



# Reducing Food Impacts

A Strategic Plan for Oregon

February 2025



This document was prepared by  
Oregon Department of Environmental Quality  
Materials Management  
700 NE Multnomah Street, Portland Oregon, 97232

Contact: Sanne Stienstra  
Phone: 503-229-6494  
Oregon DEQ Website

### **Acknowledgements:**

The production of this report was a collaborative effort supported by multiple staff within the Oregon Department of Environmental Quality.

Report authors and contributors: Elaine Blatt, Gabrielle Hobbs, Jerin Dinkins, Lily Herd, Katie Romano, Mia Weitz, and Sanne Stienstra, Oregon DEQ Materials Management Program.



### **Translation or other formats**

[Español](#) | [한국어](#) | [繁體中文](#) | [Русский](#) | [Tiếng Việt](#) | [العربية](#)  
800-452-4011 | TTY: 711 | [deqinfo@deq.oregon.gov](mailto:deqinfo@deq.oregon.gov)

### **Non-discrimination statement**

DEQ does not discriminate on the basis of race, color, national origin, disability, age, sex, religion, sexual orientation, gender identity, or marital status in the administration of its programs and activities. Visit DEQ's [Civil Rights and Environmental Justice page](#).

# Table of contents

<b>Introduction .....</b>	<b>4</b>
<b>Background .....</b>	<b>4</b>
Why the emphasis on food? .....	4
The Materials Management Program’s food waste work to date .....	8
<b>Food Systems .....</b>	<b>9</b>
<b>DEQ Food Systems Objectives.....</b>	<b>13</b>
<b>Operating Principles.....</b>	<b>13</b>
<b>How we do the Work .....</b>	<b>14</b>
<b>Action Plan .....</b>	<b>15</b>

# Introduction

This Strategic Plan outlines the Oregon DEQ Materials Management Program's priorities and guiding principles related to reducing the impacts of food for the next ten years, with a system-wide approach and continued emphasis on reducing food waste. This plan builds on work completed in the 2017 [Strategic Plan for Preventing the Wasting of Food](#) and is the culmination of the Materials Management Program's work designed to take a more systems-based approach to food impacts.

Specific activities to support the priorities outlined in this Strategic Plan will be provided in a companion "Action Plan" developed in collaboration with partners around Oregon. While the Strategic Plan establishes priorities and defines the Materials Management Program's approach for the next ten years, Action Plan activities describe specific interventions that will be implemented over shorter periods of time and will be revised and updated on a more frequent basis. The Materials Management Program will revise the Action Plan in consultation with partners to take advantage of emerging opportunities and respond to changing needs.

Together, the Strategic Plan and Action Plan represent the Materials Management Program's framework for addressing food impacts.

## Background

This section provides background on food impacts, along with a brief history of DEQ's food impacts work to date.

### Why emphasize food?

It is difficult to overstate the importance of food as a material. It is essential to life and well-being, a key economic driver through its production and distribution and even its management as waste, and a source of significant environmental impacts across its entire value chain. This section provides an overview of some key issues related to food and includes details related to these issues that help guide how the Materials Management Program approaches potential interventions.

**Environmental impacts associated with food are high.** From an environmental perspective, food is one of the most significant materials, and it is estimated that 38% of all food produced



or imported for consumption in the United States is never eaten.<sup>1</sup> Preventing food waste is a priority for Oregon due to the combined environmental burdens of food production, distribution, refrigeration, preparation, and final disposal.<sup>2</sup> The environmental impacts embodied in that food waste are significant (Data in Figure 1 are for the U.S. as a whole):



**Figure 1. Annual resources used to grow wasted food in the U.S.<sup>3</sup>**

No one group or economic sector is responsible for food waste. The Materials Management Program's own data show that we all contribute to food waste, regardless of demographics.<sup>4</sup> At the same time, other impacts associated with food may affect certain groups more deeply (e.g., rural communities and farm workers). Effective responses to food impacts therefore need to

