



HANDBOOK

Inspire Change in Your Community

Master Recyclers are a volunteer corps who inspire neighbors and coworkers into action

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PARTNERS | THE MASTER RECYCLER PROGRAM IS BROUGHT TO YOU BY:



Department of Environmental Quality
Waste-Free Advocates

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Fifteen committees of content experts, local jurisdictions, community partners and Master Recyclers informed and reviewed content and provided images. Each and every contributor demonstrated their belief that Master Recyclers have the power to inspire change.

*This handbook is truly a community effort and we all hope that you will enjoy it!
May you put it to good use, first in the Master Recycler course and then in outreach projects in
communities throughout the Portland metro region.*

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GLOSSARY

INTRODUCTION TO THIS HANDBOOK

Welcome to the Master Recycler Handbook and Program! The Master Recycler Program aims to bridge the gap between awareness and action by motivating people to consume sustainably in their homes and workplaces. The program stresses education and outreach and is informed by behavior change theory. Master Recyclers are key agents of change, working with communities throughout the Metro region.

This Handbook you are holding is yours to keep. It is an essential resource to you as a Master Recycler and it incorporates contributions from key professionals and community leaders as well as fellow Master Recyclers.

The Handbook has a number of objectives, including:

- Provide current and relevant information.
- Reinforce key messages for outreach and education.
- Provide resources for outreach and education.
 - Supplemental reading options.
 - Ideas for connecting to community efforts.
- Improve outreach and education skills.
- Motivate continued commitment and action.

Each week of the class, the Master Recycler Program Manager will announce the week's reading assignments. You will gain more from your course experience if you complete this reading on time.

Once you've completed the course, this Handbook will be a reference tool to help you develop outreach and education projects. Whether you staff an information table, give a presentation, or work on a personal project, the Handbook supplies key messages and facts, common vocabulary used in the field, and resources available to you, including literature and demonstration kits.



The Handbook is divided into four topic areas



1. **Systems.** The first seven chapters describe major systems so that you can understand the context of processes and messages. It introduces the concept of materials management (from extraction to end of life) and how materials relate to climate change, sustainable consumption and equity. This section also explores behavior change theory, which will be important throughout the course.



2. **Our Lives.** Once we have explored the bigger picture, the next five chapters will put these concepts in the context of our homes, workplaces and community gathering places. You will explore resources and learn how to implement easy and practical changes that can have significant impacts.



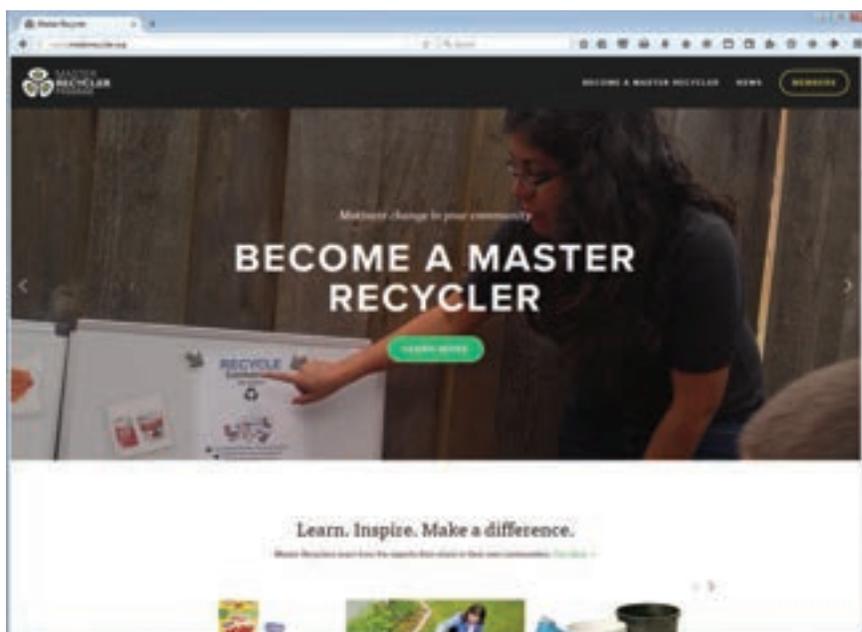
3. **Special Considerations.** Some materials are worth a closer look because they have greater environmental and social impacts, because they pose more difficult challenges, or because there are special opportunities for positive change. These four chapters focus on toxics, food, electronics and buildings.



4. **Volunteering.** The magic of the Master Recycler Program is that you will be sharing the information you learn in the community. The final section of six chapters connects you to resources and builds skills to help you be the most effective outreach and education volunteer possible.



- G **Glossary of terms.**



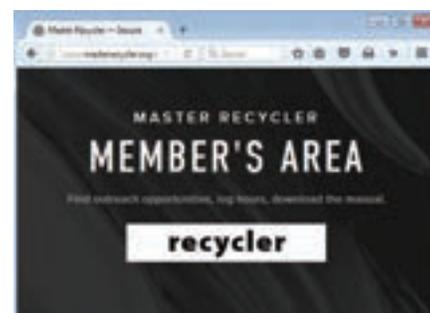
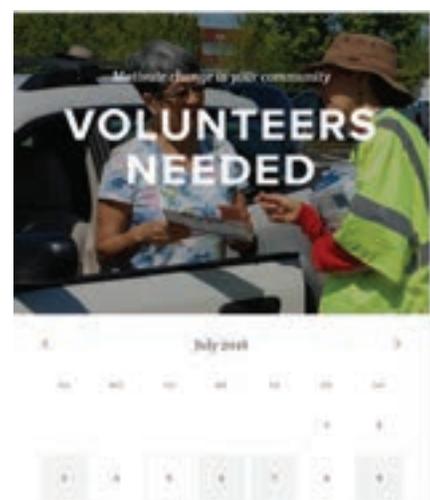
Keep your handbook current.

This handbook is current on the day that you receive it. Once a year, the handbook will be updated. To give you the opportunity to keep your handbook current, update packets will be posted to the members section of the website. The packets will include only the updated pages which you may print and replace in your binder.

MASTER RECYCLER ELECTRONIC TOOLS

- A monthly newsletter will be sent to you by email to keep you informed and connect you with events and new resources.
- You are encouraged to follow www.facebook.com/masterrecyclers.
- There are several Facebook groups you can join as well: The Official Portland Area Master Recyclers, Eastside Master Recyclers, Master Recyclers of Color and Westside Master Recyclers.
- You will find these resources in the Members section of www.masterrecycler.org:
 - A volunteer opportunity calendar
 - Volunteer hours report form
 - Past newsletters with informational articles
 - A list of brochures, literature, and demonstration kits you can use
 - A job seekers board
 - Presentations from class
 - Update packets for your handbook

Master Recycler Members Section Password is “recycler”.



To access the members section of the website, enter “recycler” as the password

INTRODUCTION TO THE MASTER RECYCLER PROGRAM

Most people know they should reduce, reuse and recycle to protect the environment. But people don't always act in accordance with what they know! In fact, research demonstrates that just giving people information has little or no effect on what they do. If brochures won't change behavior, what will?

Research shows that personal contact, when paired with specific information about how to reduce waste, is a powerful way to inspire action. Master Recyclers bridge the gap between awareness and action by motivating people to consume sustainably in their homes and workplaces.

You are about to embark on an exciting adventure that will impact the way people think about consumption and waste. After taking the course, Master Recyclers make personal contacts and work to encourage sustainable consumption throughout the community.

Master Recycler Program Mission:

Bridging the gap between awareness and action by motivating people to consume sustainably in their homes and workplaces.

History of Master Recycler program

In 1990, Jeanne Roy, Chair of Recycling Advocates (now Waste-Free Advocates), read an article about a Master Recycler in Seattle who held compost parties at her home. Jeanne was captivated by the idea of individuals using their own knowledge of waste reduction practices to influence their peers. She drove to Seattle to visit King County's Master Recycler program compost demonstration site. She proposed Recycling Advocates develop a program here.

Recycling Advocates agreed and formed a committee. Fortunately, Seattle shared its Manual and curriculum outline for Portland to adapt. OSU Energy Extension Program joined as a partner to help develop and administer the program.

When the OSU Extension Service experienced budget cuts in 2003, the City of Portland Bureau of Planning and Sustainability agreed to administer the program, while Metro, and Clackamas and Washington Counties committed to contribute funding.

After 18 years, the City of Portland passed the duties of administering the Master Recycler Program to Metro to better reflect the full community it serves and provide more sustainable resources.

Master Recycler partners

The Master Recycler Program is supported by community partners committed to resource conservation in the Portland Metro area. Metro administers the program and employs the Program Manager.

The program's founding partners are:

Metro, our regional government, manages garbage disposal and recycling for 1.7 million residents in three counties and 25 cities in the Portland region.

City of Portland Bureau of Planning and Sustainability (BPS) takes action to shape the future of Portland and advance climate protection for a more prosperous, healthy, equitable and resilient city now and for future generations.

Clackamas County's Sustainability & Solid Waste Program provides education and technical assistance to residents, businesses and workplaces, schools, and events throughout Clackamas County so the community can reduce waste, conserve resources, recycle effectively, and adopt more sustainable practices. The County also oversees garbage and recycling services provided by collection companies in unincorporated areas of the county to ensure residents and businesses receive timely service at a reasonable cost.

Washington County Solid Waste and Recycling oversees the collection and transportation of waste, yard debris and recyclables in the unincorporated county area and regulates one dry waste landfill and one compost facility. Additionally, Washington County delivers waste reduction and recycling education to residents on behalf of the 10 cities that make up the Washington County Cooperative Recycling Program.

Oregon Department of Environmental Quality (DEQ) helps consumers and industry make more sustainable choices. DEQ sets goals and monitors the management of materials, including the production, consumption and recovery of materials.

Waste-Free Advocates (formerly Recycling Advocates) empowers and connects Oregon communities to minimize over-consumption and waste..

Master Recycler community outreach

Master Recycler participants receive training on waste reduction and outreach. In return, course graduates commit to at least 30 hours of community education and outreach.



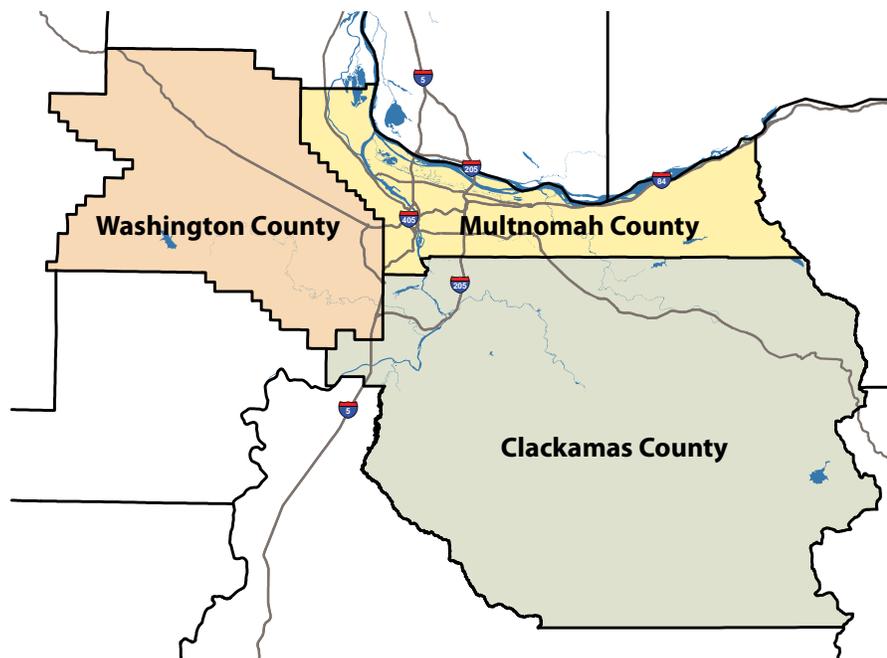
Kelly explains plastics recycling in North Portland

Master Recyclers serve their neighbors throughout the Metro region (Clackamas, Washington and Multnomah Counties). With about 2,000 graduates, 80,000 volunteer hours have been devoted to the one-on-one contact necessary to drive behavior change. Through this sort of work, individual behavior change can quickly scale and lead to changes in community norms.

