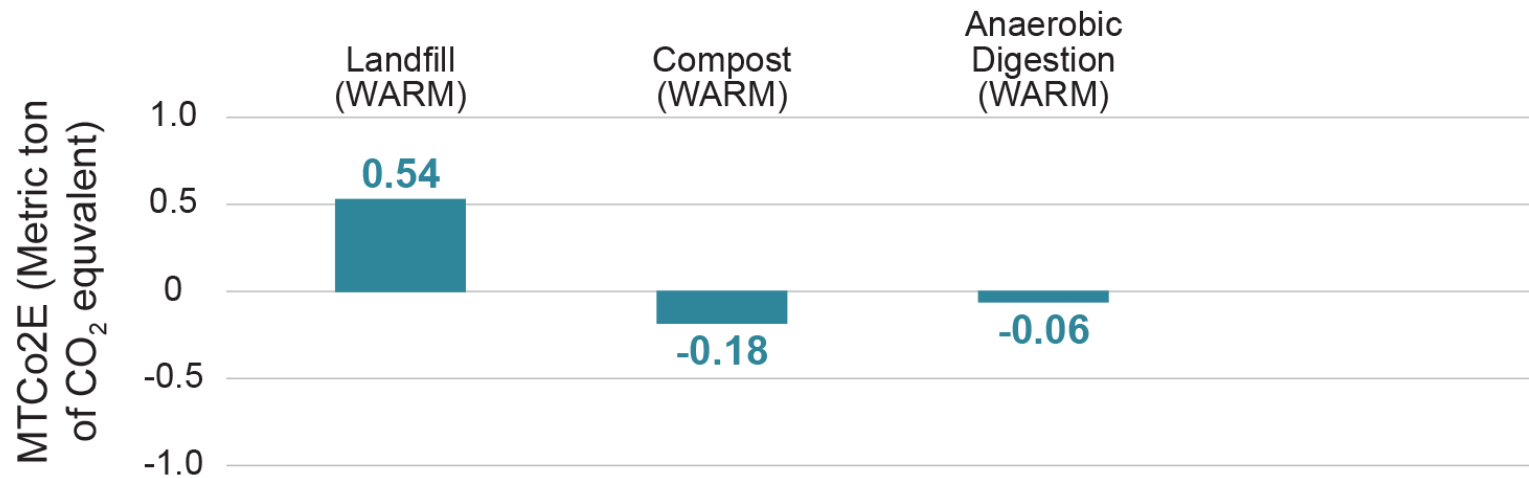
DEQ
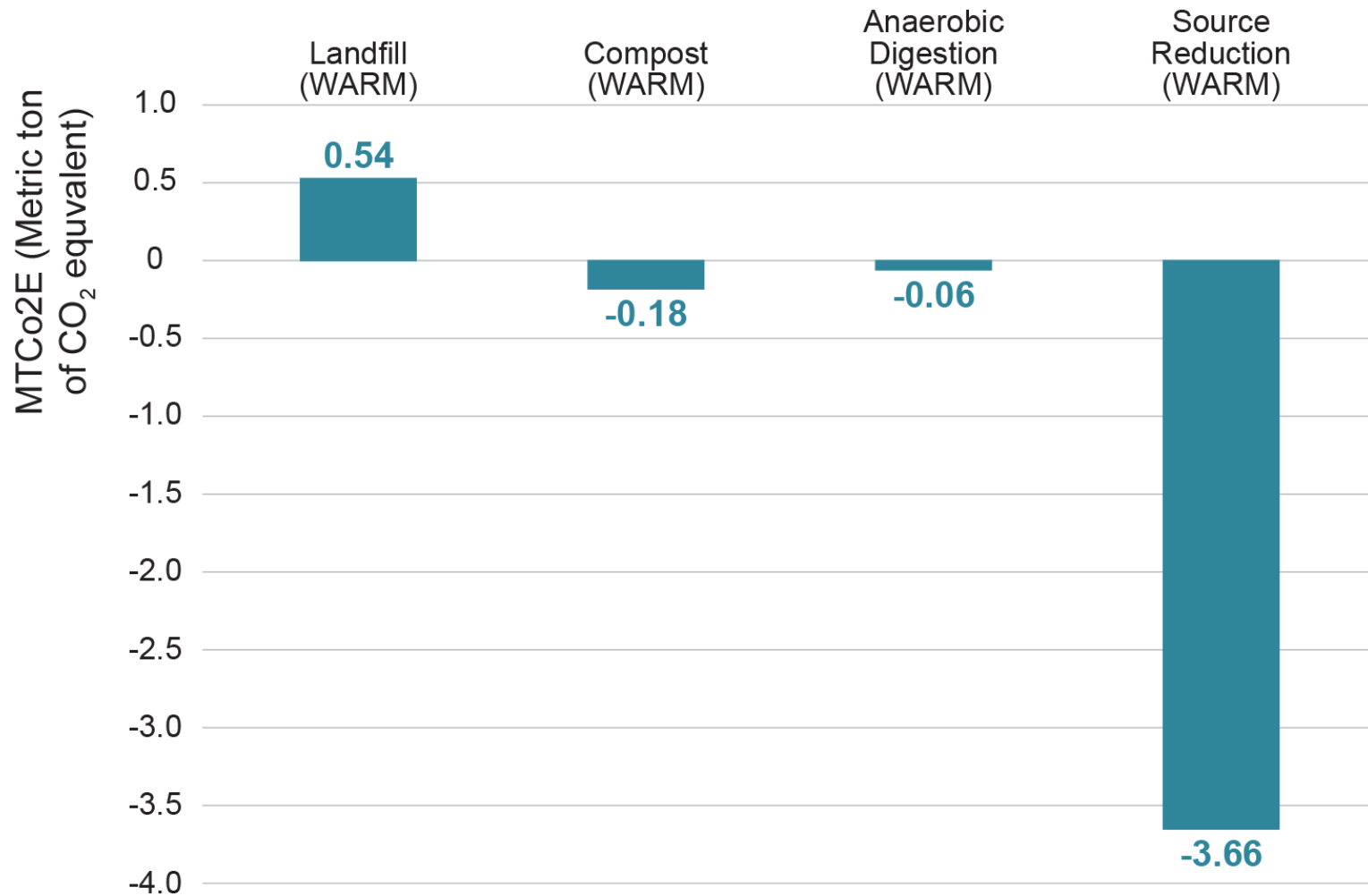State of Oregon