<sup>1</sup> *ReFED Releases New Food Waste Estimates and Calls for Increased Action by Food System*, October 2024

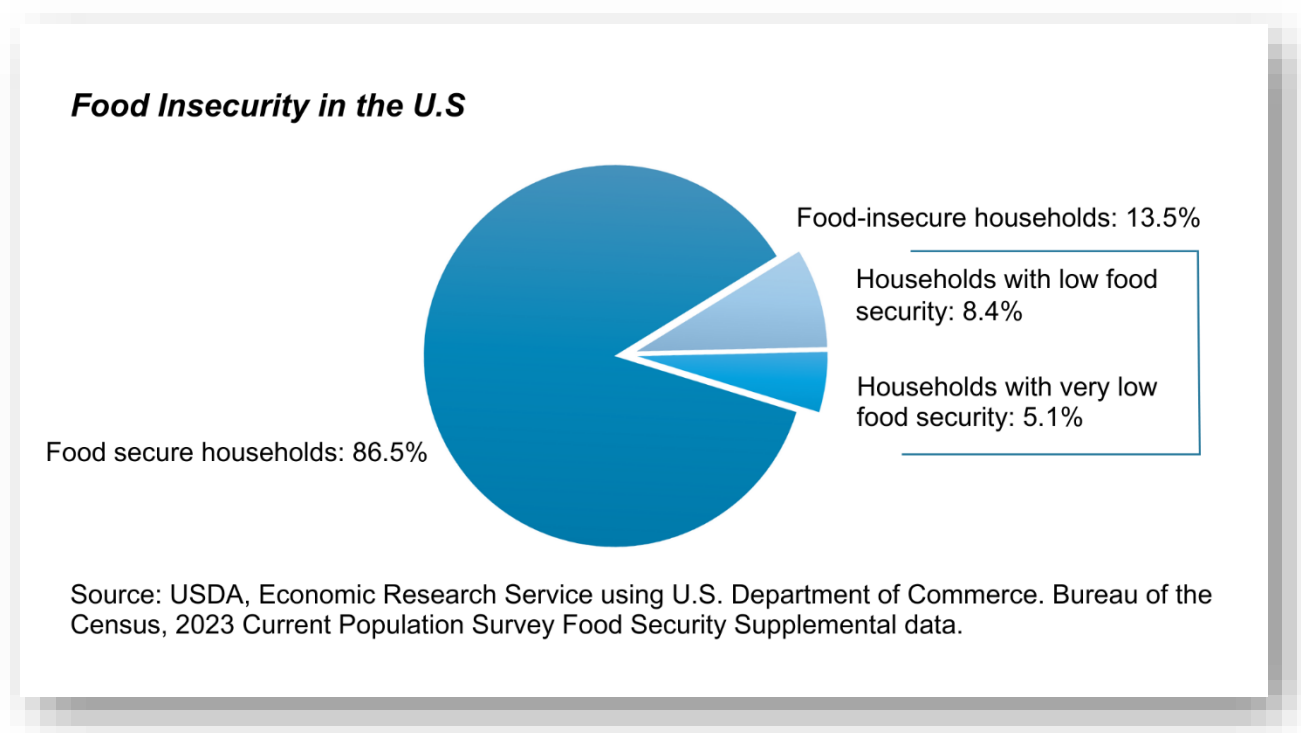
<sup>2</sup> *DEQ's 2050 Vision and Framework for Action*, published in 2012 (with the Framework updated in 2020)

<sup>3</sup> *From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste*, U.S. Environmental Protection Agency, November 2021, p.iii

<sup>4</sup> *Wasted Food Measurement Study: Oregon Households*, Oregon Department of Environmental Quality, 2018

target a range of demographic groups and business sectors, with particular emphasis on impacts on underrepresented or vulnerable communities.