When you volunteered to become a Master Recycler, you made a commitment to fulfill this goal by volunteering 30 hours that will 1) implement a system or program that eliminates or diverts materials from the waste stream, and/or 2) provide direct community contact to educate and inspire people to practice waste reduction.

Volunteer activities may include individual projects created by you and/or fellow classmates and approved by the Program Manager. Or they may be organized by the Program Manager working with other volunteers and local educational and solid waste programs.

Most graduates do some of both. However you choose to participate in the program, your contributions will be an important part of a larger movement to protect our natural resources in the region. We hope you enjoy the course and even more that you enjoy your subsequent volunteer work. **Thanks!**



Metro area Master Recyclers volunteer hours count when they take place anywhere in the tri-county area (Washington, Multnomah and Clackamas)

SECTION 1: SYSTEMS

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1. **Materials Management**
 2. **Climate and Materials**
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 4. **Equity and Materials**
 5. **Discards: Solid Waste and Recovery Systems**
 6. **Recovery Markets**
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Understand the decisions we make about materials in our daily lives in the context of the global economy, social structures and human psychology.

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CHAPTER 1 MATERIALS MANAGEMENT

INTRODUCTION

Oregon's Vision

Imagine a day when Oregonians live well and prosperously, producing and using materials responsibly, conserving resources, and protecting the environment. Imagine a day when we recognize that the earth's resources are finite, and we begin living within those limits, ensuring that future generations have the same opportunities as we do.

Is such a future impossible or possible only with tremendous sacrifices? The short answer is no. We are in the midst of an important transformation with respect to how we think about and manage materials. This transformation will have its challenges, to be sure, but it is possible and economical given current technology and systems. Proper **materials management** will enable a future in which we all live sustainably and well, responsibly using and managing all the materials we depend on.

The Department of Environmental Quality (DEQ), Oregon's regulatory agency responsible for protecting our environment, convened a diverse group of stakeholders that resulted in the adoption in 2012 of a vision and framework for rethinking waste and discards. Their report, *Materials Management in Oregon: 2050 Vision and Framework for Action*, lays out four key transformations:

1. Recognizing that Earth's resources are finite, Oregonians live within the limits of our sustainable share of the world's natural resources.
2. We take into account the full impacts of materials throughout their life cycle.
3. We use renewable resources at levels that can be sustained in perpetuity while maintaining the resiliency of natural systems.
4. All Oregonians have access to the knowledge, capabilities, resources and services required to use materials responsibly.

We have done the impossible before!

Carbon emissions in Multnomah County are



25% lower

than they were in 1990.

TERM

Materials management: *the use of materials based on the environmental and social impacts associated with the materials across their entire life cycle. (EPA)*



Learn more about materials management at DEQ's website.

TERM

Paradigm shift: *an important change that happens when the usual way of thinking about or doing something is replaced by a new and different way.*

These aspirational statements were collaboratively generated by businesses, non-profits and local governments from all over the state. The stakeholders worked together to identify current challenges and create a compelling vision for the future. Many of the environmental challenges facing Oregon and the world, such as pollution and greenhouse gas emissions, are related to how materials are produced, used and managed. In DEQ's long-term vision:

- Producers make products sustainably, so every option is a sustainable option.
- People live well and consume sustainably.
- Materials have the most useful life possible before and after discard.

In June 2015, the Oregon Legislature passed SB 263 and SB 245, which will turn our state and cities towards a robust implementation of the 2050 Vision. They provide goals, requirements and a revenue stream to help make the vision a reality. In June 2021, they furthered this commitment with SB 582 which required that producers of certain products help with the financing of some of these goals.

In the rest of this chapter we'll more fully explore this **paradigm shift** from discards management to materials management, outlining key stages in the life cycle of materials and their environmental and social impacts. We will explore how Oregon law will alter how we measure and prioritize practices to meet this Vision. We'll also begin to lay out how you as a Master Recycler might play an important role in this shift.

WHAT IS MATERIALS MANAGEMENT?

Materials management takes a holistic view of environmental and social impacts across the full life cycle of materials as they move through the economy and around the world. We can use materials management to identify actions needed to reduce negative impacts. Materials management includes the analysis and management of all of the steps it takes to make products.

The steps in the life cycle of materials typically include:

- Extraction
- Manufacturing
- Transportation
- Use
- Discard (reuse, compost, recycle and energy extraction)

MATERIALS MANAGEMENT LIFE CYCLE



This Materials Management image shows the cycle of materials from extraction to disposal (or recovery).

Materials management recognizes that there are environmental, economic, and social impacts in each and every stage of the life cycle of the material. Trees, minerals, water and food are gathered to make products. Oil, natural gas, water, wind, the sun and wood are used for energy for transportation, manufacturing and during the use phase. Waste is generated during just about every stage in the form of water and air pollution, carbon emissions and solid waste.

Each stage along the life cycle also has economic impacts (negative and positive). Workers extract, transport, design, manufacture, recycle, and reuse materials sometimes at a living wage, sometimes as slaves. Corporations produce the products made from raw materials. The recycling and reuse industry mines discarded materials for reuse.

Materials also affect our social wellbeing and health. People who work in and live near mines, factories and landfills can face health risks. Americans often report feeling overwhelmed by having to gather, store and maintain all our stuff. But materials make up the products that meet basic human needs such as food, medicine, clothes and shelter. Materials also enable human creativity from music and art to the sharing of ideas on the Internet and in books.

CREDIT

Much of the language and ideas in the next three sections come from a presentation by David Allaway, Senior Policy Analyst in the Materials Management Program of Oregon's Department of Environmental Quality (DEQ). David coordinates DEQ's Waste Prevention Strategy and has contributed to several projects involving life-cycle analyses, including e-commerce packaging, water delivery systems, residential construction, end-of-life management of paint, community-scale recycling, and an economy-wide carbon footprint for all consumption in Oregon. David co-leads the Inventory Workgroup of the West Coast Forum on Climate and Materials Management and was an invited member of the Steering Committee of Walmart's Packaging Sustainable Value Network. David is also on the Master Recycler Advisory Committee.

MATERIALS MATTER

Materials matter, and our current use of materials is deeply unsustainable. The extraction, transportation, use and discarding of materials produce significant negative environmental impacts and have social and economic costs.

By looking at the full life cycle of materials, we can begin to understand the magnitude of their impacts.



Extraction: The products that we use every day are made from natural materials (such as wood and metal) that are found in the environment and then extracted. This stage has substantial environmental impacts that are most often not directly seen by consumers.

To obtain metal for new products and coal for manufacturing them, large mines permanently scar landscapes and leave behind acid drainage that pollutes the water and kills wildlife. Many of our nation's Superfund sites are abandoned mines. In the southeastern U.S., coal is mined by dynamiting mountain tops and pushing the rubble into nearby streams. Mining devastates large tracts of tropical rainforest. Mining often requires smelting onsite, poisoning the nearby rivers and villages.

Eight thousand years ago our planet had 1.5 billion acres of forest; today close to half of this is gone, and the rate of destruction is increasing. In Oregon and Washington over 90 percent of old-growth forests have been cut. Loss of forests leads to loss of wildlife and erosion of soils that disturb rivers.



Manufacturing: Most of the materials that we use must be transformed through manufacturing processes into final products. Metal and paper manufacturing are major contributors to air pollution, including acid rain. Plastic manufacturing is one of the largest contributors to hazardous waste. Manufacturing requires large volumes of water that are then returned to the environment polluted and at temperatures incompatible with the native habitats. Construction of a new home creates about 2.5 tons of wood waste.



Transportation: After raw materials are extracted they almost always need to be transported somewhere, usually to sites of manufacture or consumption.

Evidence is mounting that the noise produced by ships at sea negatively impacts the sea life dependent on sound for communication and navigation. Roads used to transport materials between each step of the life cycle of materials damage the land. The normal use of cars and trucks release significant heavy metals that drain into our waterways. Brakes release copper, while tire wear releases zinc. Smaller amounts of many other metals, such as nickel and cadmium, come in contact with motor oil that then drips onto roads. These metals are also emitted in exhaust.



Use: Many everyday products and devices continue to require natural resources for their use and maintenance. Small appliances, computers, phones, automobiles and homes are all powered by energy, usually made from coal and oil. Even our clothes require significant energy to keep them clean.



Discard: Eventually most of our materials and products reach the end of their useful lives, at which point they typically end up in landfills. While landfills monitor and contain toxins and pollution better than they did in the past, their maintenance still requires resources and land. Recycling and energy recovery also require resources. Even reusing a product in the same form often requires transportation, cleaning and possibly fixing, all of which require resources.

Now that we've painted a somewhat bleak picture by outlining the negative environmental impacts that accumulate at each and every stage of the materials life cycle, we'd like to explain how the shift to materials management can offer a solution.

TERM

Solid waste: Any discarded or abandoned materials. Solid wastes can be solid, liquid or containerized gas.

Discards management: The policies, decisions and processes regarding materials that prioritize environmental and social impacts associated with products after the consumer has used them.

RESOURCE

For more on landfill and recycling capacity see the *Solid Waste and Recovery Infrastructure* chapter.

FROM MANAGING DISCARDS TO MATERIALS MANAGEMENT

Until 2012, when the Materials Management vision for Oregon was approved, DEQ's Materials Management program was called the **Solid Waste** program, because it traditionally focused on managing products and materials at the end of their useful life, when they were considered solid waste. This resulted in programs, priorities and measurements of success based almost entirely on how we manage materials when we discard them, and so, is often called a **discards management** approach.

DEQ's historic focus on planning for materials based on their end-of-life is largely a consequence of problems identified — and legislation passed — in the 1990's. At that time, many landfills were poorly located, operated and regulated, and new federal standards made the closure of many landfills imminent. These factors added to a perception of a *garbage crisis* — that we were running out of places to dispose of our waste.

Oregon's current solid waste system is quite different. We now have ample disposal capacity, in landfills that are better operated and less polluting than their predecessors. Recycling programs are firmly established, conserving resources, reducing pollution and providing green jobs. Some producers are even sharing responsibility for managing their products at end-of-life and for reducing the presence of toxic chemicals in products that enter consumers' homes and eventually become solid waste. Recycling is now second nature for Oregonians, and interest in *reduce and reuse* is growing.

Discards management and materials management are concerned with different stages of the life cycle of materials. In contrast to discards management, materials management focuses on the entire life cycle of materials, attending to the social and environmental costs at all stages from extraction, manufacturing, and use to disposal or reuse.

To understand the difference, it is helpful to look back at the steps of the life cycle of materials from the perspective of the consumer. The extraction, transportation, design and manufacturing of materials all take place before the consumer uses that material. If we were to use a river as an analogy, they could be thought of as *upstream* from the consumer. Collection, processing, landfilling, recycling and reuse are all activities that take place *downstream* from the consumer. The time that the consumer is actually using the product is the *use phase*.

Discards management focuses on actions downstream of the consumer to reduce emissions from waste facilities and also to conserve resources through recovery. Materials management addresses all stages of the life cycle and all associated pollutants and resources. The old model of discards management is not wrong. In fact it is very much a part of materials management. Materials management, however, offers a much broader view

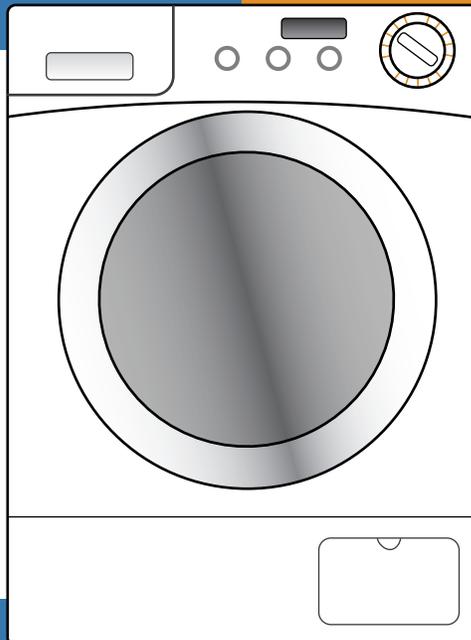
and, with the bigger picture in mind, helps individuals and policy makers make better choices, because often the biggest impacts can be in the upstream and use phases rather than the discards phase.

