

The Story and Highlights of Oregon's *2050 Vision for Materials Management*

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Outline of today's presentation

- Oregon's transition from "discards management" to "sustainable materials management"
 - What "sustainable materials management" really means
 - *Materials Management in Oregon: 2050 Vision and Framework for Action*
 - Initial implementation
- Oregon's consumption-based greenhouse gas emissions inventory
- Oregon's strategic plan for preventing the wasting of food
- Questions and discussion

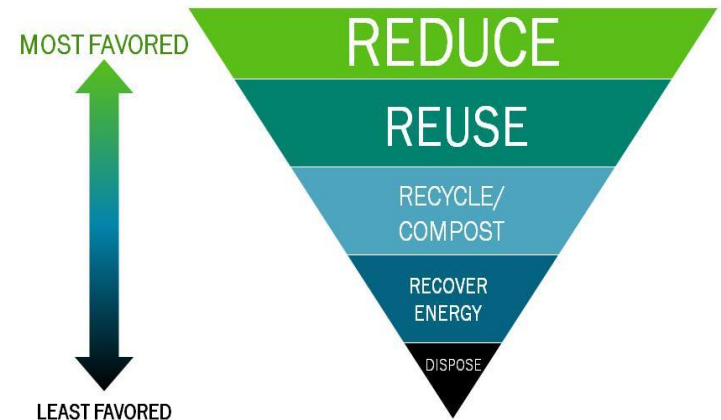
Oregon's Journey to Sustainable Materials Management



- Early years (1983 – 2010)
- Development of *Materials Management in Oregon: 2050 Vision and Framework for Action* (2011 – 2012)
- Development of initial implementing legislation (2013 – 2015)
- Initial implementation (2016 -)

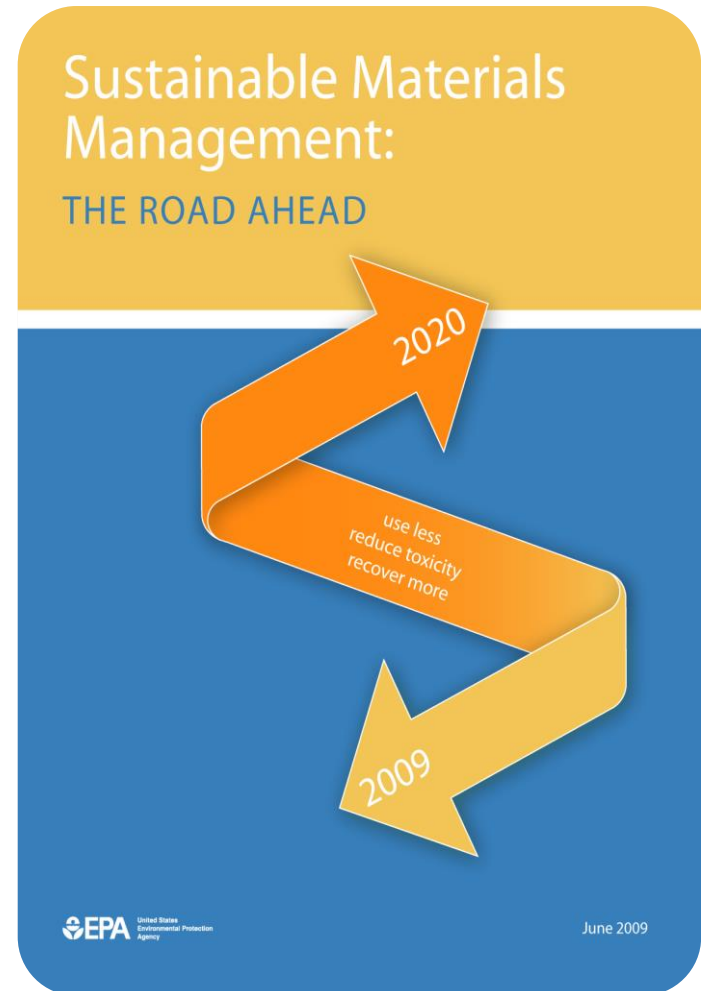
Early years (1983 – 2010)

- “Solid waste” hierarchy (1983)
- Lead agency: state Department of *Environmental Quality*
- Motivations: resource conservation, pollution reduction, not landfill avoidance



Early years (1983 – 2010), continued

- 1990s: great progress in recycling and composting
- 2001: new waste generation goal
- 2000's:
 - New focus on waste prevention
 - Life cycle assessments
 - Climate change






What is Sustainable Materials Management?

“An approach to serving human needs by using and reusing resources productively and sustainably throughout their life cycles, generally minimizing the amount of materials involved and all associated environmental impacts.” (US EPA)

Sustainable Materials Management: A “Life Cycle” View of Impacts and Actions



Example: Comparison of Coffee Packaging Systems (EPA)

Coffee Packaging (11.5 oz product)	Recyclable postconsumer?	Energy Consumption (MJ/11.5 oz.)	CO2 eq Emissions (lbs/11.5 oz)	MSW Waste Generated (lbs./ 100,000 oz. of product)
	Steel can – yes Plastic lid – no	4.21	0.33	1,305
	Plastic container – yes Plastic lid - no	5.18	0.17	847
	Flexible pouch - no	1.14	0.04	176

Oregon's 2050 Vision

Materials Management in Oregon

2050 Vision and Framework for Action

Adopted by the
Environmental Quality Commission
December 6, 2012



State of Oregon
Department of
Environmental
Quality

<http://www.oregon.gov/deq/LQ/Documents/SWdocs/MaterialsManagementinOregon.pdf>

<http://www.deq.state.or.us/lq/sw/materialsmgmtplanbkgrddocs.htm>

Oregon's *2050 Vision*

*Oregonians in 2050 produce and use materials responsibly
conserving resources • protecting the environment • living well*

Foundational Legislation (2015)

78th OREGON LEGISLATIVE ASSEMBLY--2015 Regular Session

Enrolled Senate Bill 245

Printed pursuant to Senate Interim Rule 213.28 by order of the President of the Senate in conformance with pre-session filing rules, indicating neither advocacy nor opposition on the part of the President (at the request of Governor John A. Kitzhaber, M.D., for Department of Environmental Quality)

CHAPTER

AN ACT

Relating to solid waste disposal fees; creating new provisions; amending ORS 459.235, 459.236, 459A.025, 459A.110 and 459A.120; and repealing ORS 459.112, 459.114 and 459A.115.