Department of
Environmental
Quality
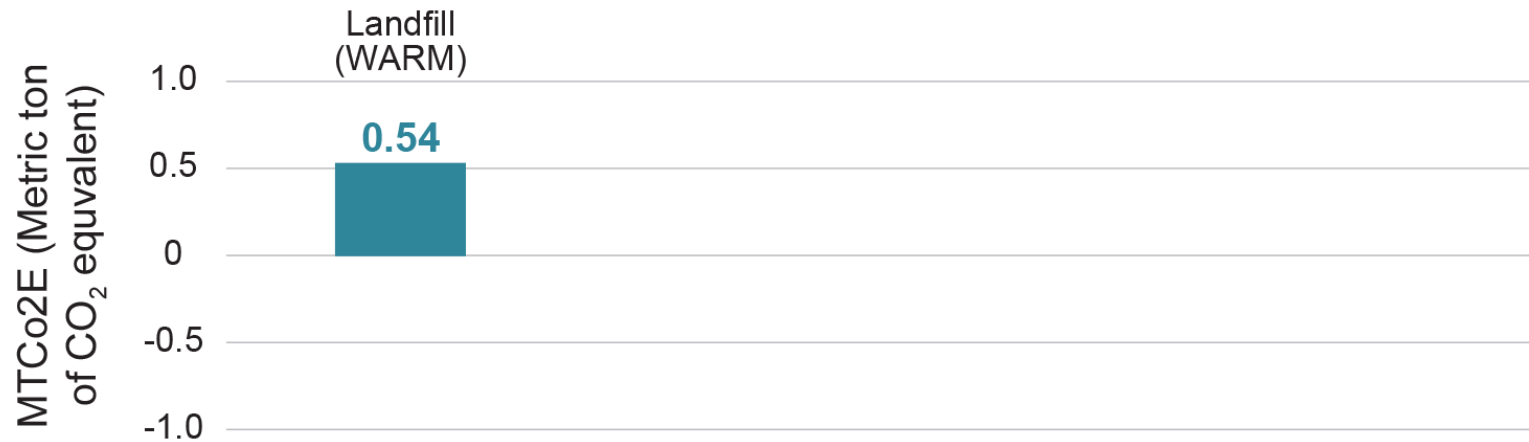
Relative GHG Impacts