Along with shifting the focus and analysis of the problem, shifting to material management will drive innovation to solve the problem. For instance, these two approaches to materials engage different sets of partners. Discards management primarily involves waste generators and the waste collectors, landfill managers, and the recycling and reuse industries. Materials management involves those partners along with everyone else involved in the life cycle of materials — which is everybody!

TYPES OF QUESTIONS WE MIGHT ASK IN DISCARDS MANAGEMENT VS. MATERIALS MANAGEMENT

Discards Management

- Can I recycle the material from this washer when I am done with it?
- Will it be safe to take it apart for recycling?
- Will it add toxins to our landfills?
- How long will it last?
- Can someone else use it when I am done with it?



Materials Management:

- Where did the materials they used to make the washer come from?
- Is it designed with minimal materials and toxins? Who made it?
- How much energy will it need to run?
- How long will it last?
- Can I recycle it when I am done with it?
- Will it be safe to take back apart for recycling?
- Is it better to recycle the washer when I am done with it because it is now an energy hog?
- Will it add toxins to our landfills?

CASE STUDY: DRINKING WATER

To more fully understand the powerful, holistic approach of materials management, let's consider how we drink water, whether in single-use bottles, bottles that we reuse, or directly from the tap. In 2008, the Oregon Department of Environmental Quality (DEQ) commissioned life cycle analysis that compared various ways to reduce the environmental impacts associated with the delivery of drinking water.

This Water Delivery graphic shows five different types of impacts: global warming potential, energy use, carcinogenic potential, respiratory effects and ecotoxicity. The darkest bar shows the baseline which is the impacts of delivering drinking water in a single-use PET bottle, where the bottle is recycled at a rate of 37 percent (which was the current recycling rate of water bottles). All of the impacts are set to a common index of 100 for easy comparison.

The next lighter bars show the impacts of the same water in the same bottle, recycled at a higher rate, about 62 percent. You can see that increasing the recycling of PET bottles is one way to reduce environmental impacts, although not by nearly enough.

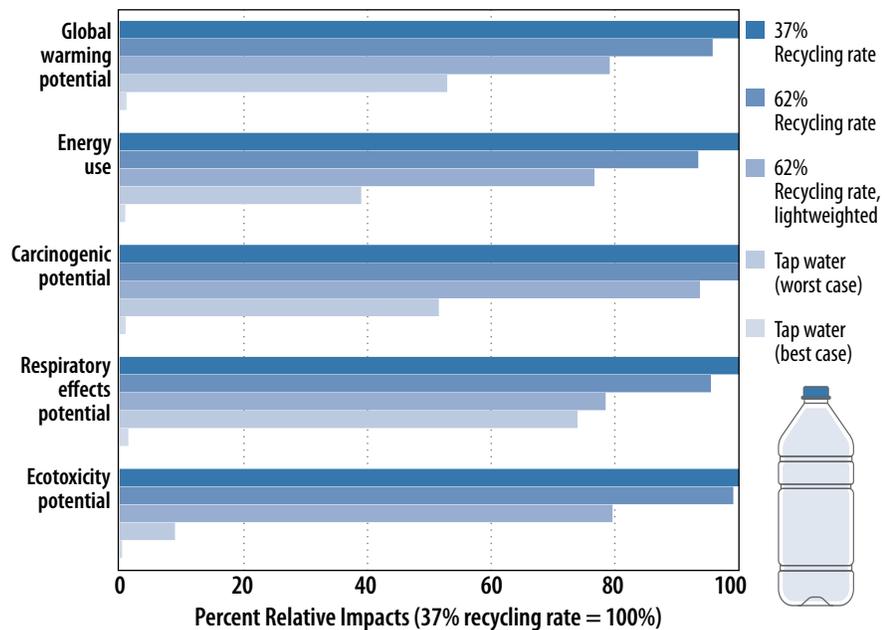
Fortunately, there are actions that producers and consumers can take that go beyond just changing how we manage our discards. Producers, for example, can make their bottles thinner. Many already have, and we see those impacts in the middle bar. That's a form of **product stewardship** where manufacturers take action to reduce impacts of their products; it's also waste prevention. And you can see that this reduces impacts more significantly than just recycling.

TERM

Product stewardship:

The principle in which everyone involved in the lifespan of a product is called upon to take responsibility to reduce its environmental, health and safety impacts.

WATER DELIVERY



Baseline = PET, half-liter, 13.3 grams, 0% post-consumer recycled content (PCR), on-site molding, purified municipal water (reverse osmosis, ozone and uv), 50 miles to retail, 5 miles home-to-retail, co-purchase w/24 other products, no chilling.

Source: Oregon DEQ (2013)

Consumers can also take action. They can drink from the tap, in a reusable bottle. DEQ explored this scenario in contrast to water delivered in a bottle. The fourth bar in the chart is a worst case scenario of reuse, where the consumer drinks from a reusable bottle and washes it every day in a home dishwasher which, by the greatest margin, failed EPA's Energy Star Program.

Use an Energy Star dishwasher and wash your bottle once a week, and the impacts are there in the fifth bar. Can't see them? That's because they're about 98 percent less than using and recycling a single-use bottle.

If we look beyond recycling, we can identify more strategies, and sometimes more effective strategies, for reducing impacts. That's the power of materials management.

As a side note, the drinking water delivery graph also illustrates the hazards of promoting recycling as a method of landfill avoidance. The hierarchy — reduce first, then recycle — is an imperfect but powerful tool. It says that we should reduce first, then recycle, because reducing our consumption is the most effective way of lessening our environmental impacts. Recycling is better than disposal, but waste prevention is best of all. In this example, recycling PET water bottles at 100 percent results in no new landfill material, and yet it still produces very significant and unsustainable environmental impacts.

MATERIALS MANAGEMENT ON A NATIONAL LEVEL

Oregon is not the only place shifting from discards to materials management. In 2009, U.S. Environmental Protection Agency (EPA) created a materials management vision. It is described in *Sustainable Materials Management: The Road Ahead*.

The EPA states that a materials management strategy would be an important shift of emphasis where policy and practice would be focused on:

- Knowing and reducing the life cycle impacts across the supply chain.
- Using less material inputs (reduce, reuse, recycle).
- Using less toxic and more renewable materials.
- Considering whether services can be substituted for products.

Upcoming chapters explore each of these topics in greater depth.

Shifting to a materials management approach refocuses the way our economy uses and manages materials and products.

It is certain that a thoughtful materials management strategy is essential to realizing a future of less waste, fewer toxics and greater prosperity.



Materials Management
Find EPA's vision in the
*Sustainable Materials
Management: The Road
Ahead (available online).*

The EPA asks:

“What kind of world will we actually inhabit in 20 years? Some predict that it will be better than the present — where products and materials will be less toxic and reusable, and where resources will be used more efficiently so that far less waste is produced. Others predict we will experience a bleaker future — where harmful chemicals will be more prevalent throughout our environment and may seriously affect groundwater, drinking water, and food supplies. While we can't know which of these scenarios—or others—will exist in 20 years, considering the future now makes sense if we want a chance to shape it positively.”

CONCLUSION

A future in which we use and manage materials sustainably is possible and very much within our reach. *Materials Management in Oregon: 2050 Vision and Framework for Action* aims for a future in which people live well and sustainably. Key to realizing such a future is shifting from a paradigm of discards management to materials management.



We have learned that materials management takes a holistic view of environmental and social impacts across the full life cycle of materials as they trace their course through the economy and through natural and built environments. This broader view empowers us to make better decisions, individually and collectively, and helps us move beyond simply focusing on waste reduction or recycling. So, what's next?

Chapters 2 through 4 use a systems perspective to explore how the materials we use every day relate to global issues such as sustainable consumption, climate change and equity.

Then, Chapters 5 and 6 will explore the economies and processes of recovery (reuse, recycling, compost, incineration) and disposal from a holistic materials management perspective.

This larger systems approach introduced in the early chapters of this handbook will empower you as a Master Recycler with a conceptual foundation so that you can answer questions that relate to the everyday choices people make about materials at work and home. Master Recyclers are important agents in the transformation from discards management to materials management. You can help promote positive activities such as recycling, reuse, sharing, fixing, and maintaining materials and toxics reduction (all of which are powerful strategies for sustainable consumption).

CHAPTER 2 CLIMATE AND MATERIALS

INTRODUCTION

Climate change is a serious threat, but we know what we need to do

Climate change is the greatest environmental challenge of the 21st century and so deserves some special focus in this handbook. Climate change poses a serious threat not just to Oregon’s natural treasures — forests, mountain snows and rivers — but also to our jobs and our health.

The good news is that working to address climate change also presents huge opportunities. Money can actually be saved and made during the transition to a low-carbon community. The Portland metro area is a global leader in that transition, and we have an unparalleled opportunity to make the switch in ways that create jobs and benefit all residents.

Scientists expect that, should we fail to curb climate change, Oregonians in the future may see more intense heat waves, droughts, rainstorms, floods, wildfires and landslides. These impacts could drag down Oregon’s economy, stress our natural resources and worsen inequities.

When we protect the climate, we win

When we work to protect our climate, good things happen. Local businesses innovate and create jobs. Residents and businesses save money that they can then spend locally. Our community gets healthier and our neighborhoods become more vibrant.

When people in our region reduce the energy we need to power our homes and businesses, invest in renewable energy, make smart decisions about urban development and transportation, and consider climate change risks in decision-making, we see:

- Better air quality and improved human health.
- New jobs and greater reinvestment in the local economy.
- Lower energy bills.
- Shorter commute times between home, work and school and more opportunities for people to walk, bike or take public transit.
- Less damage to social and environmental systems due to drought, floods and fire, and fewer disruptions in services.



DEEP DIVE

For more on potential local area ramifications to climate change visit the City of Portland Climate Preparation Strategy (available online).

We're adding too much carbon to our atmosphere

The world's scientists have concluded that carbon emissions from human activities have begun to destabilize the Earth's climate. Carbon emissions from fossil fuels and land use changes, including deforestation, are primary drivers of climate change today and in the future. Emissions of methane from cattle and landfills also make significant contributions. Simply put, we're adding too much carbon to the atmosphere by burning fossil fuels like coal, natural gas and gasoline. The magnitude of future climate impacts depends largely on the trajectory of future global carbon emissions.

MATERIALS AND CLIMATE

Materials management is important

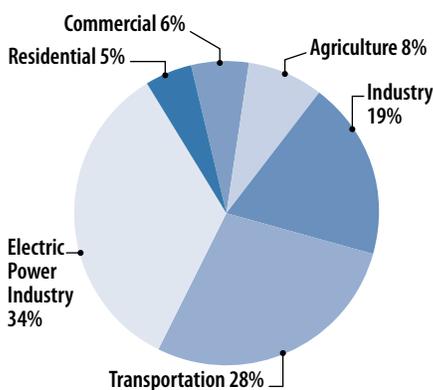
While most of the public knows that the transportation and energy choices we make are important to curbing climate change, studies show that the average consumer does not associate consumer goods and food choices with climate change. When addressing climate, programs, plans and climate action outreach tend to focus on transportation and energy used in buildings. This chapter will explore why materials management matters for climate protection.