**Many are food insecure.** Even as large surpluses of food are wasted, an estimated 13.5% of people in the U.S. face food insecurity.<sup>5</sup> The latest data from the U.S. Census Bureau shows that about 11% of Oregon households are food insecure, struggle to have enough to eat and often must choose between paying rent or buying prescriptions or groceries. That means that 186,000 households, or 463,000 people, in Oregon have a problem securing enough food on a regular basis.<sup>6</sup>



**Figure 2. U.S households by food security status, 2023 <sup>7</sup>**

<sup>5</sup> *Food Security Status of U.S. Households in 2023*, U.S. Department of Agriculture, Economic Research Service

<sup>6</sup> *Food insecurity is on the rise in Oregon after downward trend before the pandemic*, Oregon Public Broadcasting, January 29, 2024

<sup>7</sup> *Food Security Status of U.S. Households in 2023*, U.S. Department of Agriculture, Economic Research Service

Rescuing surplus food for distribution to food insecure populations offers one way to reduce food surplus and waste, while addressing the immediate needs of many in Oregon. However, waste levels are so high, the U.S. Environmental Protection Agency estimates that the U.S. has four times the amount of surplus food needed to feed food insecure people in the U.S.<sup>8</sup> Rescuing nutritious and culturally appropriate food is a necessary, but not a sufficient response to the problem of food waste.



**Figure 3. Segment of municipal solid waste that is food waste<sup>9</sup>**

**Recovery of unavoidable food waste can reduce emissions from landfills.** While the Materials Management Program has most recently focused on preventing food waste in the first instance, Oregon still needs to improve our ability to manage unavoidable food waste through methods other than landfill disposal, such as composting and anaerobic digestion. Impacts of food waste in landfills are significant. U.S. EPA estimates that food disposed in landfills accounts

---

<sup>8</sup> *From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste*, U.S. Environmental Protection Agency, November 2021, p. 15

<sup>9</sup> *Oregon Solid Waste Characterization and Composition Study*, 2017

for 58% of landfill greenhouse gas emissions.<sup>10</sup> Food waste accounts for 15% of all material disposed in Oregon landfills.

**How we manage food waste outside of landfills matters, too.** By processing food waste in ways that retrieve its remaining value and then putting that material to work in our food system to effectively improve food production and sequester greenhouse gas emissions, we can maximize the benefits of food waste recovery. Improved food production includes co-benefits of potential reductions in the use of chemical fertilizers and pesticides — reductions that may reduce toxic exposures in rural populations and farm workers. Use of compost in agricultural production also offers potential benefits of improved soil health and increased soil water retention and improved water quality.<sup>11</sup>

**What we eat also matters.** Food impacts are spread unequally across food types, with the largest impacts coming from meat and dairy production. The Materials Management Program’s recently released report, *Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon’s Consumption*,<sup>12</sup> identified reducing consumption of meat and dairy products, as well as reducing the carbon intensity of production of these food types, as a significant opportunity to help Oregon achieve its greenhouse gas reduction goals. The report found that, in 2021, meat and dairy consumption accounted for 5.6% of Oregon’s total consumption-based emissions and approximately 39% of emissions within the category of food alone. There also is evidence that increasing access to plant-rich diets results in improved health outcomes in vulnerable groups that may be more likely to experience food allergies and other food-related health issues.<sup>13</sup>

## Materials Management Program’s food waste work to date

The Materials Management Program has a long-standing commitment to reducing the environmental impacts of food. Even before the *2050 Vision and Framework for Action* formally

---

<sup>10</sup> *Quantifying Methane Emissions from Landfilled Food Waste*, U.S. Environmental Protection Agency, October 2023

<sup>11</sup> *Benefits of Compost Use*, U.S. Environmental Protection Agency

<sup>12</sup> *Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon’s Consumption: Prepared for the Oregon Legislature in accordance with HB 3409 (2023)*, September 12, 2024

<sup>13</sup> *Serving Up Plants by Default*, Better Food Foundation, May 2023



prioritized sustainable materials management in 2012, the program supported projects that emphasized prevention – through such actions as changing school cafeteria practices, working to reduce food loss in groceries and supporting the rescue of surplus food for redistribution to food insecure populations.<sup>14</sup> Building on that foundation, the program published its *Strategic Plan for Preventing the Wasting of Food* in early 2017. The main goal of this plan was to “change the conversation” around food waste to pivot from a focus on downstream food waste management to upstream prevention. Highlights of work completed under the 2017 plan include:

- *The Wasted Food Measurement Study*, which documented the amounts of food wasted in Oregon households and identified factors contributing to that waste.
- The *Bad Apple campaign*, a first of its kind (in the U.S.) research-based outreach campaign designed to focus on messaging most likely to move consumers to take action on food waste.
- The *Pacific Coast Food Waste Commitment*, a West Coast collaboration to reduce waste in food production and commercial foodservice and retail through a public-private partnership approach.
- *Food Waste Stops with Me*, an innovative campaign targeting commercial foodservice businesses, developed in partnership with Oregon Metro.
- *A Life Cycle Assessment of Edible Food Rescue*, conducted to better understand the relative value and environmental impacts and trade-offs of diverting food from various sources (farms, groceries, restaurants) directly to food banks and other organizations that serve food insecure populations.

## Building a food systems approach

The Materials Management Program’s significant work on food waste prevention highlighted interconnections in the food system that suggested the need for the program to take a more systems-based approach to reducing food impacts. Some of these interconnections include:

- **Integrated food supply chains.** Growers and processors are often interconnected, through actual vertical integration within a single company or through longstanding supply agreements between growers and processors, and even retailers. Understanding

---

<sup>14</sup> Oregon DEQ *Strategic Plan for Preventing the Wasting of Food*, March 2017, p.7

this integration helps us better identify actions to reduce food impacts in the production and processing phases of the supply chain.

- **Processing and marketing of food.** How food is processed, packaged and sold can contribute significantly to household food waste. Better understanding these dynamics can support efforts to reduce household food waste generation.
- **Food waste management and soil health.** Efforts to address food waste management often focus on the impacts of food waste decaying in landfills, but an additional and crucial factor is the potential for recovered food waste's value to reduce production impacts, restore soil health and achieve additional climate benefits via soil sequestration.
- **Local food system resiliency.** Strong local food systems provide significant benefits to Oregon communities by ensuring food access during supply disruptions and strengthening local food economies. Local food systems also offer attractive end markets for recovered food waste in the form of compost.
- **Food access.** As noted briefly above, distribution of surplus food is an important action to improve food access and reduce waste. Local food systems also can play a role in reducing food insecurity through highly localized community gardens and urban farms that can provide ready sources of food to lower income populations and serve as end markets for recovered food waste.

To broaden our understanding of food systems in Oregon, beginning in 2021 and continuing into early 2023, the Materials Management Program engaged in a lengthy period of outreach to a wide range of actors in the food space – practitioners of alternative and regenerative agricultural practices, BIPOC farming advocates, communities engaged in developing “home grown” food waste management programs, food rescue organizations and other community-based organizations, academics working in agriculture and food waste, and local governments working on food waste prevention and waste management issues. From these discussions, Materials Management staff gained a greater understanding of the linkages outlined above, and an appreciation of the role the Program’s work could play in supporting local food system resiliency and expanding access to food.

Food systems are very complex and as an environmental agency, DEQ faces some limitations on where it can act in the food system. These include large commercial food production, which is primarily addressed by the Oregon Department of Agriculture and the U.S. Department of Agriculture. Food access, a problem often driven by issues of income inequality and “food deserts,” is another area that has historically been understood as outside DEQ’s traditional environmental mandate.