Food Waste Management Activities

Relative GHG Impacts

Food Waste Management Activities

Oregon's Hierarchy

Wasted Food Hierarchy

- Source Reduction
- Feed Hungry People
- Feed Animals
- Industrial Uses
- Anaerobic Digestion
- Composting
- Incinerate Landfill

Most preferred → Least preferred

Prevention — Rescue — Recovery — Disposal
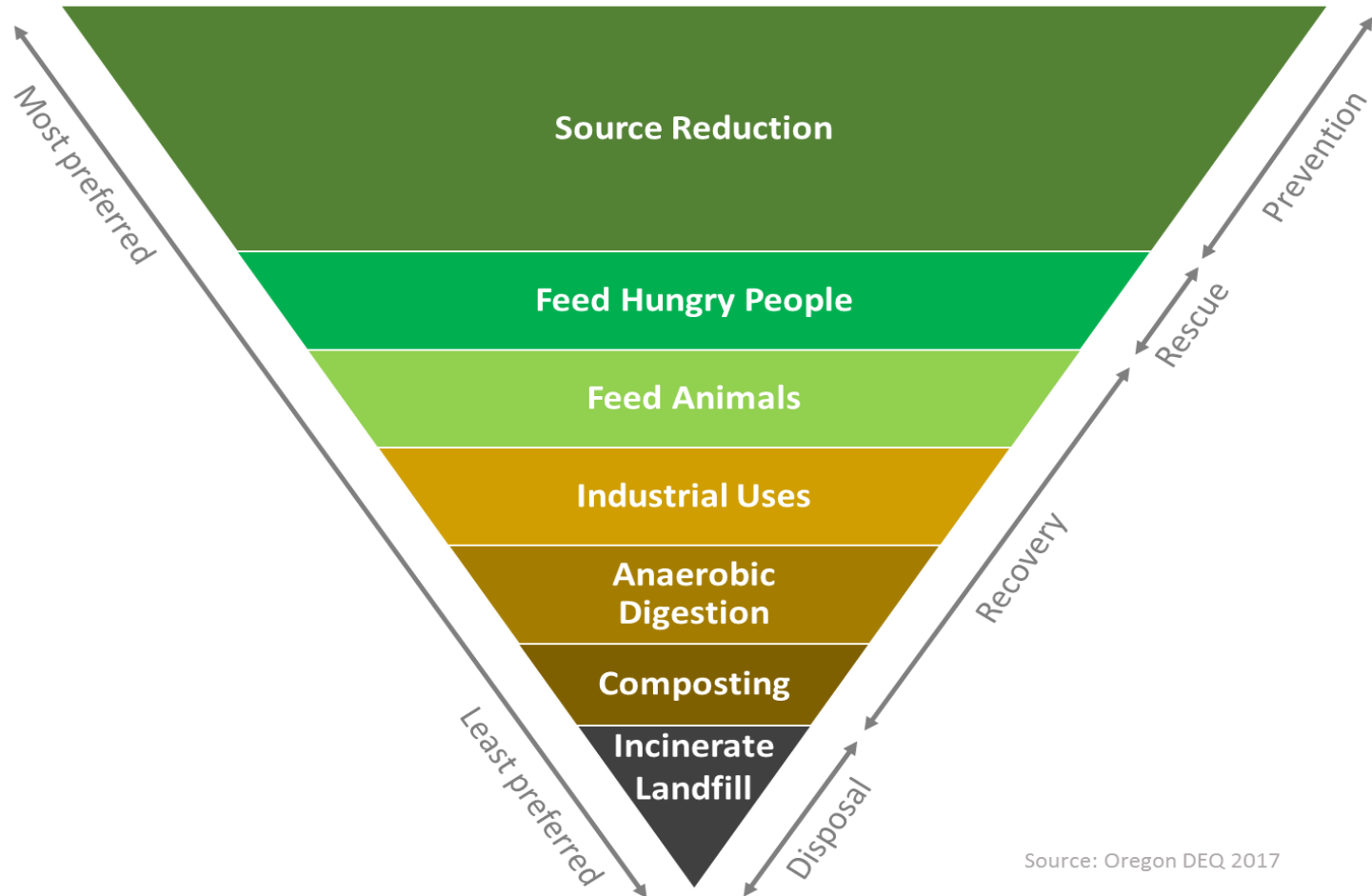
Source: Oregon DEQ 2017

Mindset Matters

DEQ's Objective – Change the Conversation

Oregon's Strategic Plan – Goals

- Develop the state of knowledge and building blocks to help reduce wasted food

- Increase business and consumer actions to prevent wasted food

- Reduce GHG emissions, water use, energy use and wasted resources by reducing the generation of wasted uneaten food by
  - ✓ 15 percent by 2025
  - ✓ 40 percent by 2050.

Oregon's Strategic Plan

Oregon DEQ Strategic Plan for Preventing the Wasting of Food

Materials Management
700 NE Multnomah
Portland, OR 97232
Phone: 503-229-5696
        800-452-4011
Fax: 503-229-6762
Contact: Elaine Blatt
www.oregon.gov/DEQ

DEQ
State of Oregon
Department of Environmental Quality

http://www.oregon.gov/deq/mm/Pages/foodwastestrategy.aspx

Preventing the Wasting of Food

Strategic Plan for 2017 – 2021

Near term projects

- **Measurement study**

- **Messaging research**

- **Commercial campaigns**

- **Research on impacts of food rescue approaches**

- Consumer campaigns and outreach

- Date labeling – initial research and tracking

- Regional coalition

- Commercial best practices

DEQ
State of Oregon
Department of Environmental Quality

Preventing the Wasting of Food

Strategic Plan for 2017 – 2021

Longer term projects

- Further work on date labeling, based on research and other developments

- Best practices for school kitchens

- Additional research

  ✓ Comparative analysis of prevention actions
  ✓ Analysis of prevention, donation, and recovery as interventions
  ✓ Economics of food waste reduction
  ✓ Impacts of packaging

Oregon Wasted Food Measurement Study

What does "Reduce" mean?