Be It Enacted by the People of the State of Oregon:

2016 FUNDING ADJUSTMENTS

SECTION 1. ORS 459.235, as amended by section 8 of this 2015 Act, is amended to read:

459.235. (1) Applications for permits shall be on forms prescribed by the Department of Environmental Quality. An application shall contain a description of the existing and proposed operation and the existing and proposed facilities at the site, with detailed plans and specifications for any facilities to be constructed. The application shall include a recommendation by each local government unit having jurisdiction and such other information the department deems necessary in order to determine whether the site and solid waste disposal facilities located [thereon] at the site and the operation will comply with applicable requirements.

(2) The Environmental Quality Commission shall establish a schedule of fees for disposal site permits. [The permit fees contained in the schedule shall be based on the anticipated cost of filing and investigating the application, of issuing or denying the requested permit and of an inspection program to determine compliance or noncompliance with the permit.] Consistent with the policies in ORS 459.015, moneys collected under this section shall be used to fund oversight activities related to solid waste disposal sites, including but not limited to policy development, permitting, inspecting, monitoring, enforcement, training, technical assistance, responding to complaints, rulemaking and any other activities that support the safe management of solid waste.

(3) In addition to the fees imposed under subsection (2) of this section, the commission shall establish a schedule of permit fees for the purpose of implementing this section and ORS 90.318, 182.375, 279A.125, 279A.155, 279B.025, 279B.240, 279B.270, 279B.280, 459.005, 459.015, 459.247, 459.418,

78th OREGON LEGISLATIVE ASSEMBLY--2015 Regular Session

Enrolled Senate Bill 263

Printed pursuant to Senate Interim Rule 213.28 by order of the President of the Senate in conformance with pre-session filing rules, indicating neither advocacy nor opposition on the part of the President (at the request of Governor John A. Kitzhaber, M.D., for Department of Environmental Quality)

CHAPTER

AN ACT

Relating to materials management of solid waste; creating new provisions; and amending ORS 459.055, 459.305, 459A.005, 459A.010, 459A.020, 459A.029, 459A.030, 459A.035 and 459A.050.

Be It Enacted by the People of the State of Oregon:

OPPORTUNITY TO RECYCLE: GOAL AND RECOVERY RATE UPDATES

SECTION 1. ORS 459A.005 is amended to read:

459A.005. (1) As used in ORS 459.015, 459.250 and 459A.005 to 459A.665, the "opportunity to recycle" means at least that the city, county or metropolitan service district responsible for solid waste management:

(a)(A) Provides a place for collecting source separated recyclable material located either at a disposal site or at another location more convenient to the population being served and, if a city has a population of 4,000 or more, collection at least once a month of source separated recyclable material from collection service customers within the city's urban growth boundary or, where applicable, within the urban growth boundary established by a metropolitan service district; or

(B) Provides an alternative method [which] that complies with rules of the Environmental Quality Commission; and

(b) Complies with the [rates and program elements required under ORS 459A.010] program element requirements described in section 5 of this 2015 Act.

(2) The "opportunity to recycle" defined in subsection (1) of this section also includes a public education and promotion program that:

(a) Gives notice to each person of the opportunity to recycle; and

(b) Encourages source separation of recyclable material.

SECTION 2. ORS 459A.005, as amended by section 1 of this 2015 Act, is amended to read:

459A.005. (1) As used in ORS 459.015, 459.250 and 459A.005 to 459A.665, the "opportunity to

2015 Legislation

- Strengthened DEQ's authority for full life cycle sustainable materials management
- Restored and stabilized long-term funding for DEQ's Materials Management Program
- Updated existing solid waste laws, including:
 - Expanded recycling and new waste prevention & reuse requirements
 - Changed statewide waste recovery and generation goals
 - Required changes in how Oregon counts recovery: from tons to environmental "outcomes"

Initial Implementation (2016 -)

- Continuing traditional solid waste and recycling work, plus . . .
 - . . . new “upstream” work such as:
 - Evaluating popular product attributes for their environmental impact
 - Co-creating a viable market for low-carbon concrete
 - Co-creating a climate-friendly purchasing toolkit for governments
- <https://westcoastclimateforum.com/cfpt>

West Coast Climate & Materials Management Forum

Climate Friendly Purchasing Toolkit

Harnessing the power of public purchasing to reduce Greenhouse Gas (GHG) Emissions

The Climate Friendly Purchasing Toolkit provides clear guidance, tested strategies, and critical resources for governments at all levels to reduce the GHG emissions through their supply chain.

GHG Emissions from Public Institutions

PURCHASING 55% OPERATIONS 45%

Getting Started

An organization's purchasing can account for 35-55% of its total GHG emissions!

Use this toolkit to lower the greenhouse gas emissions from the purchases of your public institution. The toolkit was developed to help government target their efforts on the most significant GHG emissions in their institution's supply chain or the production of goods and services. You can learn from the efforts of other organizations to help identify high-impact categories, or you can conduct your own survey. This toolkit also provides guidance on specific purchasing strategies on how to reduce an organization's carbon footprint.

Targeting Tools

To help government target their efforts on the most significant GHG emissions in the supply chain.

- How to complete a supply chain GHG inventory**
This detailed primer shows how to complete purchasing data and provides a checklist to gain a complete picture of GHG emissions in your organization's specific supply chain.
- Trends Analysis**
Instructions are provided on how to use the data from trends analysis to target GHG reductions. It is a compilation of more than 40 supply chain GHG inventories, purchase or organization tool, size, and total supply chain budget.

Sector-specific strategies

Each module includes background on how the sector contributes to GHG emissions, and guidance on specific purchasing strategies to reduce GHG emissions.

- Carpets & Flooring**
- Construction: Asphalt, Concrete, and More**
- Diesel Fuels**
- Food**
- Information and Communication Technology (ICT)**
- Professional Services**

Related Resources

- Purchasing Resources**
Including model and sample specifications, evaluation criteria, contract language, and vendor qualifications.
- Case Studies**
Real world experiences from organizations of all sizes.
- Measurement Tools**
Approaches for measuring and tracking GHG reductions in the supply chain and results from purchasing changes.

Initial Implementation (2016 -), continued

- Additional “upstream” work:
 - Supporting a sustainable consumption toolkit for cities:
<http://sustainableconsumption.usdn.org/>
 - Summarizing existing academic/scientific literature on the environmental impacts of foods
 - Growing the market for space efficient housing
 - Advancing reuse and repair
 - And more!