While public perception research shows that it may not be effective to begin a conversation about reducing, reusing or recycling by talking about climate change, this topic will come up, and it is helpful to be prepared to speak about it. Meanwhile a growing portion of the public is becoming alarmed about this global problem and will sometimes mistakenly decide that materials management is a distraction from the action that they urgently believe must be taken to save the planet. Master Recyclers can help respond to concerns about climate change and help give people hope that we can still mitigate the impacts of climate change, in part by changing how we extract, produce, consume and dispose of materials.

National, state and local governments inventory where emissions come from in order to identify priority areas to change our practices.

To identify where we burn fossil fuels, climate experts have traditionally divided carbon emissions into economic sectors: You can see by the graph to the left that they are divided into residences, businesses, agriculture, industry, transportation and electrical power. This inventory process has led governments to believe that the best strategies to reduce carbon emissions pertain to how we heat and power our homes, businesses and factories and how we get around. The connection between materials and climate was not intuitively obvious because emissions associated with materials were spread throughout all of the sectors.

TRADITIONAL ECONOMIC SECTOR-BASED VIEW OF U.S. GREENHOUSE GAS EMISSIONS



Source: U.S. EPA (2009)

In 2009, however, the EPA shifted the emissions inventory to better identify the actual activities that cause emissions. They called this new inventory a systems-based view of U.S. greenhouse gas emissions (GHG), where each system represents and comprises all the parts of the economy working to fulfill a particular need. For example, the provision of food system includes all emissions from the electric power, transportation, industrial, and agricultural sectors associated with growing, processing, transporting, and disposing of food. The systems view is helpful for framing opportunities to reduce GHG emissions through prevention-oriented mitigation strategies that act across an entire system.

The resulting report confirmed that lighting, heating and cooling buildings contribute 25 percent of our domestic emissions, and therefore green building is important. It also confirmed that moving people around contributes 24 percent, so transit and types of fuels are priorities.

What was new and surprising to some was that the EPA report showed that about 42 percent of U.S. greenhouse gas emissions are associated with the energy used to produce, process, transport, and dispose of the food we eat and the goods we use. This includes the extraction or harvest of materials and food, the production and transport of goods, the provision of services, reuse of materials, recycling, composting, and disposal. The report also indicated the following:

- 29 percent of U.S. GHG result from the provision of goods produced within the United States.
- The provision of food contributes another 13 percent of U.S. GHG emissions.
- Landfilling and incineration represents 1 to 5 percent of U.S. GHG emissions.

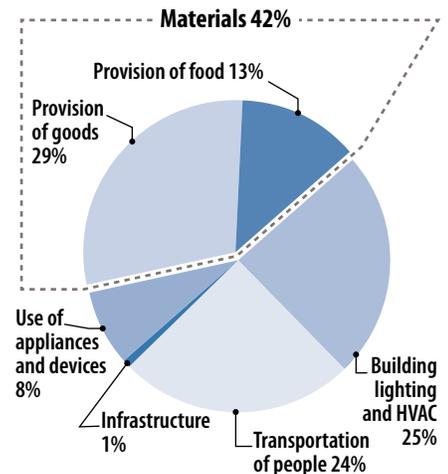
Note that the U.S. GHG emissions presented in these two graphs represent emissions that are released domestically. Emissions associated with extraction of raw materials, processing, and production of goods and services outside the United States, but consumed in the United States, are not captured in the EPA Inventory, and therefore are not reflected here. Correspondingly, the emissions associated with goods and services produced in the United States that are exported for consumption in other countries are not included. If U.S. emissions were calculated using a total life cycle perspective, based on goods and services consumed rather than produced in the United States, the emissions associated with materials management would be greater than is shown due to the large quantity of imported goods consumed in the U.S.

Oregon engaged in a related effort, estimating the global emissions associated with consumption by Oregonians no matter where the product was made. And we've come to similar conclusions: When viewed through the lens of consumption, Oregonians contribute more to climate change as a result of purchasing stuff, than we do by driving our cars, or heating and powering our homes.

DEEP DIVE

For more information you can consult the EPA's report *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices* (available online).

MATERIALS MATTER: SYSTEMS-BASED GEOGRAPHIC EMISSIONS INVENTORY



Source: U.S. EPA (2009)

These new approaches to calculating carbon emissions led local governments to shift priorities to include materials management as part of the suite of solutions that will be necessary.

OREGON'S CLIMATE IS CHANGING

Climate change presents an unparalleled challenge.

Human influences on climate, already apparent at the global and continental scales, are altering the social, environmental and economic systems we rely upon. In the Pacific Northwest, these changes threaten agriculture and water sources, power supplies, public safety and health, forests and local economies, all of which have substantial impacts on quality of life. Observed regional temperature, snowpack, snowmelt timing and river flow changes are consistent with projected trends.

Over the past 30 years, average temperatures in the Pacific Northwest have generally exceeded the 20th-century average, and the region has seen a temperature increase of about 1.3 degrees Fahrenheit.

Over the past 50 years, increases in winter temperature have contributed to the decline in snowpacks in the Pacific Northwest, including in the Clackamas River basin. Glaciers have diminished, a trend expected to continue through the next 100 years. In particular, Mount Hood's glaciers have decreased in length as much as 61 percent over the past century.



DEEP DIVE

For more on the changes expected in our region visit the City of Portland's Climate Preparedness Plan (available online).

These changes are costly

Warmer temperatures and more extreme heat events are expected to increase the incidence of heat-related illnesses (for example, heat rash, heat stroke) and deaths. A recent study projected up to 266 additional deaths in the greater Seattle area among persons 65 and older in 2085 compared to the annual average for 1980–2006. In Oregon, the hottest days in the 2000s resulted in about three times the rate of heat-related illness compared with days 10 degrees Fahrenheit cooler.

The physical impacts of a changing climate are accompanied by social challenges. In particular, low-income households face disproportionate impacts of climate change. Exposure to heat stress in homes without air conditioning, for example, while having fewer resources to respond to these changes. Rising energy prices compound the situation and have the potential to further exacerbate existing social disparities.

Climate change will affect natural systems and watersheds across the Portland region. Changes in precipitation patterns affect streamflow, groundwater recharge and flooding, and may increase risks of wildfire, drought, and invasive plant and animal species. Increasing surface water temperatures affect resident and migratory fish and wildlife species and their habitats, threatening their long-term survival.

Native American leaders in the Portland metropolitan region have also been vocal in stating that climate change will have complex and profound impacts on their communities, many of which have deep historic and current ties to the land's resources. For example, treaty-protected fish species may become threatened or less accessible to tribes due to impacts on water quantity and quality that affect salmon and other fisheries.

CONCLUSION

The good news is that there has been important progress and many new voices have joined the call to action.

International religious leaders are beginning to characterize climate protection as a moral imperative. In particular, Pope Francis has been remarking how the environmental degradation caused by climate change disproportionately affects the world's poorest people. Pope Francis has also been linking climate change to the massive movements of people and increased human trafficking.

Islamic leaders have also prompted faith communities to take action to halt the desecration of nature that leads to destruction of creation, human and otherwise. In summer 2015, they launched the *Islamic Declaration on Climate Change*.

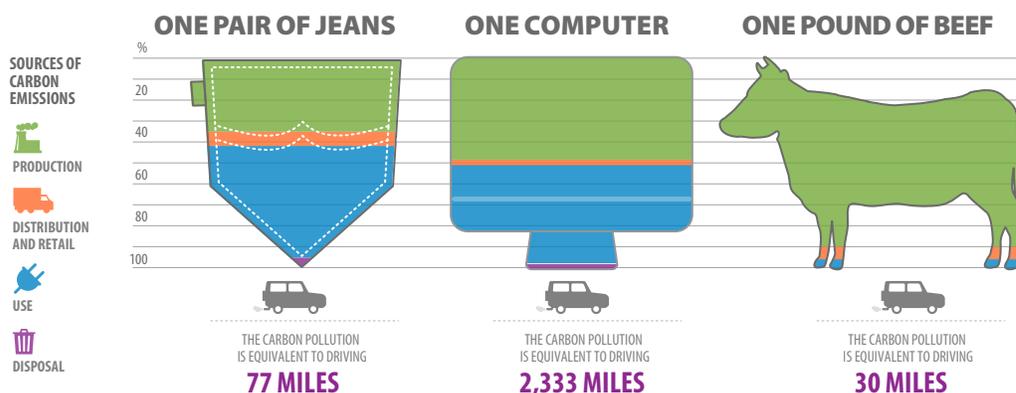
On a more local level, the State of Oregon passed its Material Management plan in part to address climate. Metro also worked on regional planning for transportation, land use and landfill management in order to address climate change.

It can be discouraging to hear about the devastating effects of climate change. Many people doubt that it's still possible to turn climate change around. But the City of Portland and Multnomah County have proven that it is possible to change the momentum of emissions. In 1993, Portland was the first city in the country to adopt a climate action plan with a roadmap of action items. They've already reduced carbon emissions by 25 percent since 1990, while the population has increased by 42 percent and they have 27 percent more jobs. Furthermore they have a plan for continuing to reduce emissions that will also improve our economic, social and cultural lives.

Action is required at all levels to build low-carbon communities. Each person, each business, each government agency has a part to play. Whatever you decide to focus on in your volunteer efforts as a Master Recycler will ultimately be related to this larger global effort.

IT TAKES ENERGY TO MAKE THE THINGS WE BUY AND USE EVERY DAY

And most of that energy comes from carbon polluting sources.
From farm or factory to your home, buying something costs more than just money.



So, what CAN we do? Wash jeans in cold water and line dry. Turn off computer when not in use and have it repaired rather than buy a new one. Try eating lower carbon foods, such as vegetables, grains or chicken.

CHAPTER 3 SUSTAINABLE CONSUMPTION

INTRODUCTION

Last Sunday morning, Aurelia Sanchez made breakfast for her kids with eggs from their chickens, and berries and vegetables grown in their garden. They walked down the street and Aurelia caught up with her best friend on the front porch as they watched their children play together. Then Aurelia walked the kids to the Hillsboro library for children’s reading hour while she sat on the library sofa and read the newspaper. There was an article about a drunk driver who had plowed onto the sidewalk and killed two pedestrians.



TERM

Gross Domestic Product (GDP): the monetary value of all the finished goods and services produced within a country's borders in a specific time period. GDP includes all private and public consumption, government outlays, investments and exports minus imports that occur within a defined territory.

To an economist focused on the **Gross Domestic Product (GDP)**, Aurelia’s day had zero economic value. No money was exchanged. No purchased products were consumed.

The drunk driver in the story in the newspaper, on the other hand, had consumed alcohol and gasoline. That counted for something. His accident necessitated paramedics who arrived in an expensive vehicle and used costly medical equipment. Repairs and glass will be needed for the storefront he smashed into. The two funerals will also cost money. Ironically, by standard metrics, the drunk driver was contributing significantly to GDP, while Aurelia Sanchez was not. Although these are extreme examples, they point to some significant flaws with using GDP as a measure of progress.



“Gross National Product counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. [...] It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl. [...] Yet the gross national product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages.”

– Robert F. Kennedy, 1968

Gross Domestic Product (GDP) is one of the primary indicators used to gauge the success of a country’s economy. It represents the total monetary value of all goods and services produced over a specific time period. Steady growth of production and sales of goods indicates the economy is going the right direction. Too much or too little indicates problems.

But is the monetary value of materials produced and consumed really the best indicator for the health of a community or a country? And is steady GDP growth sustainable?

In 1968 Robert F. Kennedy spoke out about shortcomings to the ways we measure economic and social wellbeing. He roundly criticized Gross National Product (GNP). (GNP was used before they started adjusting for exports and imports and changed to GDP.)

This chapter will explain how neither the current patterns and trends of consumption nor perpetual growth are sustainable. It will then look at new ways of measuring consumption and community well-being that proponents hope will move us towards more sustainable communities, businesses and governments.

WHAT IS SUSTAINABLE CONSUMPTION?