At same time, there are many areas in the larger food system where DEQ can play a role, either directly or working with partners. These areas go well beyond the scope of work covered in the Program's 2017 strategic plan. Specifically, the Program's recent food systems work points to three major areas where DEQ can play a larger role in reducing food impacts and in improving food access:

- **Sustainable food production:** this area encompasses food manufacturing and processing, a traditional Materials Management focus area, but also could include food production on smaller farms involved in innovative agricultural practices. The Materials Management Program's ability to influence production comes largely from promotion of sustainable food waste management (see below), but also from supporting lower impact production processes more generally – such as dry farming and farming methods that reduce toxic chemical use. Support for lower impact production methods may also have co-benefits related to reducing health impacts for agricultural workers and support for smaller scale farming that may bring additional economic benefits to rural communities.
- **Sustainable food consumption:** this area has been the core of the Materials Management Program's work and was a central focus of the 2017 strategic plan – prevention of food waste.<sup>15</sup> This area also includes work to rescue nutritious, culturally appropriate food for distribution to food insecure populations. Going forward, the program will consider a greater role for increasing food access by promoting localized food production, supported by localized composting (see food waste management below). There may also be opportunities to work with the program's Built Environment Program to encourage sustainable housing development that facilitates small scale food production, particularly in communities experiencing food insecurity. Materials Management also has an opportunity to support reduced consumption of high impact foods, particularly by working with the Oregon Health Authority to promote the health benefits of lower meat and dairy consumption.
- **Sustainable food waste management:** this area includes supporting actions that increase or improve management of food waste via composting and anaerobic digestion (AD), with an emphasis on using compost to sequester carbon and restore soil health, decrease use of chemical fertilizers and pesticides, decrease water use, and in the case of AD, generate renewable energy to displace fossil fuels. As noted in sustainable production above, a co-benefit of such approaches could be health benefits for farm laborers where on-farm chemical use is reduced. Oregon's imperative in food waste management is not simply keeping food waste out of landfills but putting the value of that food to work to improve our

---

<sup>15</sup> DEQ continues to prioritize prevention, and this strategic plan is aligned with the US EPA's recently redesigned wasted food scale, U.S. Environmental Protection Agency

food system. As noted, localized food waste management supporting local food production has the potential to support improved food access. Localized food waste management may also offer the opportunity to strengthen food waste management and local economies in rural areas where food waste collection services are less readily available.

Figure 4 illustrates the Materials Management Program’s understanding of the interactions within the food system and how the program plans to support work in the three main areas and lists areas of co-benefit where DEQ action may have positive impacts on those parts of the food system typically seen as outside of DEQ’s scope.



**Figure 4. Food system priority areas**

# Objectives

Taking a systems-based approach will enable the Materials Management Program to broaden its food impacts work in some important ways. As a consequence, the Program's formal strategic plan objective going forward is to:

---

## Reduce the life cycle impacts of food

---

This broader objective contrasts with the Program's earlier focus primarily on prevention to reduce impacts. It offers the opportunity for the program to engage in a wider range of activities and with a wider range of partners, and achieve greater environmental, social and health-related benefits in support of achieving the *2050 Vision* of an Oregon where materials are produced and used in a way that conserves resources, protects the environment, and enhances wellbeing. These benefits inform the Program's larger "operating principles" outlined below, which guide how the program prioritizes and plans interventions in support of this goal.

### ***What about prevention?***

Even with a broader objective around reducing food impacts, food waste reduction, particularly via prevention, remains a key supporting objective. DEQ shares the goal articulated in [United Nations Sustainability Goal 12.3](#), which calls for a halving of food waste at the retail and household level, and a reduction of food loss across the supply chain by 2030. This goal also has been adopted by U.S. EPA and many other organizations and government agencies and was adopted by Oregon in Governor Brown's Executive Order 20-04 in 2020. For continuity and consistency with partners in this work, the Materials Management Program continues to work toward this aspirational goal and will revisit it closer to 2030.

# Operating principles

The Materials Management Program also identified operating principles that will guide its food systems work going forward, and which are consistent with the *2050 Vision*'s considerations of



environmental, social and economic issues.<sup>16</sup> These principles will also inform activities in the Program's accompanying Food Systems Action Plan.