Questions?



Consumption-Based Greenhouse Gas Emissions Inventory

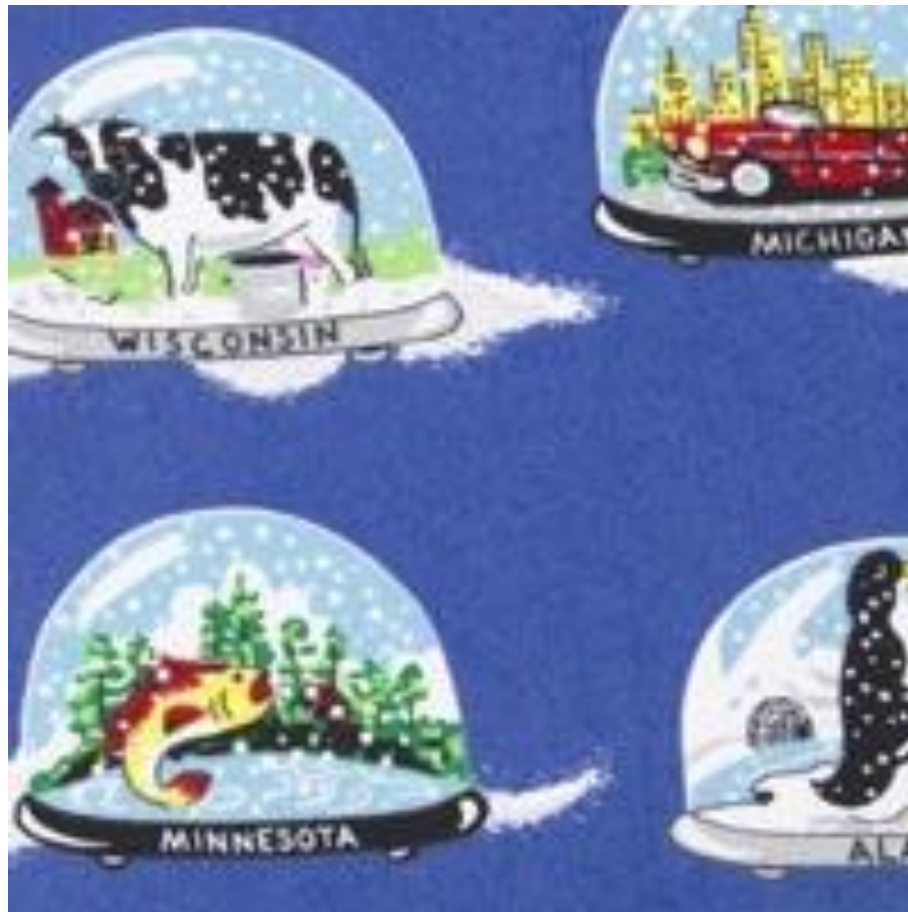


Common uses of community-scale greenhouse gas (GHG) inventories

- Establish a baseline and measure progress towards climate change goals
- Identify sources of emissions that the community can influence, identify trends in those emissions, and inform related efforts
 - Support climate related projects, programs, planning efforts
 - Provide data and tools to community partners (e.g. cities, community groups, businesses, individuals)
 - Inform development of emissions reduction policy and targets
- Communicate all of the above to policy-makers and the public



Traditional, in-boundary inventories



Limitations of the (modified) “snow globe”

- Provides an incomplete perspective of how communities contribute to emissions . . .
 - . . . and by extension, opportunities to reduce emissions
 - Particularly acute for materials!
- Appears to penalize local production, reward outsourcing (“leakage”)
- May lead to sub-optimal decisions (e.g., discontinue recycling)
- Alone, may provide misleading signals of change over time

Local consumption, global production



Der Spiegel, The Global Toothbrush, 01/31/2006

<http://www.spiegel.de/international/spiegel/0,1518,398229,00.html>

Consumption-based emissions inventories

- GHG emissions resulting from *consumption*
 - “Consumption” is typically defined in economic terms (purchases by “consumers” = households, government, business capital formation)
 - Consumption = a “root driver” of emissions
 - Emissions are life-cycle emissions and globally distributed
 - “Life-cycle” = Supply chain/Production + Use + Disposal
 - Includes, but not limited to, materials
 - Includes all fuels, electricity, materials and services “consumed” by the community