There are many definitions of sustainability (see below for a sampling) and they differ significantly. Despite this there are some important common themes that connect most of the prevalent definitions. Sustainability is the capacity to endure. A sustainable society, system or process is one that mimics a healthy ecosystem. It is rich in diversity. It is resilient to disturbance and can retain its basic structure and viability even during times of change. And there is a balance or equilibrium of inputs and outputs.

There are numerous models of sustainability, but most of them include three pillars that are considered essential for a sustainable society. These three pillars are often called the *three P's: People, Planet and Profit*, or the *three E's: Economy, Equity and the Environment*. The idea is that a society that wants to endure must meet basic human needs without destroying or degrading the natural environment, which is essential to current and future wellbeing. Sustainable consumption must therefore provide goods and services that contribute to human wellness without depleting our natural resources.

Sustainability Defined

The World Conservation Union, United Nations Environment Programme, and World Wildlife Fund:

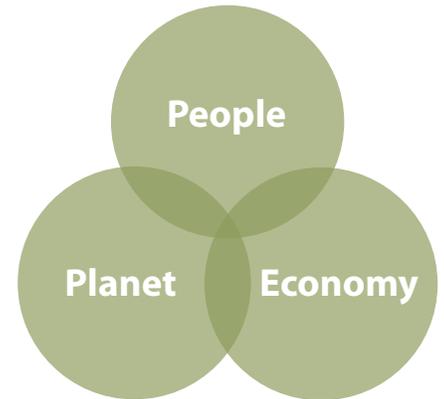
Sustainability: improving the quality of human life while living within the carrying capacity of natural ecosystems.

Environmental Protection Agency

Sustainability: the conditions under which humans and nature can exist in productive harmony to support present and future generations.

Part of the Great Law of the Iroquois Confederacy

Sustainability: In every deliberation, we must consider the impact of our decisions on the next seven generations.



Sustainable Consumption

“The use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations.”

– United Nations Commission on Sustainable Development (UNCSD),
Symposium on Sustainable Consumption, Oslo, 1994.2

ARE CURRENT TRENDS OF CONSUMPTION SUSTAINABLE?

In the economic model that values growth, based on the GDP, the future is looking rosy. Rapid global population growth will mean a population of 9 billion by 2050. In this time, the International Finance Corporation (IFC) predicts there will be a rise in global affluence and that there will be an associated increase in consumption among low-income populations, resulting in increased *purchasing power*. Where there is already a high level of wealth and consumption, there is heavy societal pressure to maintain and even increase consumption patterns and competitive spending and displays of wealth are valued. All of this means that more and more consumers will be ready and interested in spending money and consuming products.

Even multinational corporations are beginning to see that these trends are not sustainable. The World Business Council for Sustainable Development (WBCSD) concedes “there are now clear signs that consumption issues are increasingly of central concern to business. The global challenges related to shortage of resources, water scarcity, climate change and loss of biodiversity. Overlooking this trend would be shortsighted and a risk for any company.”



DEEP DIVE

For more information you can consult the World Business Council for Sustainable Development’s Report: *Sustainable Consumption facts & trends: from a business perspective (available online)*.

The World Wildlife Fund (WWF), the United Nations, Amnesty International and the Global Footprint Network are some of several international environmental and human rights organizations that concur with WBCSD’s conclusion that a shortage of resources is coming. In fact, they have been saying this for some time. Assessments emerged in the 1990’s that attempted to describe the potential risks. One such model showed that nature provides humans with essential resources that are sometimes called **ecosystem services**. Ecosystem services include provisioning services or products, such as timber and fish, and regulation services, such as climate control, pollination, irrigation and flood regulation.

These international organizations warn that ecosystem services are not infinite. Groups like the WWF and Global Footprint Network offer metrics that compare existing global resources (especially energy, forests, freshwater and seafood) with the current rate at which they are being consumed. These metrics show that the planet cannot sustain its level of ecosystem services given current levels of consumption. We are using or withdrawing renewable resources faster than the earth is able to replenish those resources.

WWF explains that, “It takes a year and a half to generate resources that the human population uses in only a year.” Another way of imagining this is that we need one and a half earths to sustainably produce the renewable resources that we are currently using. This means that we are now in a state of “global ecological overshoot, depleting the very resources on which human life and biodiversity depend” (Global Footprint Network).

If these trends continue, this overshoot will become more severe. The WWF predicts that if the trajectories of growth for population and middle class are correct, and the wealthy continue to consume at current levels, we will be using renewable resources three and a half times faster than they can be regenerated. This would mean severe shortages and other dramatic adverse impacts.

TERM

Ecosystem services: *the benefits provided by ecosystems that contribute to making human life both possible and worth living.*



ALTERNATIVE METRICS

Given the flaws in GDP, economists and policy makers are developing alternative metrics. Some of these new metrics continue to focus on economic growth, while other metrics choose to include the health of the ecosystem and the well-being of people as part of the bottom line.

Genuine Progress Indicator

Some economists propose an alternative way of measuring economic growth called the Genuine Progress Indicator (GPI). This metric continues to use goods and services as the primary measurement, but where GDP measures the economy based on the price of finished products, GPI loads into their measurements a number of costs related to the production and consumption of the goods and services. Among the indicators factored into GPI are resource depletion, pollution, human health and long-term environmental damage.

These economists point out that GDP does not recognize social and environmental costs associated with products. Some of these costs that are left out of GDP may have profound economic effects. You will recall that GDP measures the monetary costs of a finished product. GPI, in contrast, recognizes that the manufacture of a consumer good results in other costs like pollution. The costs of this pollution (such as health impacts or property damage) may not be paid for by the producer, but rather are borne by other members of society. The impacts and costs are nonetheless real and GPI accounts for them.

When the full costs are not reflected in our models and decision-making, society as a whole is less well off. Production and consumption are over-valued and we over spend scarce resources because we are not considering all the costs.

When there is a full accounting, it is easier to set policies and make economic decisions that mitigate specific costs. An example is creating zoning laws that do not allow manufacturing to take place within a certain distance of where people live.

Understanding the full cost of the making of a product can also help ensure that manufacturers are invested in mitigating the cost of production and consumers understand the full implications of their purchases.

The EPA's Acid Rain Cap and Trade program is an example of a program that considers human illness and environmental degradation as part of the cost of production. The *cap* sets a limit on emissions, which are lowered over time to reduce the amount of pollutants released into the atmosphere. The *trade* creates a market for pollution allowances, helping companies innovate in order to meet, or come in under, their allocated limit. The less they emit, the less they pay, so it is in their economic interest to pollute less.

Well-being and the environment as the bottom line

Without a doubt, there are certain materials that are required to meet basic human needs. We need food, shelter, vaccines and medications to stay healthy. We even need materials to be creative and productive. But models that aim for growth assume that there is no such thing as enough or too much. Is growth sustainable?

While continuous growth challenges the basic concept of environmental balance, studies also indicate that the continuous accumulation of money and materials is not a very good predictor of human well-being.

A Princeton University study demonstrated that the life expectancy and sense of satisfaction for people in the United States that lived below the poverty level were definitely negatively affected by the lack of basic materials to meet their needs. But the study also found that after meeting a certain annual income threshold of about \$75,000, life expectancy and the level of well-being did not increase with additional income.

The New Economics Foundation decided to create a metric that did not use growth as its implicit goal. Their Happy Planet Index ranks a nation's progress based on the amount of the Earth's resources its inhabitants use and how happy they are. They defined happiness by the length of life and how satisfied people report feeling on a scale from 1 to 10. Although this is a contentious area of research, it yields some interesting insights. According to the Princeton study, a high consumption level does not guarantee happiness. This study suggests that people can live long, happy lives without using more than their *fair share* of the Earth's resources.



While no country combines high GDP with low life satisfaction, many poorer countries achieve levels of life satisfaction just as high as their wealthier neighbors. Above a minimum level, there is no apparent correlation between per capita GDP and life satisfaction.

The New Economy Working Group (NEWGroup) is seeking an alternative bottom line, as well. NEWGroup members are academics, community developers, economists, and labor and environmental justice leaders. They are working together to identify measurements that show the economy is meeting quality of life standards for people rather than simply measuring the movement or cost of materials that might or might not be enhancing our quality of life.

New Economists want to shift the defining value from money to quality of life, decision making from global to local, the favored dynamic from competition to cooperation, the defining ethic from externalizing costs to embracing responsibility, and the primary purpose from growing individual financial fortunes for a few to building living community wealth that enhances the health and well-being of everyone.

A primary contributor of NEWGroup is author Juliet Schor who calls for an Economy of Plenitude. She posits that how we spend our time is key to reducing negative environmental impacts, creating more jobs and improving our way of life.



Image from the video, Visualizing a Plenitude Economy

DEEP DIVE

For more detail see Juliet Schor and the New Dream's animated video explanation of the Economy of Plenitude, Visualizing a Plenitude Economy (available online).

Juliet Schor writes, "Economists today focus solely on growth as a mechanism for job creation. But for much of the industrial age, falling hours have been roughly as important a contributor to employment as market growth." And she argues that fewer hours worked allows for more time for community, family and what she calls *the basic rhythm of daily life*. She explains:

Imagining a world in which jobs take up much less of our time may seem naïve or utopian, especially now, when a scarcity mentality dominates the economic conversation. People who are employed often find it difficult to scale back their jobs. Costs of medical care, education, and child care are rising.

But fewer work hours for people with jobs may be a key step toward solving the unemployment crisis—while giving Americans healthier lives. Fewer hours worked per week could mean more jobs available to people who need them. Living on less pay usually means consuming less, making more of the things one needs at home, and living lighter.

EUGENE MEMO

For the most part, the models described above have been theoretical. Little has been applied to real sustainable consumption policy and practices in U.S. cities. Babe O’Sullivan, from the Urban Sustainability Director’s Network wants to change that. She found there to be a profound gap between academia and practice and so led a nationwide series of workshops aimed to bridge that gap.



For more information you can consult the *Local Governments and Sharing Economy Report* (available online) and the USDN’s *Sustainable Consumption Toolkit* (available online).

In October 2014, members of the Urban Sustainability Directors Network (USDN), the Sustainable Consumption Research and Action Initiative (SCORAI) and other policy experts met in Eugene, Oregon to review relevant research and explore the actions that cities could take to promote sustainable consumption and wellbeing at the municipal scale. The workshop concluded with the development of several working committees.

Participants felt that they were missing a list of principles to guide municipal goals and policies. A committee was formed to develop a memo that set forth guiding principles. The resulting *Eugene Memo* is excerpted below. In summer 2015, O’Sullivan convened another committee to develop a *Sustainable Consumption Toolkit* that aims to help Cities successfully design policies and practices to carry out the systemic changes described in the Eugene memo. The resulting toolkit is available online for members of the Sustainable Directors Network. Other committees formed to provide focused research on specific topics such as developing a roadmap for Cities to navigate the *sharing economy*.

EXCERPT OF THE EUGENE MEMO: THE ROLE OF CITIES IN ADVANCING SUSTAINABLE CONSUMPTION NOVEMBER 2014

Cities in North America have an important role to play in building prosperity and wellbeing while promoting lifestyles that are compatible with the limits of natural systems. The consumption of materials and energy in high-income cities is a significant factor in driving climate change and resource depletion. Increasingly, government agencies, industry organizations and experts in the research community are calling attention to the need both to consume less and consume differently. Cities can and should take action to make this possible.

A clear consensus emerged from this dialogue: to facilitate human and ecological wellbeing, we must transform the economy so that it serves what we value.

This objective is ultimately less about increasing material wealth and more about enhancing the hallmarks of the good life to which everyone aspires: time with family and friends; strong community ties; a sense of belonging; personal growth through new skills and knowledge; meaningful livelihoods, good health and other life-qualities that transcend mere income and material consumption.

Such a transformation requires a shift in cultural values and a re-design of urban economies and communities to reduce material and energy throughput while simultaneously improving the quality of life for all people. Advancing sustainable consumption in cities also entails supportive systemic change at the nation-

al and global levels: these multi-level changes enable the fundamental and necessary shifts in culture and markets that make the transition possible.