Measurement data can help:
•Design of policy or interventions
•Provide baseline
•Assess progress

More "robust" data needed to accomplish these goals as we move up the hierarchy:
•Loss reason
•Type of food
•Disposal Destination

U.S. Food Waste Measurement Comparison

	On-Farm	Manufacturing	Retail	Consumer	Total (Million Tons/Yr)
FAO					103
USDA					67
ReFED					62.5 (Landfill & On-Farm Only)
EPA					35 (Landfill & Compost Only)

● Edible Food Only   ● Edible & Non-Edible
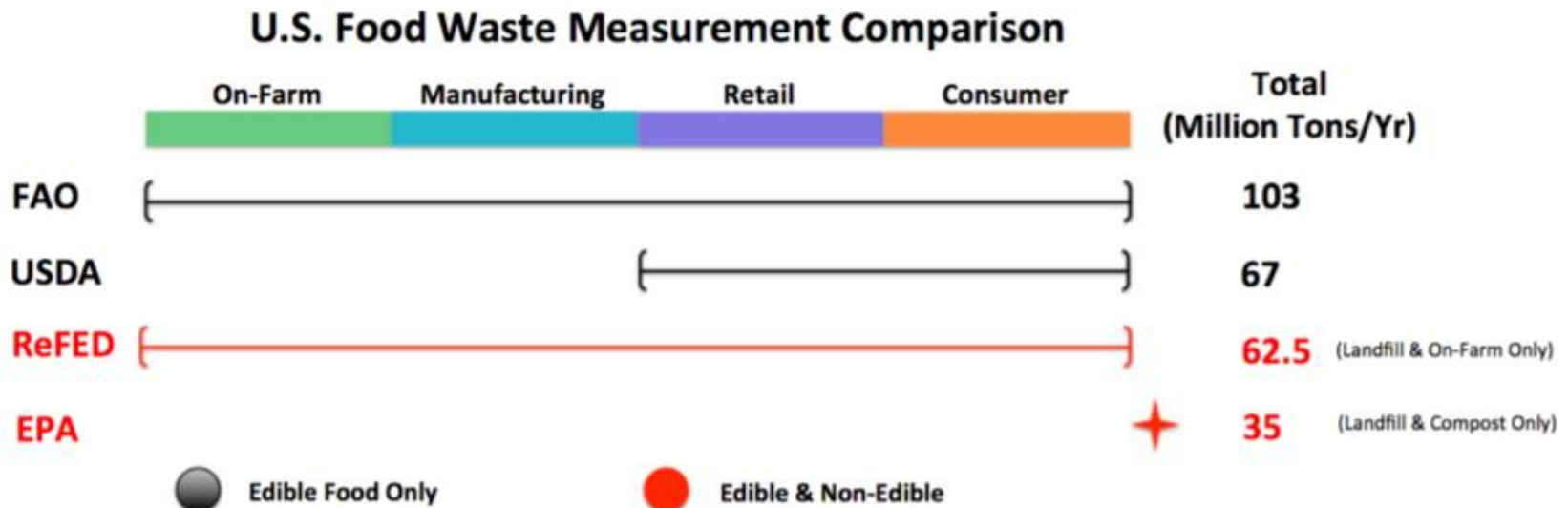
Public Policy Goals and Targets

Wasted Food Hierarchy

Most preferred

Prevention ("Reduce")

Rescue ("Reuse")

Recovery ("Recycle")