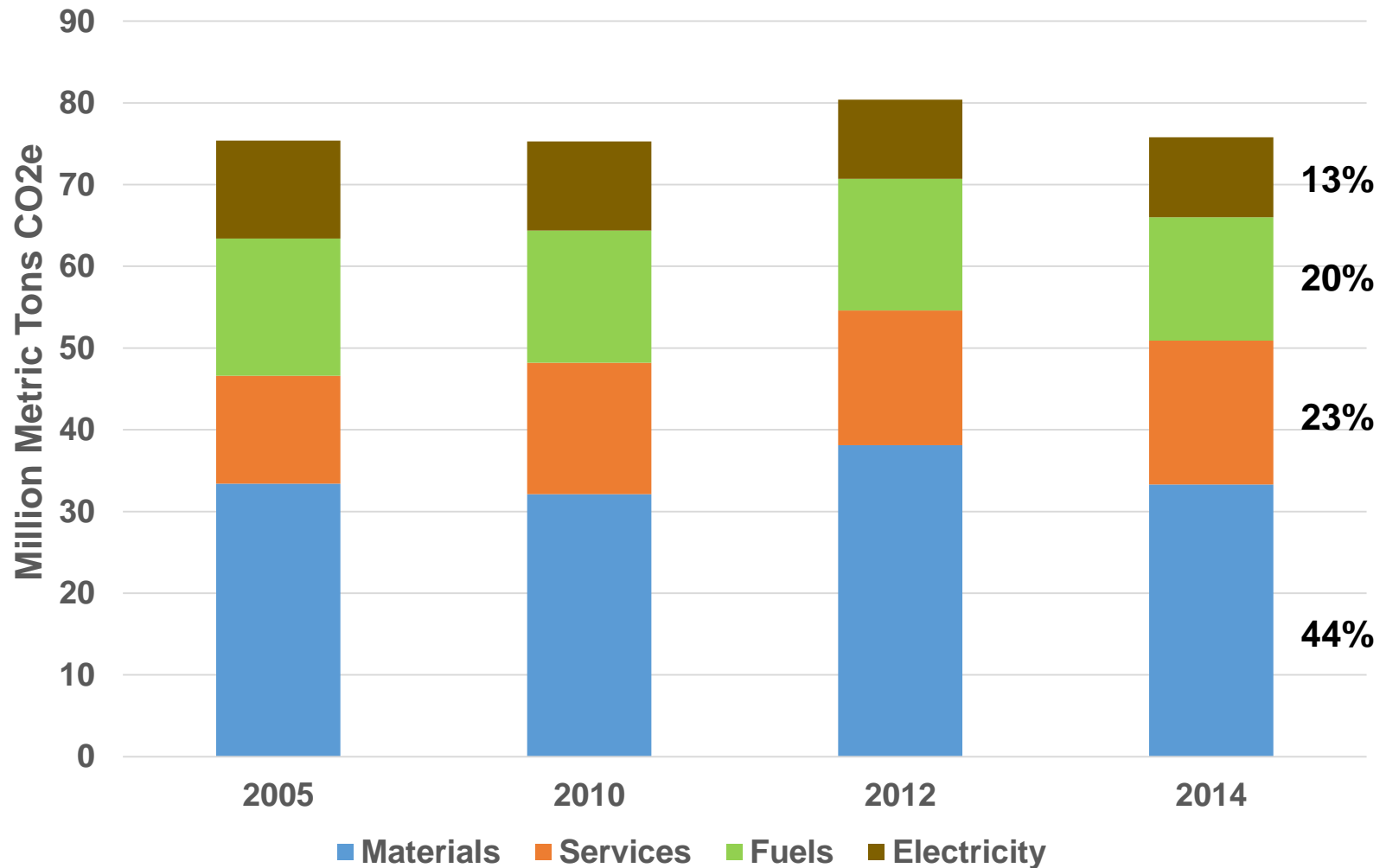
DEQ reports at

<http://www.deq.state.or.us/lq/consumptionbasedghg.htm>

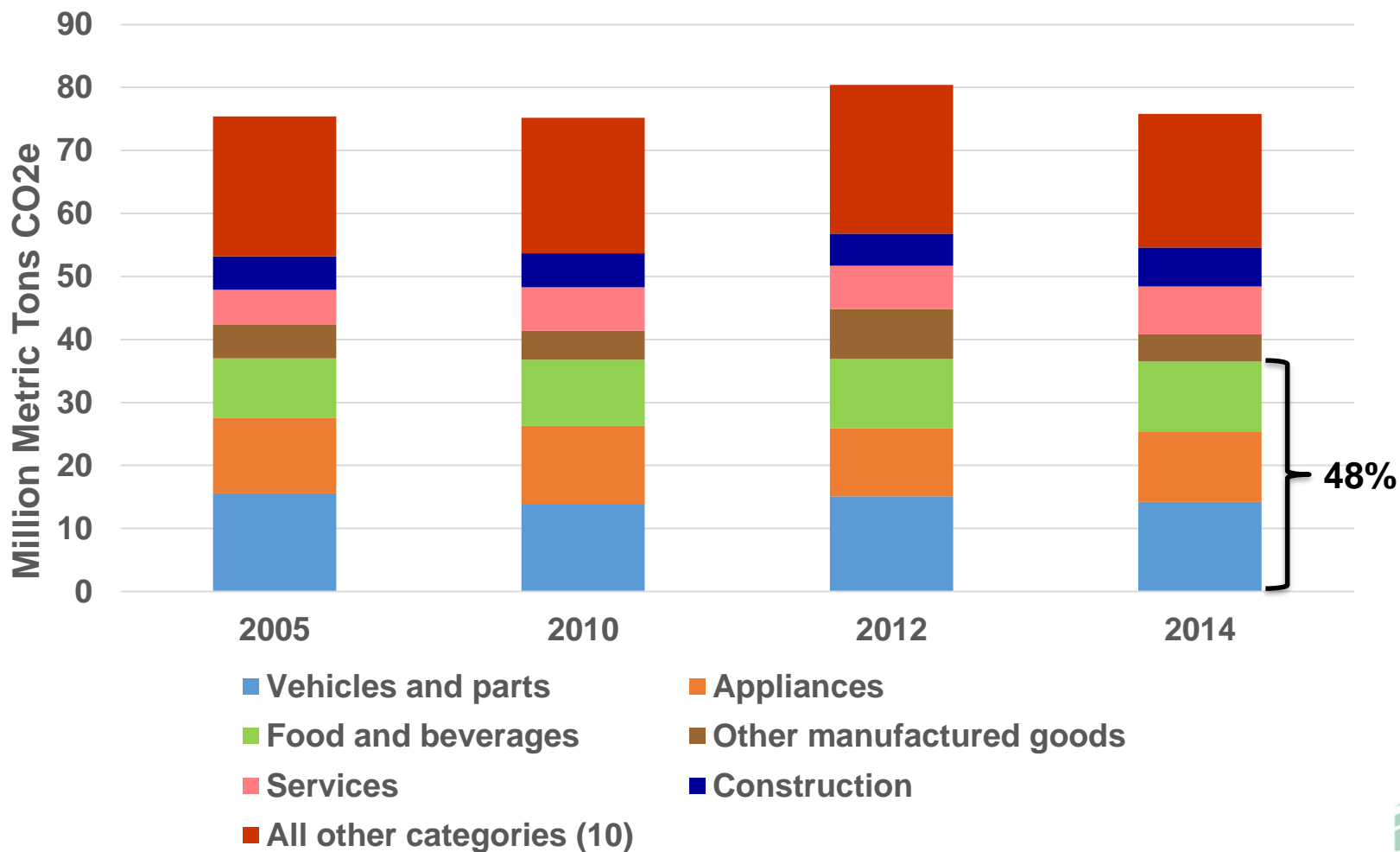
U.S. communities with consumption-based GHG emissions inventories

- State of Oregon
- City of San Francisco
- King County, Washington
- City of Portland, OR
- City of Eugene, OR
- Bay Area Air Quality Management District (~114 cities)
- State of Minnesota (in process)
- C40 member cities (in process)