- **Wellbeing:** Food is essential to our wellbeing, and everyone needs food to survive and thrive. Unlike many other materials, we cannot simply stop producing it to reduce its environmental impacts. Food also is closely tied to our sense of ourselves as human beings –we use it to show friends and families we care for them, we derive comfort from food beyond sustenance, it can have cultural and religious significance, and it's often closely tied to our sense of our heritage, a link to family history. The Materials Management Program will use the principle of wellbeing and center the previous considerations as it implements interventions to reduce food impacts.
- **Equity:** There are clear equity issues around lack of access to food, but there also are equity issues embedded in how the benefits and burdens of the food system are distributed along the supply chain. As it works to reduce food impacts, the program will consider how benefits associated with its work are distributed and focus on approaches that facilitate more equitable outcomes for people and communities across the state.
- **Inclusion:** Inclusive decision-making offers many potential benefits – including underserved populations in decision-making provides Materials Management with a better understanding of how impacts of the food system are distributed and leads to better program and policy design by bringing in viewpoints and experiences that the program has not historically engaged with. Inviting communities into decision-making around food systems also empowers communities to direct how food issues are addressed in their localities in ways that support local ownership of food systems solutions.
- **Partnerships:** This food systems approach highlights the importance of co-creation to achieve DEQ's objectives. The complexities of the food system mean that there many roles the Materials Management Program can play, including leading, convening or supporting efforts of others in the food system in ways that benefit people in Oregon. The program will work to co-create solutions where possible or support existing solutions where appropriate.

## How we do the work

The Materials Management Program's active engagement with partners around the state during the systems mapping activity served to focus attention on values we want to guide our work going forward. The approaches listed below have deep ties to the program's core values as

---

<sup>16</sup> *Materials Management in Oregon 2050 Vision and Framework for Action*, December 6, 2012

expressed in the *2050 Vision* and reiterated in the *2020 Framework for Action*.<sup>17</sup> In its approach to reducing impacts across the food system, the Materials Management Program will:

**Rely on research-based and data-driven approaches** – the program is committed to data-driven solutions and understanding the lifecycle impacts of food, even when those solutions run counter to commonly held beliefs.

**Promote innovation** – the program has a history of innovation. As a strategy for food impacts work, the program will seek out and use new technologies, engage with new partners, and explore novel practices to enhance effectiveness. There are many new approaches and new ways of thinking about food and its impacts that exist within Oregon. The program is committed to ensuring that we remain open to new ideas that come from beyond our traditional partners.

**Build a collaborative strategy** – in keeping with the partnership principle highlighted above, the program will ensure that its approach to policy and program development is built on collaborative processes that bring partners into decision-making processes early and emphasizes transparency and clear communication with all partners.

**Promote information-sharing and build relationships** – the program will actively share information, engage with partners around the state and facilitate communication among those partners. The program will do this by developing processes (in person and virtual) and platforms that engage our partners, both with us, but also with each other. We will support the development of “communities of practice” among our partners with the objective of creating an environment of trust that facilitates work toward common food systems goals.

**Empower community engagement** – the program will support community leaders to have the resources they need to make informed, empowered local decisions about food systems. We will do this by building on information sharing discussed above, actively highlighting the work of our partners around Oregon, fostering specific partnerships (both within Oregon, but also bringing in outside partners where appropriate), and providing Materials Management staff resources and funding, especially where such support can strengthen underserved communities.

## Action plan

The priorities, principles and values articulated in the Strategic Plan are operationalized in the Action Plan. While the Strategic Plan defines overall policy priorities for the next ten years, the

---

<sup>17</sup> *Materials Management in Oregon 2020 Framework for Action*

Action Plan defines specific projects and activities that will be implemented over a shorter timeframe (three to five years) in support of policy and program priorities.

Consistent with the operating principles outlined above, Action Plan activities will apply the approaches described in the *How We Do the Work* section above. Projects in the Action Plan will be updated regularly based on:

- Evaluations of progress.
- Emerging areas – including responding to urgent needs like the COVID-19 pandemic, natural disasters, changes in economic conditions, and emerging environmental concerns.
- Emerging knowledge – new data or other information that supports changes in priorities.
- New opportunities resulting from new relationships and partnerships.

In addition to project specifics, the Action Plan includes more detail about specific processes DEQ will follow to renew activities over time.