Dispose

Least preferred

Reduce Generation

Reduce Disposal

Source: Oregon DEQ 2017
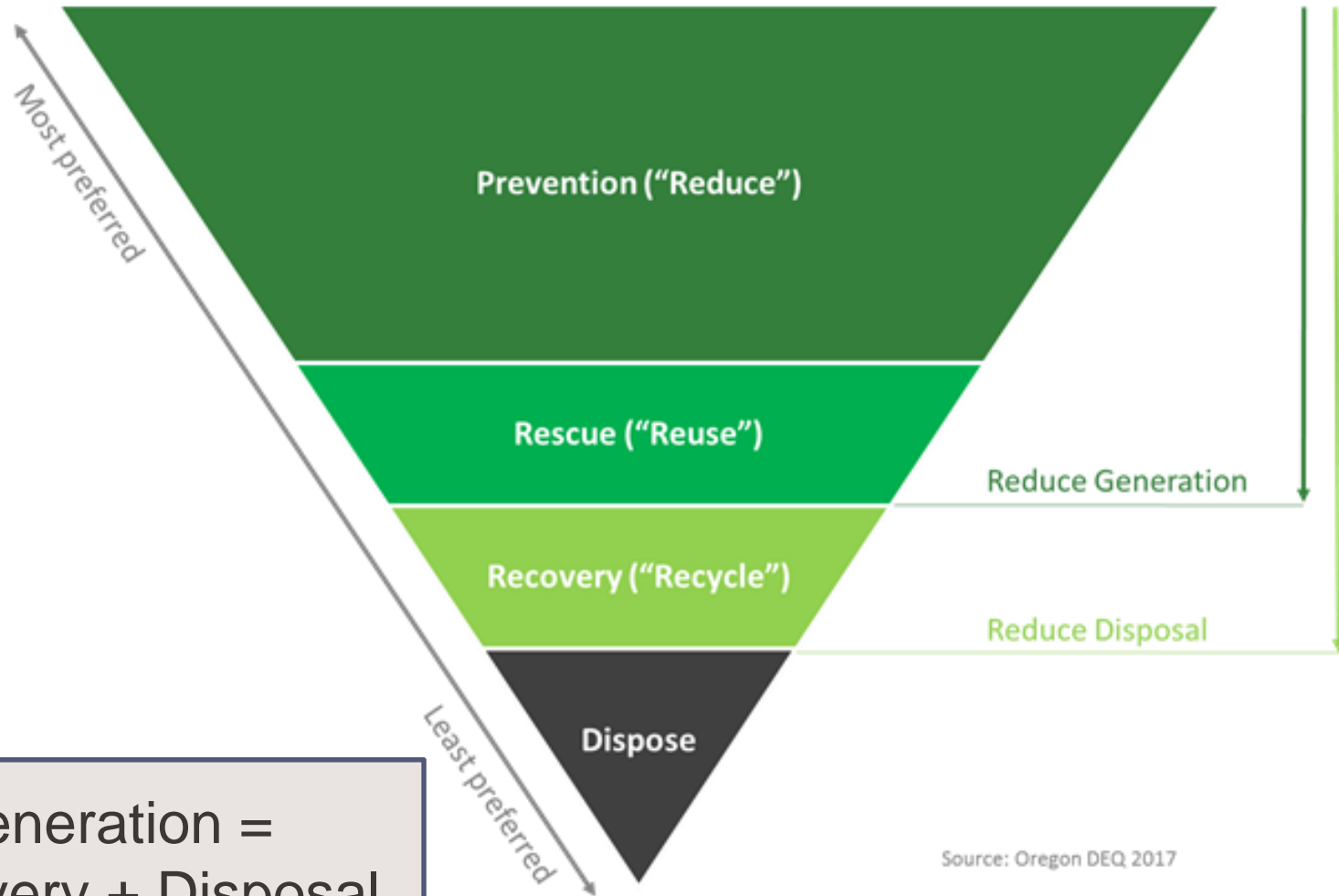
Generation = Recovery + Disposal

DEQ and PSU Wasted Food Research

Research Goals:

1. Establish baseline metrics for wasted food in residential households and a limited number of commercial/institutional (ICI) sectors. Metrics include:

    a) Quantities and types of edible food wasted;
    b) Self-reported perceptions of reasons, barriers, and alternative behaviors;
    c) Knowledge and attitudes in relation to behaviors and structural and/or psychological motivators to reduce wasted food.

2. Test methods for reliably collecting data on wasted food, *both quantity and reasons for waste*

3. Develop basic methods for other cities, states, and countries to establish their own baselines, making context specific modifications, and assess progress in preventing waste.

4. Assess cost effectiveness and environmental impact of up to 7 waste prevention interventions in a limited number of food service environment.

DEQ
State of Oregon
Department of Environmental Quality

Timeline

Task 1 - Qualitative Interviews

•June 2017 Published Report

Task 2 – Statewide Residential Survey (urban and rural)

•Finalized in August 2017 (unpublished)

Task 3 – Household Wasted Food Study (urban and rural)

•Finalize Design in August. February 2018 Report

Task 4 – ICI Case Studies (fifteen total)

•Finalize Design in July. March 2018 Report

Task 5 – Overall Analysis and Report

•August 2018 Final Report and Protocols for States, Counties, Cities, and Businesses

DEQ
State of Oregon
Department of
Environmental
Quality

Timeline

Task 1 - Qualitative Interviews

• June 2017 Published Report

Task 2 – Statewide Residential Survey (urban and rural)

• Finalized in August 2017 (unpublished)

Task 3 – Household Wasted Food Study (urban and rural)

• Finalize Design in August. February 2018 Report

Task 4 – ICI Case Studies (fifteen total)