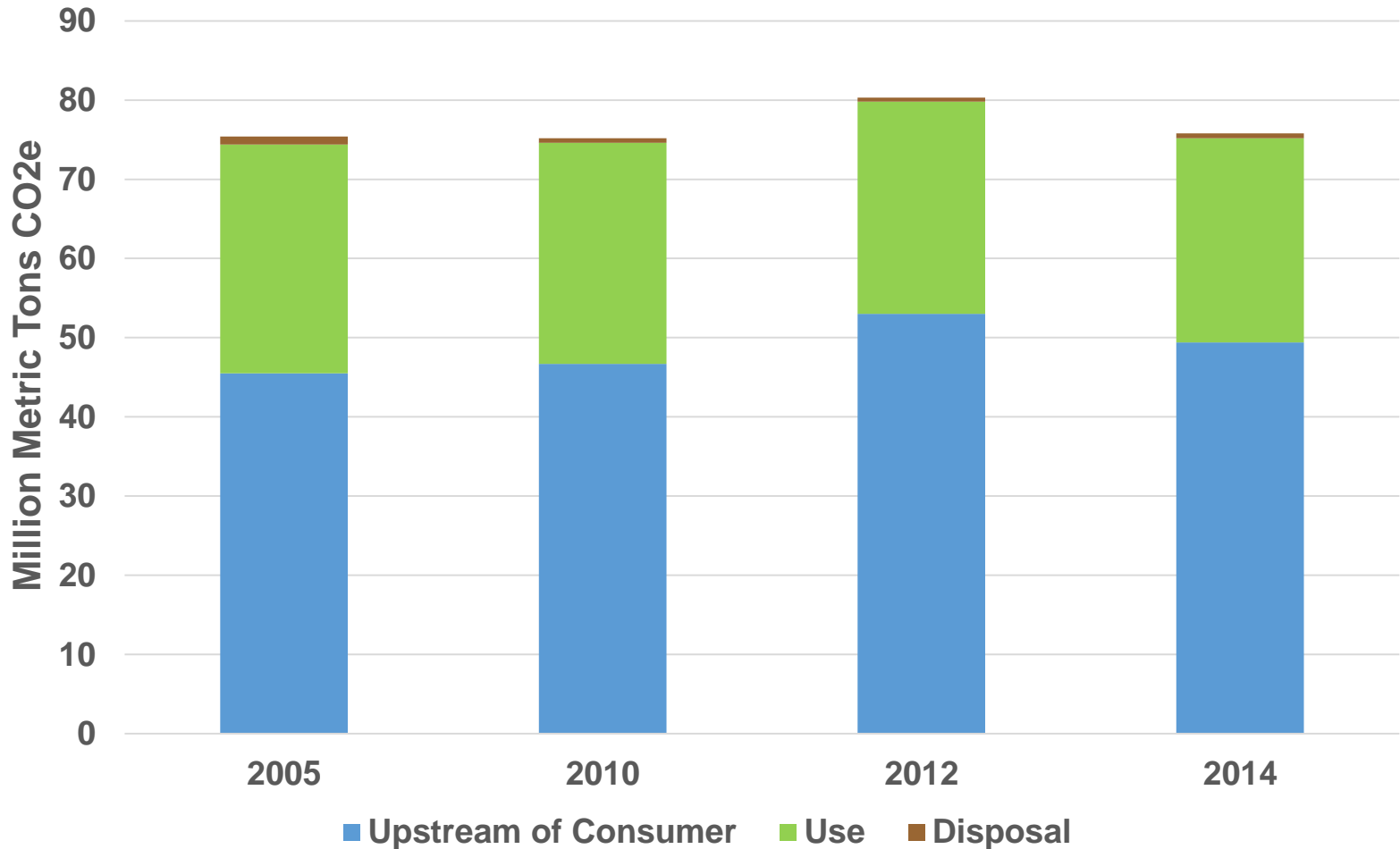
Oregon Consumption-Based Greenhouse Gas Emissions, by Type of Consumption



Oregon Consumption-Based Greenhouse Gas Emissions by 16 Major Category of Consumption



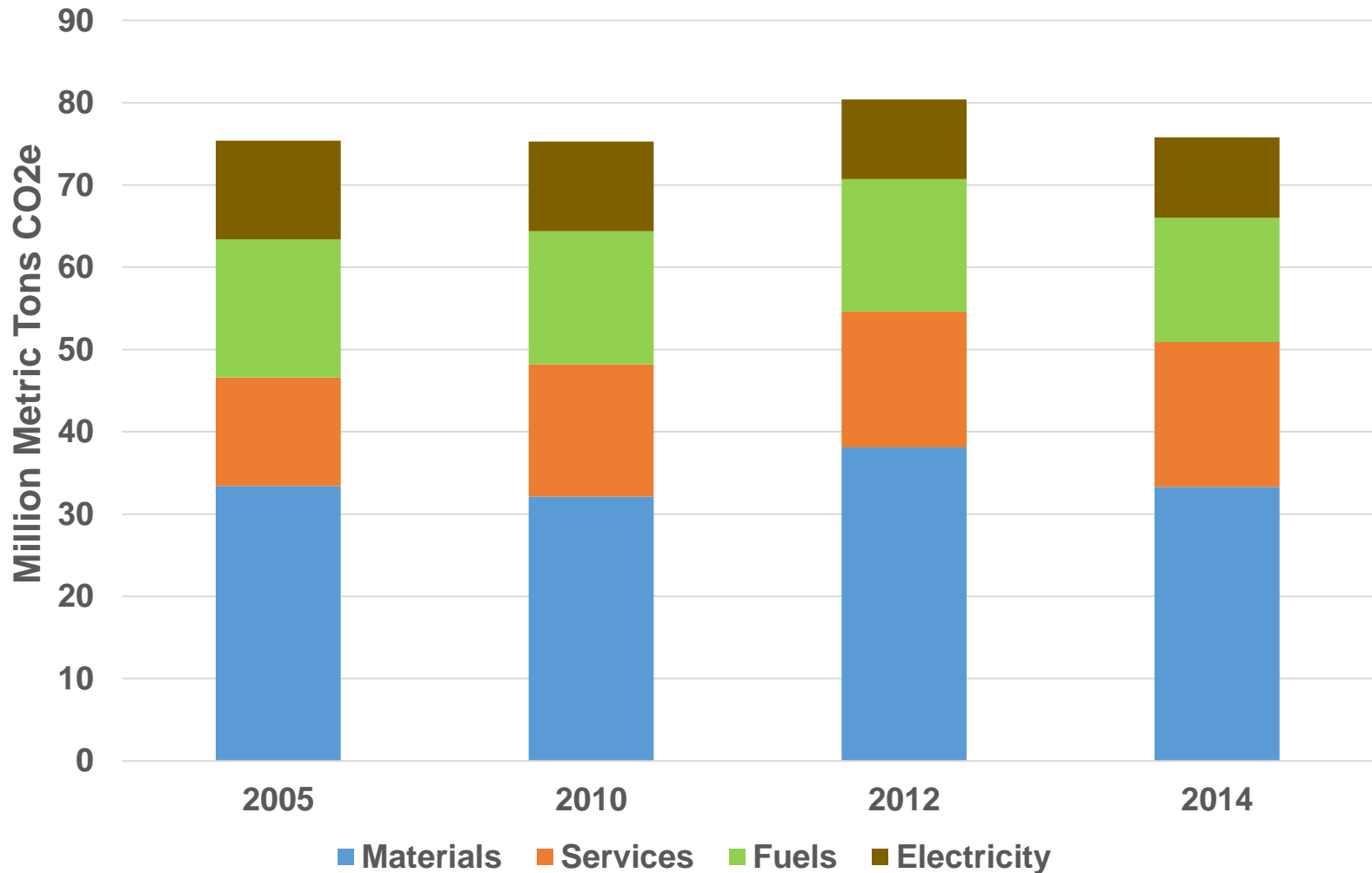
Oregon Consumption-Based Greenhouse Gas Emissions by Life-Cycle Stage