We need such powerful ideas to open a new way of advancing urban sustainability.

GUIDING PRINCIPLES FOR LOCAL ACTIONS:

1. **Envision prosperity as a holistic, integrated concept:** Real prosperity supports individual, social and ecological dimensions of wellbeing. Aggregate wellbeing should be the goal of progress in the pursuit of social and economic development. That means satisfying basic needs, food, shelter, mobility, security, education, and health, while also ensuring true personal and community development (development implies getting better and not just getting bigger).
2. **Commit to equity and social inclusion:** Highly unequal societies are not sustainable. By committing to sustainability with social justice we also commit to equity in designing projects and policies, and in evaluating progress.
3. **Enhance social capital and resilience:** As cities build toward more compact, cohesive and livable communities, urban form must align with more collaborative, reciprocal and interdependent patterns of human interaction, including consumption. People living in close proximity have more opportunities to share idle resources, to launch small-scale commercial ventures and to build community engagement and cohesion. Sustainable urban form fosters both informal and commercial exchange, augments social capital and builds stronger neighborhood networks and resilience in the process.
4. **Advance sustainable local economies:** A strong and diverse local economy promotes human wellbeing by: providing a cushion against global financial shocks; responding to new business opportunities and emerging needs; strengthening local communities; and creating novel livelihoods. Consumers are becoming more interested in access to goods and services than in personal ownership.
5. **Keep the big picture in mind and work toward the long-term:** Taking a systems approach enables us to target our efforts at the appropriate level. Cities can focus on integrated programs and actions that lead strategically toward more sustainable consumption patterns in the short- and long-run.
6. **Collaborate with diverse partners to take action and leadership:** Advancing sustainable consumption requires interaction and engagement across sectors (public, private, civil society, academia, media, communities) to co-create and take action together. Cities can facilitate connections among people, sectors and activities to catalyze change.
7. **Experiment and learn:** Advancing sustainable consumption in cities requires a commitment to sharing lessons on effective initiatives, monitoring and evaluating approaches, learning from mistakes, and embracing emergence and the unexpected. Cities benefit from engaging and consulting with the research community to gain from their insights.
8. **Set goals and measure:** Learning and progress over time is supported by clear goals and measures that indicate whether our actions are moving us forward. GDP per capita is an inadequate measure of human wellbeing. New indices must be developed and deployed to evaluate progress and in choosing among alternative policies and projects.
9. **Combine structural and systemic change with education:** Awareness programs on their own are limited in advancing systemic change but are effective when cities combine structural and institutional changes with educational programs.
10. **Take action and leadership:** Cities must be opportunistic as well as strategic. They should mobilize their assets, engage local allies and partners, and embrace the need to learn-by-doing; cities should be thoughtful risk-takers and openly self-reflective in assessing the results. As cities, we can lead through convening, demonstrating, leveraging, and activating others, and by creating incentives and disincentives to move sustainable consumption, economies, and communities forward.



CONCLUSION

In this chapter we've seen that current patterns and trends in consumption are unsustainable. The global consumption of renewable resources is outpacing the planet's capacity to renew itself. Research studies have demonstrated that our high consumption lifestyle is not even particularly good at satisfying our needs. In fact, beyond a certain annual income threshold there is no correlation between increased income and increased happiness and people trying to reach beyond that threshold increasingly feel trapped in a work and spend treadmill. Meanwhile, far too many people globally and right here in Oregon struggle to meet basic material and life needs.

Given the global scope of the consumption problem, it can feel confusing and overwhelming to know how to make good choices about a sustainable lifestyle. It is hard to measure the impacts of our choices and set priorities. The current systems even build road blocks that make living those lifestyles unobtainable for people with less time and resources.

Happily, advocates, scientists and local governments are breaking new ground in understanding how humans can satisfy basic needs without consuming beyond the capacity of the planet. Alternative economic metrics such as the Genuine Progress Indicator and the Happy Planet Index offer ways to more fully account for costs such as pollution that were previously left out of economic models. These new metrics also begin to enable planners to maximize non-economic values such as happiness and satisfaction.

The transition to different and more sustainable patterns of consumption will likely have its challenges. For example, it might be challenging to accept a future with lower levels of consumption. But, on the other hand, new visions, such as the Economy of Plenitude, see a future with fewer hours worked per week and more time for friends, family, community, volunteerism and personal projects. This chapter has presented a rather theoretical overview of sustainable consumption. Systemic change will take businesses, government, diverse communities and people working together. We hope that the concepts introduced here will be helpful in putting your very practical work as a Master Recycler into a larger context. Chapter 12 Resourceful Living focuses on tools and strategies for achieving a life with less consumption and greater happiness and satisfaction.

CHAPTER 4 EQUITY AND MATERIALS

INTRODUCTION

In the materials management and sustainable consumption chapters we learned that humans both carry the burdens and enjoy the benefits from the production and consumption of materials.

We learned that all the stuff we consume has negative impacts for humans all along the materials life cycle. These negative impacts include: poisoned drinking water near extraction sites, risks to workers in manufacturing facilities, toxins in consumer products, and conflict and displacement caused by climate change.

We also learned that life expectancy and sense of life satisfaction are dependent on having a certain level of material necessities such as food, shelter, medicine and art and literature.

What has not been discussed to this point is that the benefits and burdens of consumption are distributed inequitably between differing populations and that this inequity is a great threat to sustainability.

This chapter will define equity and explore how institutional racism and poverty result in the inequitable distribution of the benefits and burdens of materials production and consumption. Materials production and consumption have the largest negative impacts on low-income communities and people of color. Meanwhile, those same people have less access to products that provide health and wellbeing.

This chapter will demonstrate the importance of addressing these inequities as we work to build new systems. Oregon's materials management vision takes a holistic view of environmental and social well-being and health across the full life cycle of materials. As we change how we produce and consume, we have the opportunity to ensure that this is done collaboratively so that communities of color and low-income communities are co-creators. We can also ensure that we create equitable avenues for wealth building. As we reduce the pollution caused by extraction, we can create safe, living wage jobs in recycling and reuse. As we reduce deforestation, we can increase access for recreation in our natural areas. As we redefine what it means to live a good and rich life, we can ensure that people who have traditionally had the least access to the American Dream will get to enjoy health and happiness. This inclusive process will result in more complex systems that better meet the needs of a diverse population.

"It is not our differences that divide us. It is our inability to recognize, accept, and celebrate those differences."

Audre Lorde

WHAT IS EQUITY?

The Portland Plan uses the following definition for equity:

“Equity is the right of every person to have access to opportunities necessary for satisfying essential needs and advancing their well-being.”

What does equity look like?

- All residents have access to opportunities, such as good jobs, education, healthy food, housing and self-expression.
- The benefits and burdens of growth and change are equitably distributed across our communities.
- All residents and communities are involved as full and equal partners in public decision-making, problem-solving and implementation; and these processes consider the history of impacted communities.

Equity is not the same as equality

There are important distinctions between equality and equity. Equality aims to distribute exactly the same resources to everyone equally. The idea is that if we all get the same things, we will all enjoy life and health equally. Equality aims to promote fairness and justice, but equality can only work if everyone starts from the same place and has the same needs and wants. Equity, in contrast, involves ensuring that people have access to opportunities to enjoy full, healthy lives. Aspects of our identities, such as race, class, and gender, can determine the difference in what is made available to us as individuals to enjoy full, healthy lives. Equity requires looking at the historic, social, and institutional barriers that impact people's access to opportunity and correcting for any negative outcomes.

A focus on equity recognizes that people do not start at the same place and consequently people have different needs. A focus on equality strives for a perfectly even distribution of resources. Whereas an equity approach takes into account the actual desires and needs of each population and their ability to satisfy those desires and needs.



*This image illustrates some of the differences between equity and equality. All three people want to see over the fence so they can watch a game. On the **equality** side of the graphic, each person is given an equal number of boxes. If the three people were the same height, this might be fair, but they are not, so the boxes only help the person in the middle. The tall person already had access to see the game and the shorter person still can't see it. On the **equity** side of the graphic, the boxes are distributed to ensure that all three can enjoy the game.*

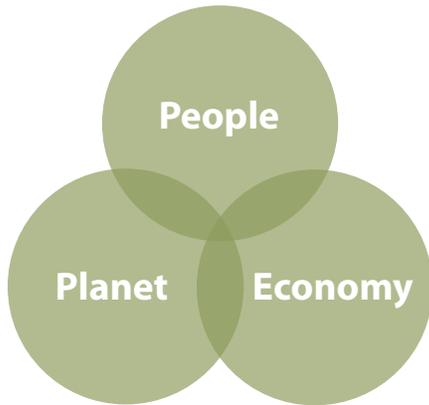
EQUITY AND OREGON'S MATERIALS MANAGEMENT VISION

The equality vs equity graphic (shown above) can guide our thinking about how we meet Oregon's materials management vision. For "all Oregonians to enjoy life and attain well-being," it is important to understand the variety of people who live here and their communities.

Each community experiences different levels of access to consumer choices, healthy food and toxic-free households. This ease of access (or lack of) has everything to do with where people were born, economic background, and race.

Inequity is built into our institutions. So, addressing the material environment and economy without defining, addressing, and monitoring existing disparities will perpetuate those inequities. If we don't, those inequities will be perpetuated in our new environmental and economic policies.

TRIPLE BOTTOM LINE OF SUSTAINABILITY



Many models of sustainability are based on the concept of a “triple bottom line,” that says we must plan for and measure economic, environmental and social outcomes. Unfortunately, economic and environmental factors typically receive most of the attention and precise accounting in the sustainability field. All too often, measures of social impact are simply tagged on at the end and rarely measure how differing populations may or may not be experiencing those impacts.

Julian Agyeman, an expert on environmental justice and sustainability and a professor at Tufts University, notes that “you cannot retrofit for equity.” To come up with solutions to sustainability problems, he argues, it is paramount that existing disparities are named at the outset and that the people who might carry the biggest burdens help shape and build the new system.

To be successful in creating a triple-bottom-lined sustainable Oregon, we must recognize our differences, particularly where there have been historical disparities. If we use the equity vs equality diagram, we can redirect our focus from moving around the boxes to ensuring that everyone gets to see the game. In other words, solutions must shift from measuring the movement of materials we produce and consume to satisfying the core needs of all people. This shift may allow us to meet the triple bottom line. Doughnut Economics and Just Transition are two models that directly put equity in the center of sustainable systems. Both global models are being applied to identify new solutions to our local consumption in the Portland metropolitan area.

A SAFE AND JUST LEVEL OF CONSUMPTION

Kate Raworth, Senior Researcher at Oxfam Great Britain, believes that we can make this shift to an equity focus through a concept she calls Doughnut Economics. She says, “The Doughnut of social and planetary boundaries is a playfully serious approach” to framing the challenge.

Raworth argues that humanity’s 21st-century challenge is to meet the needs of all people within the means of the planet – that no one falls short on life’s essentials (from food and housing to healthcare and self-expression). And while doing this we don’t overshoot our pressure on Earth’s life-supporting systems, such as a stable climate, fertile soils, and a protective ozone layer.

Traditional sustainable consumption messages and programs focus on encouraging people to “consume less,” “live simply” and “make do.” These messages fall flat for communities who are experiencing a lack of basic needs. They also only focus on consumer choice, without addressing the systemic problems that cause over consumption and inequities.

Doughnut Economics acknowledges the billions of people on the planet who fall short of meeting their basic needs. But it also describes a world where humanity is collectively overshooting our consumption at a level that is heading for collapse.

Doughnut Economics changes the goal from reducing all consumers’ consumption to identifying an economic system with a “safe and just zone” of consumption. In that system, ecological ceilings of consumption levels that are unsustainable are measured, with the goal to avoid an overshoot. But also measured is a foundation of basic well-being for all people.