• Finalize Design in July. March 2018 Report

Task 5 – Overall Analysis and Report

• August 2018 Final Report and Protocols for States, Counties, Cities, and Businesses

DEQ
State of Oregon
Department of
Environmental
Quality

DEQ and PSU Qualitative Interviews

Research Objectives are to better understand social, economic and cultural factors that lead to the wasting of food, or hinder prevention of waste, specifically:

- ✓ Within the household;
- ✓ Outside of the household, influencing behavior within; and
- ✓ Social processes and points of intervention
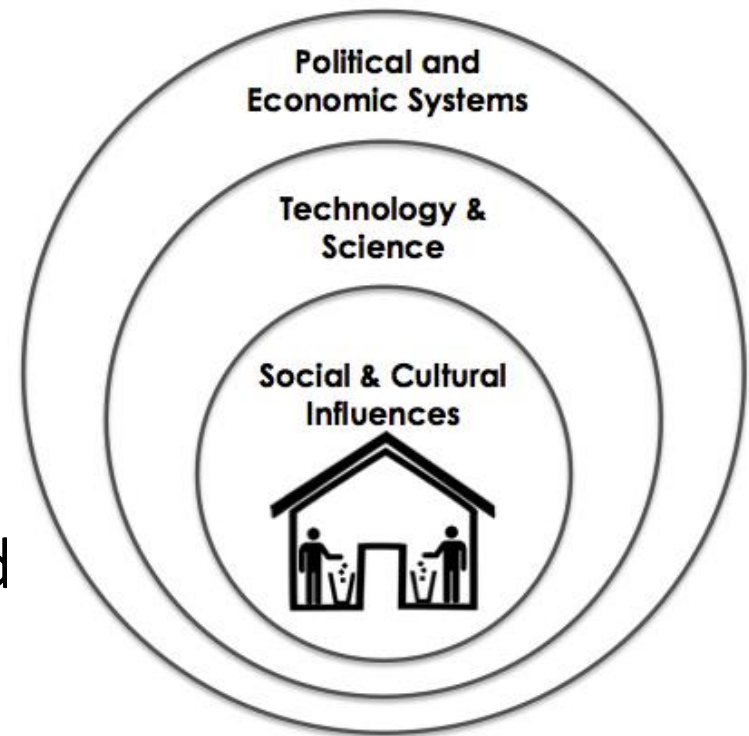
Summary of Findings

- **Delayed Disposal**: Freezing and saving leftovers often resulted in food being saved, but not necessarily eaten. Storing leftovers seems to be connected to guilt alleviation through delayed disposal.

- **Good Intentions can go awry with healthy eating and meal planning**:

  - ✓ As people are trying to eat healthier they often buy a lot of produce and healthy things that get wasted fall short of reaching their health goals.

  - ✓ Dedicated meal planners waste things unexpectedly when they say make a trip to the farmers market and find delicious produce, but that produce wasn't in their meal plan

- **Location of Provisioning**
  - ✓ "Get to go" to the Farmers Market
  - ✓ "Have to go" to the Grocery Store

Summary of Findings

- **Commonly discarded items**:

  - Items "lost in refrigerator" or "forgotten in the back of the fridge".

  - Partially-consumed beverages left out too long (such as milk, coffee, and soda).

  - Foods purchased in sizes that are larger than desired.

  - Foods purchased for specific meals or recipes.

  - Foods purchased to eat healthier (connected to aspirational relationships).

  - Leftovers (connected to waste aversion and delayed disposal).

  - Items that are wasted at the end of food phases or fads.

  - Food served to children.

Summary of Findings

Conahan for Oregon Business   The Wastrel

Role of Composting
- ✓ Composting alleviates guilt associated with trashing food, which may result in an increased generation of wasted food.
- ✓ Composting seen as separate from trash, so amount discarded may be "hidden", resulting in inability to identify opportunities to prevent wasted food.

Timeline

Task 1 - Qualitative Interviews
• June 2017 Published Report

Task 2 – Statewide Residential Survey (urban and rural)
• Finalized in August 2017 (unpublished)

Task 3 – Household Wasted Food Study (urban and rural)
• Finalize Design in August. February 2018 Report

Task 4 – ICI Case Studies (fifteen total)
• Finalize Design in July. March 2018 Report

Task 5 – Overall Analysis and Report
• August 2018 Final Report and Protocols for States, Counties, Cities, and Businesses

DEQ
State of Oregon
Department of Environmental Quality

Statewide Food Survey (n=486)

Final Report to be published by November 2018

Research Questions
- What are the perceived barriers to reducing wasted food?
- What are the perceived reasons for wasted food?
- What habits or behaviors do households engage in that promote or avoid wasting of food?
- What level of knowledge do people have about ways to reduce wasted food?
- What beliefs, attitudes, or values are related to food waste behaviors?