Emissions intensities

Final Demand	Average LCA Emissions Intensities (kg CO ₂ e/2010\$)
Materials	0.5
Electricity	7.2
Fuel	3.8
Services	0.1 - 0.2

Oregon Consumption-Based Greenhouse Gas Emissions, by Type of Consumption



Emissions intensities

Final Demand	Average LCA Emissions Intensities (kg CO ₂ e/2010\$)
Materials	0.5
Electricity	7.2
Fuel	3.8
Services	0.1 - 0.2

More emissions intensities

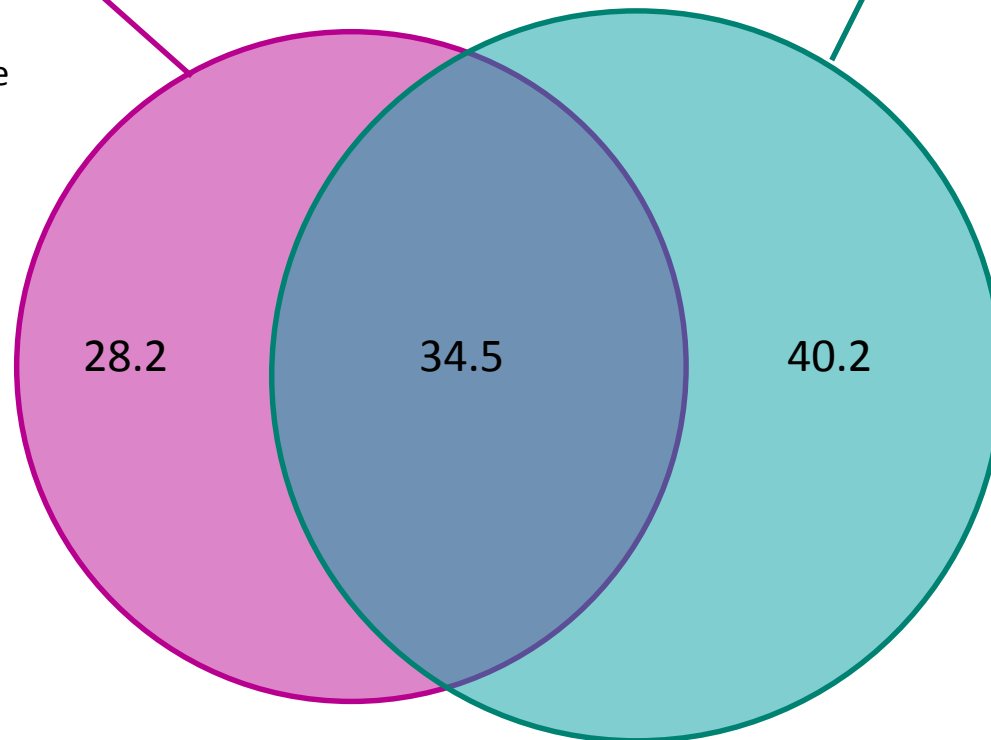
Categories	LCA Pre-purchase Emissions Intensities (kg CO ₂ e/2010\$)
Transportation services	1.6
Clothing	1.0
Food and beverages	0.8
Appliances	0.6
Construction	0.5
Furnishings and supplies	0.4
Electronics	0.3
Services	0.2

Oregon Emissions Inventories Compared (2010*)

“In-boundary” inventory
62.8 MMTCO₂e

Includes emissions associated with the use of electricity

Consumption-based inventory
74.7 MMTCO₂e



Total 2010 Emissions: 102.9 MMTCO₂e

*As published in 2013, before 2015 revisions

Potential uses of the consumption-based inventory

- ID “hot spots” (high emissions, high intensities)
 - Hot spots → potential focus areas
 - Inform design of programs
- Communication to consumers
- Research
- Enhance credibility of the larger inventory and climate action planning
- Government purchasing
- Track change over time?

Integration

Oregon's Greenhouse Gas Emissions Through 2010: In-Boundary, Consumption-Based and Expanded Transportation Sector Inventories

The following agencies collaborated on this technical report:
Oregon Department of Environmental Quality
Oregon Department of Energy
Oregon Department of Transportation

July 18, 2013



Consumption-based GHG inventories: concluding thoughts

- Both inventories (in-boundary, consumption) offer unique perspectives on how states contribute to emissions . . .
 - . . . and opportunities to reduce them.
- Consumption-based inventories are not a substitute for in-boundary inventories (and *vice versa*) . . . but do lead states (and others) to a wider range of options
- Greenhouse gases are a global pollutant – ignoring trans-boundary emissions tells an incomplete story of our shared responsibility
- Consumption is particularly important as the *root driver* of emissions
- Consumption-based inventories, policies and programs are (mostly) relatively young fields



Questions?