The goal is to stay in equilibrium within that safe and just zone. Instead of a model of an ever-growing economy, a safe and just economy is regenerative and distributive. An economy that is regenerative is one where we take nature as our model, measure and mentor. With nature as model, we can study and mimic life’s cyclical processes of take and give, death and renewal, in which one creature’s waste becomes another’s food. Economies that are distributive by design are ones where all people who contribute to its value receive its benefit.



Visit Kate Raworth’s website to see her Ted Talk, explore resources and more.

Join the debate at www.oxfamblogs.org/doughnut

C40 operates a network of the world's megacities committed to addressing climate change and supports cities to collaborate effectively, share knowledge and drive meaningful, measurable and sustainable action on climate change.

Portland and Doughnut Economics

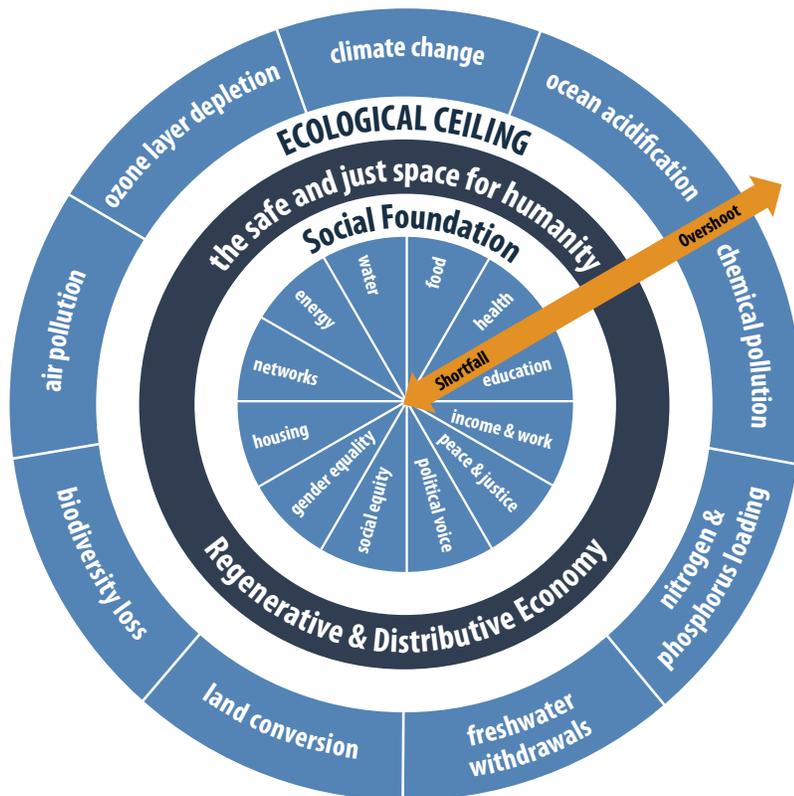
While the City of Portland is not tackling its fundamental economic structure, staff in the Bureau of Planning and Sustainability (BPS) are actively using concepts from Doughnut Economics to create strategies to address consumption.

Portland's Climate Action Plan calls for BPS to develop a sustainable consumption and production strategy to prioritize local government activities that will support a shift to lower carbon consumption patterns. A Sustainable Consumption work project started in 2019. It uses the safe and just concept to ensure that whatever strategies are considered, each has a ceiling and foundation approach.

The City's first phase took place in the spring and summer of 2019. Workgroups of stakeholders examined where carbon emissions were specifically associated with consumption and production in Portland. They used this data to brainstorm interventions in the areas of construction, electronics, food, goods, and services. Then they charted ways these interventions could reduce consumption for consumers who are overshooting in our community and lift up shortfall consumers.

The current phase is a partnership with C40, a network of the world's megacities committed to addressing climate change. The City of Portland was selected to participate in their Thriving Cities Initiative, a C40 pilot

DOUGHNUT ECONOMICS MODEL



project focused on helping cities reduce carbon emissions and enhance quality of life for all residents through shifting to more sustainable patterns of consumption.

The initiative kicked off with a workshop for City staff with Kate Raworth, who shared her Doughnut Economics research and led City staff through activities using a city scale snapshot of Portland's doughnut.

In the Spring of 2020, City leaders will partner with community-based organizations and business actors to determine how they can address unsustainable patterns of consumption and production and create a thriving city.

With the Sustainable Production and Consumption Strategy and the Thriving Cities Initiative, Portland is embarking on a journey to understand what it means to be a 21st-century thriving city.

JUST TRANSITION: LETTING COMMUNITY LEAD

Like Doughnut Economics, Just Transition is an international concept with local activities. But where the origins of Doughnut Economics were academic, Just Transitions is born out of decades of grassroots environmental justice organizing to find common ground and shared benefit in the transition away from polluting industries. Just Transition highlights that economies based on growth are extracting resources from both the environment and workers – without benefit to them. Just Transition addresses pollution and toxics that are critical issues in the environmental justice movement, but it also addresses the urgency that climate change presents.

The movement works to advance ecological resilience, reduce resource consumption, restore biodiversity and traditional ways of life, and topple extractive economies. They celebrate a concept called “Buen Vivir,” which means that we can live well without living better at the expense of others or the planet.

A critical aspect of the Just Transition concept is that “Frontline Communities” must lead in the co-creation and co-delivery of strategies, programs and systems that come out of the transition from an extractive economy. Frontline Communities are those that experience “first and worst” the consequences of climate change. These are communities of color and low-income populations. Their neighborhoods often lack basic infrastructure to support them, and they are increasingly vulnerable as our climate deteriorates. These are Native communities, whose resources have been exploited, and laborers whose daily work or living environments are polluted and/or toxic.

The Thriving Cities Initiative (TCI) is a journey for cities to explore and embrace a vision for a thriving city that appreciates what makes cities unique while understanding its global influence and responsibility. Together with diverse city representatives, participating cities embark on a journey to understand how to create thriving people in this thriving place, while respecting the wellbeing of all people and the whole planet. This is a collaboration between C40, Doughnut Economics Action Lab and Circle Economy.

TERM

Frontline Communities:

those that experience “first and worst” the consequences of climate change. These are communities of color and low-income, whose neighborhoods often lack basic infrastructure to support them and who will be increasingly vulnerable as our climate deteriorates. These are Native communities, whose resources have been exploited, and laborers whose daily work or living environments are polluted or toxic.

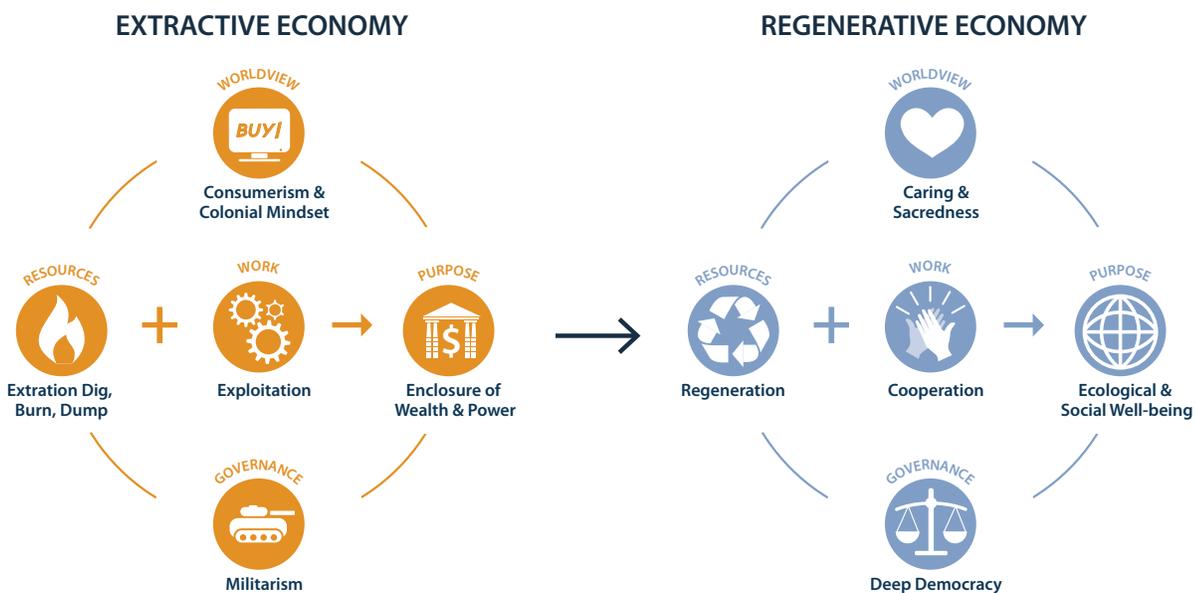
Local Just Transition

Communities in the Portland metropolitan area and Oregon are embracing the just transition concept and making substantive change using its tenants. The Oregon Just Transition Alliance (OJTA) is a project of OPAL, Asian Pacific American Network of Oregon, Beyond Toxics, Pinosos y Campesinos el Noroeste (PCUN), Rural Organizing Project, and Unite Oregon. They see just transition as the framework where frontline communities in Oregon can build existing and new relationships and nurture leadership to ensure the new economy works for them.

In Spring 2017, more than 50 community organizations organized the People’s Climate March. It was an opportunity for frontline communities to connect and find common ground. From that gathering, energy spread into projects large and small. Day laborers began to identify ways that they can play a role in the City of Portland’s emergency plans and that any job can be a green job through a project with Voz Workers’ Rights Oregon and the City of Portland. The Coalition of Communities of Color developed a program called Redefine to advocate for climate solutions that are led with racial and economic equity. Their principals demand policies that prevent further harm to communities of color, reinvest revenues to reduce disparities, create opportunities directly in underserved communities, and ensure inclusive design and implementation.

Allies developed, advocated, and passed a ballot measure in 2018 called the Portland Clean Energy Community Benefits Fund (PCEF) – the first climate-fund measure created and led by communities of color. PCEF invests over \$150 million annually in projects that maximize carbon emissions reductions, provide direct benefits to those who have been historically under-resourced, and create climate initiatives that benefit all Portlanders, while also supporting the City’s 2050 climate goals. The program is guided by a deep commitment to community engagement, accountability, and prioritization of those hit first and worst by a changing climate. This unique combination of climate expertise and public engagement makes PCEF a world leader in climate action that is rooted in economic opportunity and climate justice.

JUST TRANSITION MODEL



METRO'S 2030 PLAN: LEADING WITH EQUITY

Leading with equity

Our region is stronger when everyone has access to financial prosperity, a healthy environment and the range of opportunities that allow us to thrive.

But unfortunately, a long history of exclusionary and discriminatory policies has harmed communities of color in the Portland metropolitan region. As a result, communities of color currently experience the worst economic and social outcomes of any demographic group.

Within the garbage and recycling system, inequities appear in a variety of ways, including:

- The garbage and recycling industry tends to lack diversity in the workforce—except in the job categories that pay the lowest wages.
- Procurement processes for solid waste operations contracts often include barriers to participation for minority-owned and woman-owned small businesses.
- Communities of color experience barriers to accessing Metro's recycling information, education services and household hazardous waste services.
- People of color own few of the businesses that run our region's system.

Metro, cities and counties are committed to creating the conditions that allow everyone to enjoy the benefits of our growing region. With our programs, policies and services, we are working to make this a great place for everyone—today and for generations to come.

To ensure an inclusive process from the start, Metro convened an Equity Work Group to ensure that racial equity was incorporated into the plan. The work group participated in each phase of the process, working alongside staff in drafting elements of the plan. Metro and eight community-based organizations also organized discussions to learn how residents envision the future of the garbage and recycling system. These discussions informed many of the actions in this plan.

CONCLUSION

As we have recognized the ecological importance of biodiversity, we are increasingly also recognizing the importance of human diversity. Researchers have estimated that there are between three to 30 million species on Earth, with a few studies predicting that there may be over 100 million species on Earth! This great variety of life and its processes is called biodiversity. Ecosystems have evolved over thousands, hundreds of thousands, or even millions of years, and are therefore in delicate balance, with each species playing a vital role. This interrelatedness of species means that safeguarding biodiversity is essential to safeguarding our natural systems. Coming to understand this has been an important paradigm shift for conservationists, and it has led to the understanding that each species, no matter how small, plays an important role in the ecosystem.