Findings in the final report are organized by topic area:
- Procurement
- Planning
- Disposal
- Leftovers
- Food preparation, use and management

Timeline

Task 1 - Qualitative Interviews

•May 2017 Interim Report

Task 2 – Statewide Residential Survey (urban and rural)

•Finalized in August 2017 (unpublished)

Task 3 – Household Wasted Food Study (urban and rural)

•Finalize Design in August. February 2018 Report

Task 4 – ICI Case Studies (fifteen total)

•Finalize Design in July. March 2018 Report

Task 5 – Overall Analysis and Report

•August 2018 Final Report and Protocols for States, Counties, Cities, and Businesses

Household Wasted Food Study

Research Goals

Goal 1: Develop reliable baseline metrics for avoidable wasted food for residential households in the state.

Goal 2: Provide state, cities, and counties with methods for establishing household wasted food baseline metrics and assessing shifts in behaviors and levels of awareness.

Goal 3: Understand how household characteristics are associated with amounts and types of avoidable wasted food, as well as the reasons food is being wasted.

Goal 4: Gain understanding about the role of composting in the generation of wasted food.

Goal 5: Explore the relationship between residential wasting of food and 1) behaviors that may contribute to or help avoid wasted food 2) motivations for disposing edible food.

UK Example using similar methods

Avoidable food & drink
5.3 million tonnes (£12 bn)

Left & unused
2.9 million tonnes (£6.7 bn)

Cooked, prepared or served too much
2.2 million tonnes (£4.8 bn)

Source: UK WRAP (2012)

Household Wasted Food Study

Research Approach

- Pre-Survey (similar to statewide survey)
- Pre-Diary waste sort
- Kitchen Diary with Urban and Rural Households (n=225)
- Post-Survey

		Week 1		Week 2		Week3		Week 4		Week 5	
Recruitment	■										
Initial survey		■	■	■	■						
Waste sorts				■	■	■	■				
Diaries						■	■	■	■	■	■
Follow-up survey										■	■

1) Inedible	Items not intended for human consumption (it is acceptable for a small amount of edible material associated with the inedible material to be included).
2) Meat and fish	Uncooked or cooked meat (with mostly edible components) unmixed with other types of food. Examples include beef, pork, and fish.
3) Dairy	Solid dairy products unmixed with other food types or in original form. Examples include milk, cheese, and butter.
4) Eggs	Extra category for DEQ comparison
5) Vegetables and fruits	Solid uncooked or cooked vegetables and fruits (with mostly edible components) unmixed with other types of food. Examples include apples, lettuce, and fresh herbs.
6) Baked goods	Baked goods and bread-like products unmixed with other food types or in original form, including pastries. Examples include bread, cake, and tortillas.
7) Dry foods	(Grains, Pasta, Legumes, Nuts, Cereals): Cooked or uncooked grains, pastas, legumes, nuts, or cereals unmixed with other food types or in original form. Examples include flour, nuts, lentils, and cereal.
8) Snacks, condiments, other	Includes confections, processed snacks, condiments, and other miscellaneous items. Examples include candy, chips, and sauces.
9)Liquids, Oil, Grease	Items that are liquid, including beverages. Examples include bottled water, liquid coffee, and soda.
10)Cooked, prepared, leftover	Items that have many food types mixed together as part of cooking or preparation. Examples include lasagna, burritos, falafel, stir-fry, sandwiches, and pizza.
11) Unidentifiable	Use only if necessary

Timeline

Task 1 - Qualitative Interviews
- May 2017 Interim Report

Task 2 – Statewide Residential Survey (urban and rural)
- Finalized in August 2017 (unpublished)

Task 3 – Household Wasted Food Study (urban and rural)
- Finalize Design in August. February 2018 Report

Task 4 – ICI Case Studies (fifteen total)
- Finalize Design in July. March 2018 Report

Task 5 – Overall Analysis and Report
- August 2018 Final Report and Protocols for States, Counties, Cities, and Businesses

DEQ
State of Oregon
Department of
Environmental
Quality

Commercial and Institutional Case Studies

#	Practice Category	Target*	Description	Examples
1	Service Practices	BOH	Changes in practices related to the serving of food or food options.	Trayless dining, plate size change, plate composition change, menu alterations
2	Portion Size/Production Amounts	BOH, FOH	Attempts to better match customer demand/appetite with offerings	Smaller portion size offerings, prepare smaller batches
3	Back of House Practices	BOH	Improvements in protocols, practices or staff behavior related to the preparation and storage of food	Staff training on waste reduction, staff motivation or incentive programs, improved storage practices or equipment, using BOH edible scraps in other products
4	Waste Awareness Campaigns	BOH	Integrated waste awareness education and behavioral interventions targeted at staff.	Weekly trainings, display/communication of weekly waste metrics
5	Alternative Merchandising, Displays, Promotions	FOH	Changes to sales strategies that minimize opportunities for wasting or maximize sales of food at risk of wasting	Less-stocked product displays, sale of soon-to-expire food or tired produce
6	Pre-production Tools	BOH, FOH	Strategies to minimize overproduction in catering and cafeterias through improved forecasting or dynamic/responsive service practices	Use more pre-prepared or semi-prepared foods, using data to modify ordering or production
7	Measurement/Analytics	BOH	Tracking wasted food and analyzing its effects on operations	Food loss and waste inventories, waste reduction software and analytics