Preventing Wasting of Food



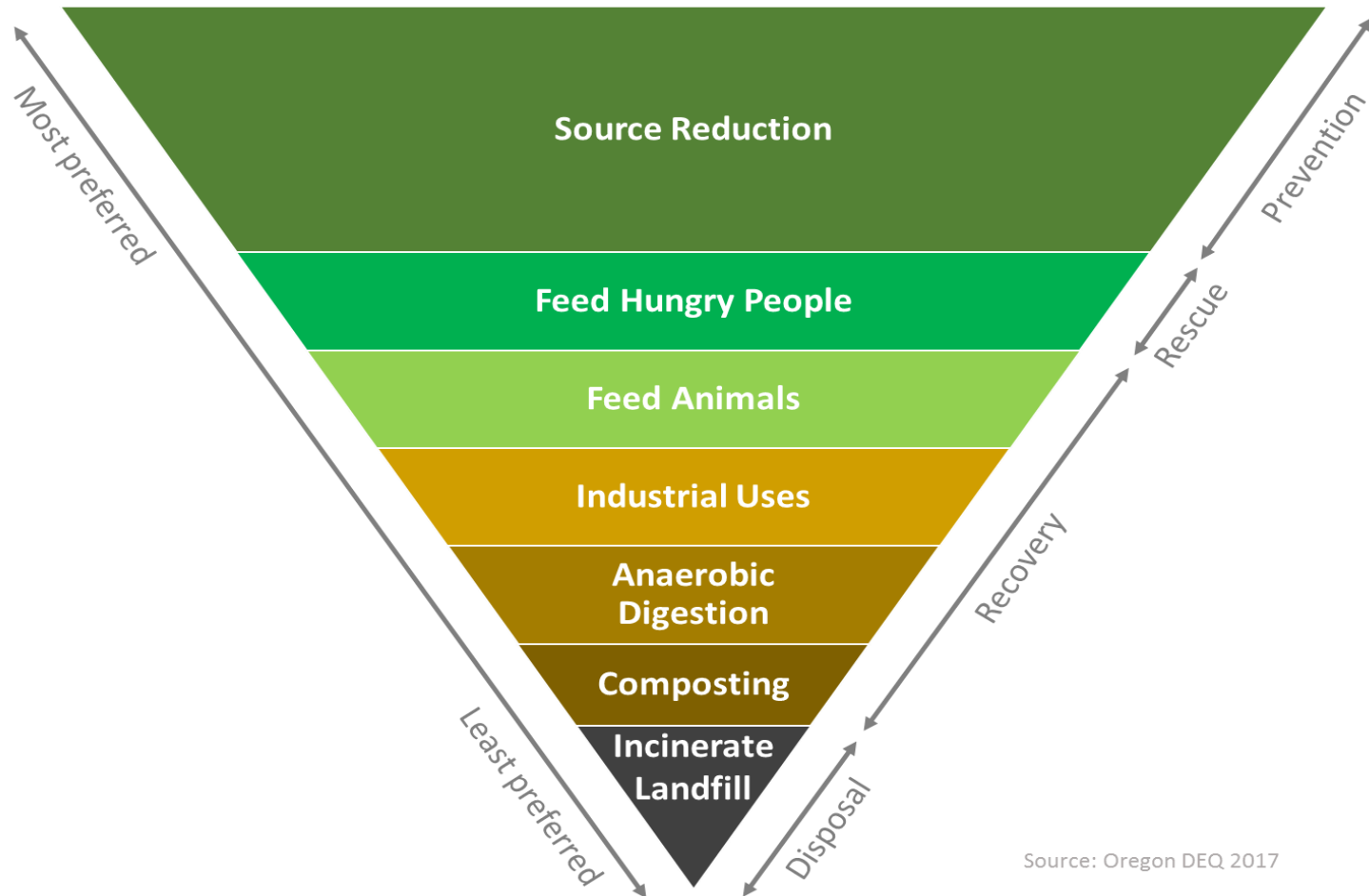
A State of Wasted Food

- As much as 40% of food produced in or imported into the US is wasted.
- If that food were grown on one farm, that farm would be larger than the State of New Mexico



The Hierarchy

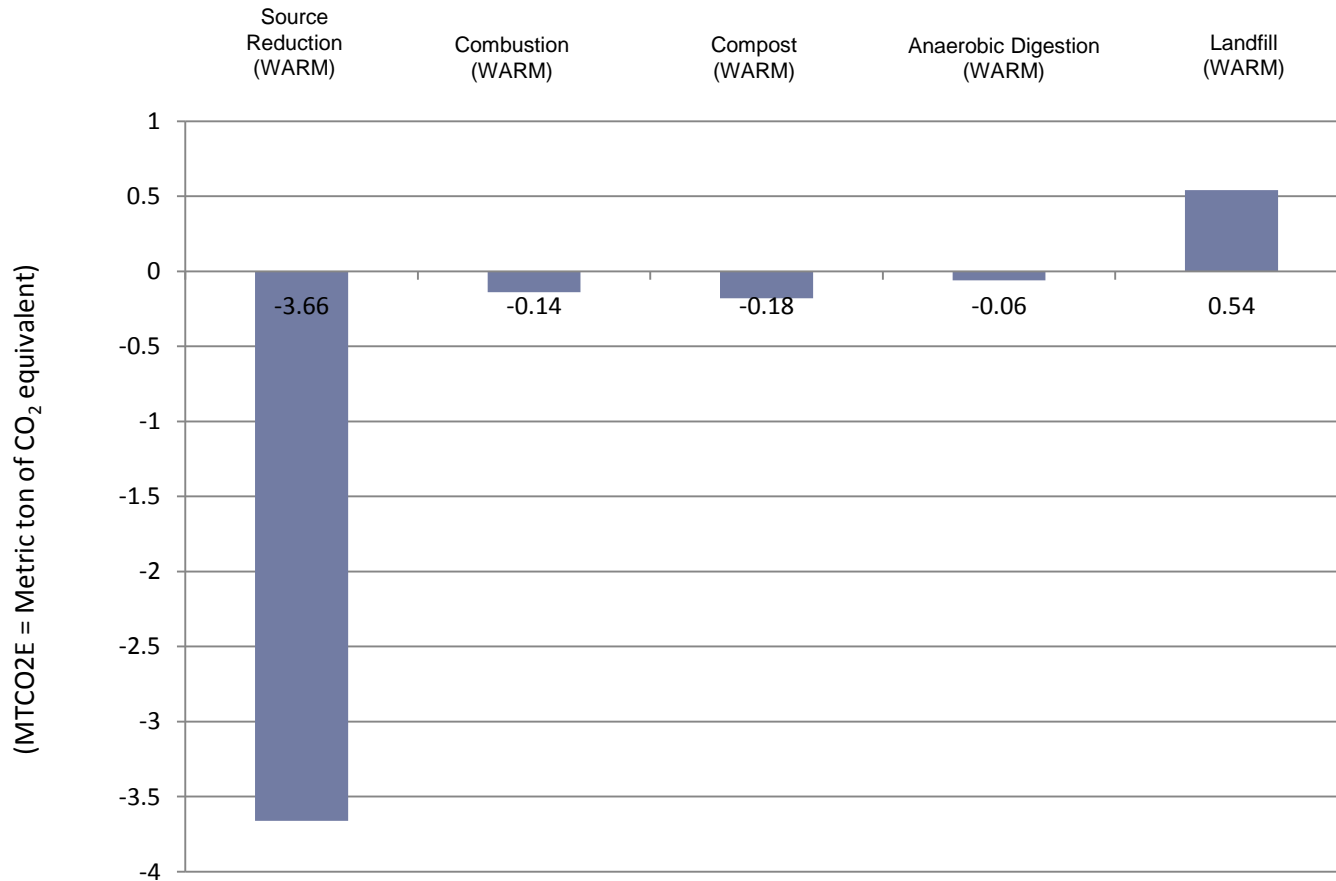
Wasted Food Hierarchy



Source: Oregon DEQ 2017

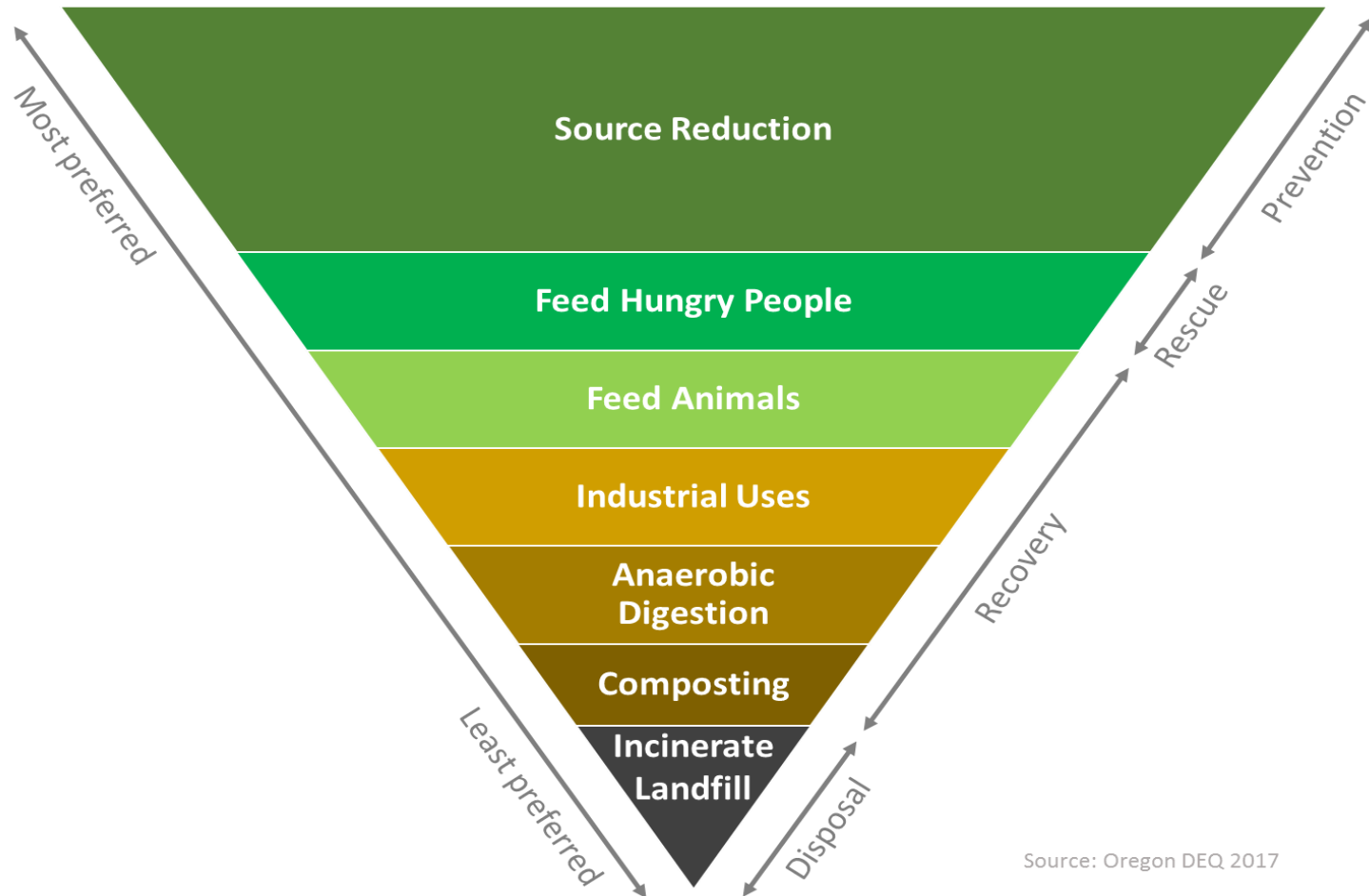
Upstream Impacts

Wasted Food Reduction Activities (MTCO₂E/ton)



Back to the Hierarchy

Wasted Food Hierarchy



Source: Oregon DEQ 2017

What's wrong with this picture?

Food Waste



All food waste and coffee grounds

 No compostable products, cardboard, waxed paper, liquids, grease, cooking oil, plastic, metal, glass, yard debris, wood

www.w[redacted]com/oregon
1-800-888-5004

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

- Nine priority projects for the next 5 years
- Several focus on foundational research
 - Measurement study
 - Messaging research
 - Food Rescue research
 - Research related to date labeling
 - Analysis of prevention practices
 - Research comparing prevention, donation, and recovery option
 - Research on the economics of food waste reduction
 - A study of packaging impacts

Oregon's Strategic Plan

- Other projects ground test approaches or fill a clear need, building on research
 - Commercial best practices
 - Consumer and commercial campaigns
 - School kitchen strategies pilot
- Others build on and strengthen partnerships within our state and region
 - Master recycler curriculum revisions
 - Additions to Outdoor School curriculum
 - Work with the Pacific Coast Collaborative

Where we want to be



Questions?



Thank you

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