*FOH: Front-of-house; BOH: Back-of-house

DEQ
State of Oregon
Department of
Environmental
Quality

The True Cost of Food Waste

Visible costs

Disposal costs

On average, the true cost of wasted materials is about 10 times the cost of disposal

(Hall, PLOS 2009)

Lost materials

Natural resources

Energy cost

Invisible costs

Liabilities and risks

Lost labor

Nutrients

Other costs

Measurement Study Outcomes

Reduce the generation of wasted food and assess success by developing more robust data to understand:

1. How much edible food is discarded
2. How and why it is wasted
3. What practices can help reduce wasted food

Develop basic methods for other cities, states, and countries to establish their own baselines and assess progress

Develop new business cases for wasted food prevention in government and business

UNITED KINGDOM

EVERY £1 INVESTED

YIELDED £250 IN RETURNS

LONDON

EVERY £1 INVESTED

YIELDED £92 IN RETURNS

Source: (WRI , WRAP 2017)

Messaging Research

Knowledge gap

- Limited market research regarding wasting food

- Limited understanding of how to best message prevention and food recycling together

Research Objectives

- Identify the value-based messages and language most likely to motivate Oregon residents to reduce wasting of food.

- Develop a messaging hierarchy that can be used to inform the development of campaigns and other outreach material.

DEQ
State of Oregon
Department of
Environmental
Quality

Commercial Campaign

- <u>Toolkit</u> for use by local governments

- <u>Target audience</u>: Consumer-facing food businesses – grocery, full and limited service restaurants, food service.

- <u>Messaging</u> focuses on making the "business case" for preventing the wasting of food:
  - ✓ Lost food is lost profit.
  - ✓ Simple steps can pay off.

DEQ
State of Oregon
Department of
Environmental
Quality

"Is Wasted Food Eating Up Your Profit?"

Toolkit components:

• Two page flyer – detailed messaging around cost of waste, return on investment

• Abbreviated messaging and supportive case studies for bill inserts, post-cards, and collateral for business publications.

• Social media materials

"Is Wasted Food Eating Up Your Profit?"

Toolkit components (continued):

- Easy-to-use measurement tools with analytics

- A resource guide with tips and tools for reducing wasted food, organized by commercial food sector.

- Plan to add additional materials in 2018 based on commercial case studies DEQ is currently developing.

Resource Guide

"Don't Let Wasted Food Eat Up Your Profit"

- Organized by sector: grocery, full and limited service restaurants, and institutional food service.

- Guide will identify a limited number of sector specific "best practice" materials and tools:

  - ✓ Short (1-2 sentence) description of the material or tool.

  - ✓ Link for accessing the material or tool.

- Guide will be both hardcopy and electronic; designed to be user friendly.

DEQ
State of Oregon
Department of
Environmental
Quality

Study of Food Rescue Alternatives

<u>Research Objectives</u>

- Explore trade-offs (environmental, economic and nutritional) involved in different rescue approaches.

- Identify which foods should be prioritized for donation

- Identify rescue approaches that might encourage over-production

<u>Methods and timing</u>

- Combination of lifecycle analyses, cost and qualitative assessments

- Underway, with completion expected this year

DEQ
State of Oregon
Department of
Environmental
Quality

Where We Want to Be in Five Years

- Households/businesses generate less wasted food

- Measurable progress made

- Research gaps filled, results shared

- Foundation built to support prevention priorities

- Communities of practice built

- Economic, social and environmental trade-offs of different food rescue pathways understood

- Economic, psychological, social, and structural drivers leading to wasted food understood

- Conversation and metrics of success has shifted

DEQ
State of Oregon
Department of Environmental Quality

How Can We Get There Together?

Better Baselines and More Actionable Data

- Sector specific food waste analytics -- root causes of wasted food and types/amounts of avoidable waste.

- Disclosure requirements for food waste data and supply chain transparency

- Date labelling

Filling Research Gaps

- Analysis of infrastructure development needs based on inedible scraps

- Real and perceived food safety opportunities to mitigate food loss

DEQ
State of Oregon
Department of
Environmental
Quality

Thank you

Elaine Blatt

Oregon DEQ

blatt.elaine@deq.state.or.us

Ashley Zanolli

Oregon DEQ

zanolli.ashley@deq.state.or.us