Much as biodiversity is important to environmental sustainability, human diversity is essential to economic and social equity. In this chapter we learned that equitable solutions arise only out of a careful consideration of our diversity and our differences. Because people do not start out from the same place and because they have different wants and needs, equity cannot be achieved by distributing resources to everyone exactly equally. Rather, an equitable distribution of resources must take into account current inequities and barriers to access. And equitable solutions to materials management must consider all people, including the workers who sort recycling, people who live near manufacturing, or households that do not have the materials to meet basic needs. Utilizing an equity lens while working on making shifts in our consumption and production of materials will improve our chances of creating rich complex systems that build benefits and serve a variety of cultures and communities.



Workers at a local Material Recovery Facility (MRF)

CHAPTER 5 DISCARDS: SOLID WASTE AND RECOVERY SYSTEMS

INTRODUCTION

What happens to our stuff after we are done with it?

We have learned in previous chapters that of all the stages of the life cycle of materials it is the making and using of products that have the most negative impacts on the environment. For this reason, so far, this handbook has focused on the *reduce* part of the 3R's. If we do not consume products they will not be made, used and discarded in the first place.

The decisions we make about our discards still have significant effects on the environment and the economy. Discards management (the reuse and recycle part of the 3R's, plus garbage) is one part of the full cycle of materials management, and it can save energy and natural resources and reduce pollution.

But we don't always fully understand those impacts, and thus we don't always make good choices about what to do with our materials when we are ready to part with them. While we dutifully place materials out on the curbside and even load up our cars and carry materials to recycling depots and reuse organizations, we typically know very little about what happens to these materials after they go away.

This chapter presents a big picture view of the infrastructure that collects, sorts and distributes our discarded materials and considers its environmental impacts. This will hopefully empower you to make better decisions and better explain those decisions to others.

The good news is it is pretty easy to do the right thing with our discards in Oregon. Households, businesses and local authorities work together to manage our natural resources by reusing, composting, recycling and sometimes burning discards for energy. We can also properly dispose of materials that belong in the landfill.

Each part of our solid waste management system plays a role in protecting the environment. Of course, our system is not perfect. You will read elsewhere in the handbook and learn from speakers and tours about the challenges our system faces. But first, it is important to understand the existing system.

TERM

Waste

Solid waste:

Any discarded (abandoned or considered waste-like) materials. Solid wastes can be solid, liquid or semi-solid.

Waste:

See also Solid Waste. Unwanted or undesired material. A material that has outlasted its purpose or is left over. The trait of using resources carelessly, imprudently or without thrift. Loss of resources.

Waste management:

The processes of the collection, treatment and disposal or return to markets of materials after their use phase. Proper waste management reduces the negative impacts waste has on environment and society.

TERM

Waste generation: the act of consuming goods and services that result in discarded material. The resulting discards are usually measured in weight, generated by a specific area or entity over a certain time period. This waste must then be processed through reuse, recycling, composting, incineration or landfilling.

TERM

Recovery: the extraction of discarded materials for reuse, recycling, composting or energy generation in order to capture some of the energy and natural resources used to make products and avoid the consumption of virgin resources to make new products.


DEEP DIVE


For more details you can consult the Oregon DEQ 2021 Waste Recovery Report (available online). DEQ releases a new waste recovery report each fall for the previous year.

QUANTITY OF DISCARDS IN OREGON

The challenge at hand

Before we explore the various parts of the waste management system, it is worth pausing to appreciate the sheer volume of the material that is processed.

Oregon facilities managed 6,494,204 tons of waste that was generated in 2021. Waste generation is the total tonnage of material our collection system manages either by recovering it (reuse, recycle, compost, incinerate) or by disposing of it. The total tons of waste generated equates to per-capita generation of 3,044 pounds per person (8.3 pounds per day), a nine percent increase from 2,792 pounds per person (7.6 pounds per day) in 2020.

Of the waste generated, a total of 4,046,936 tons went into landfills and incinerators, up 17.9 percent from 2020. Recovered material came to 2,447,267 tons or 37.7 percent of waste generated.

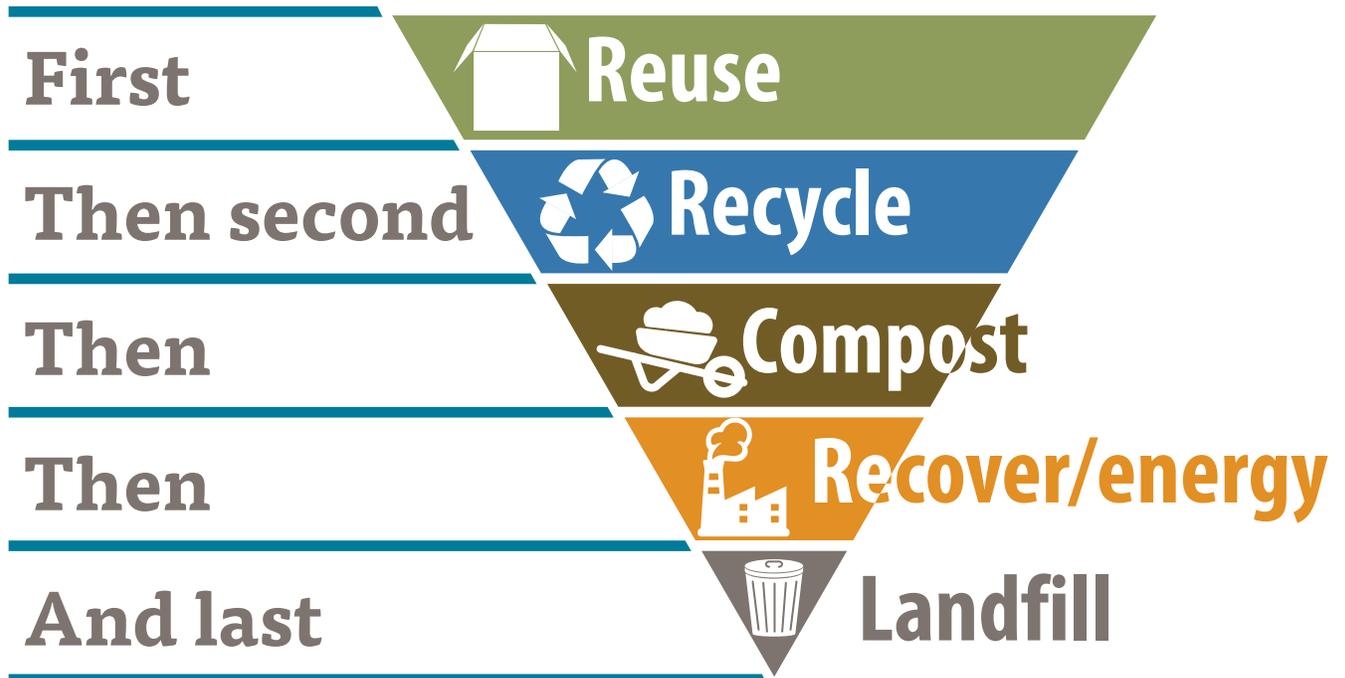
While these trends are concerning, an unprecedented wildfire season at the end of 2020 resulted in the disposal of more than 6,000 damaged structures in 2021. The Department of Environmental Quality estimates that fire debris accounted for close to 71 percent of the increase in overall disposal. Had the fire debris not been generated, the recovery rate would have been 40.4 percent in 2021, and the waste generation rate would have only gone up by two percent, not nine. Still, 2021 stands as a reminder for how increased wildfires, floods, and severe weather events can directly impact waste generated.

THE RECOVERY HIERARCHY

Setting priorities on conservation

As early as 1983, Oregon legislators set forth our state's first comprehensive commitment to integrated waste management, when they passed the Opportunity to Recycle Act; the Oregon Recycling Act of 1991 deepened that commitment. These laws established solid waste management policies and designated jurisdictions responsible for the recovery. The Acts also recognized that some waste management practices conserve more energy and natural resources than others and so we must have systems and a mindset that sets priorities for what we do with our discards. A hierarchy was established to guide solid waste management decisions. The State uses the solid waste hierarchy as a communication tool to encourage residents and businesses to reduce, reuse and recycle, in that order. The hierarchy is also used to focus planning efforts and to prioritize program activities.

THE RECOVERY HIERARCHY





Workplace clothing swap



Recycling at a multifamily complex

A CLOSER LOOK AT THE HIERARCHY

Reuse



To use an item again after it has been used. The goal is to displace the need for a new product with an existing product.

Reuse can be practiced in the following ways:

- A consumer can reuse durable products multiple times instead of using one-time-use disposable products (examples: bring your bag to the store or print documents double-sided).
- A consumer can make a discarded item available for another consumer to use in the same way in which the product was originally intended (examples: donation, resale, salvage or swapping).
- Reuse can also include repurposing an item for a new use without changing the fundamental structure of the item (example: using an old door as a desk top).

In the recovery hierarchy, reuse usually uses the least amount of energy and resources, because this strategy replaces the need to extract, manufacture and process natural resources for a new item.

Items do often still need to be collected, separated, cleaned, fixed and transported to the new owner or user. Once it is in the hands of the new consumer, the material may have environmental costs associated with the use phase. When the reused product is older and energy inefficient, these energy costs may be higher than purchasing a new product. Most of the time, these costs to reuse are still lower than the costs to recycle.

Recycle



To break discarded products down to more fundamental materials so they can be manufactured into new products (examples: pulping paper, melting glass or metal, chipping or melting plastic).

This strategy replaces the need to extract natural resources needed for new products and usually requires less energy and natural resources to process, manufacture, transport and sell back to consumers than raw materials.

Activities such as collection, separation, cleaning, transportation, processing, manufacturing and marketing have emissions, energy and wastes associated with them.

Compost



To break organic discards down through controlled biological decomposition. This can be done with some materials on a small scale in the backyard or on a large scale in a commercial compost facility. The resulting product is utilized as fertilizer, soil amendment, pest and weed control, and mulch. Compost is useful when it displaces the use of synthetic fertilizers, pesticides and herbicides. Compost also makes the production of food more energy and resource efficient. In some conditions, organic matter can also be utilized to generate energy before composting.

Composting can also play an important role in mitigating impacts of materials that decompose in a landfill. When organic matter breaks down in a closed environment (deprived of oxygen), it produces methane which is a potent greenhouse gas pollutant.

Recover for energy



To combust or process discards to create energy. When products cannot be reused, recycled or composted, it may still be useful to try to extract the material in order to generate energy. This approach reduces the need to extract raw materials (often times fossil fuels) for our energy needs. However, all of the natural resources and energy used to make the original product are lost once the material is burned. This alternative is only useful if the other levels of recovery are not an option.

Incineration and thermal depolymerization are the two most common ways that energy is recovered from materials in Oregon.

- **Incineration:** Incineration systems burn mixed solid waste to reduce its volume and extract energy as heat and/or electricity. Another name for these systems is waste to energy plants. They are the most contested and expensive methods of waste disposal. While such systems have improved, pollution still remains a problem. Incineration facilities also require a large amount of material to keep them viable economically. This need to provide a high level of feedstock often results in recovery programs having conflicting goals. One is to support the economic viability of the facility (which improves as volume increases), while the other is to prioritize recycling or reusing materials.

A small portion of our solid waste from the metro area goes to Marion County's Brooks facility. Marion County sends all of their solid waste to this facility after recovering material and removing toxic materials.

Much of the wood waste in our region is also chipped and used as an energy source for some local manufacturers. Due to the decrease in paper mills which predominantly utilize this energy source, there is a decreased market for wood waste in our region.



Backyard composting bin



Energy from waste facility in Marion County

DEEP DIVE

See video “Breath this Air” from the Peak Plastic Foundation to learn more about inequities in human health costs of depolymerization.

- **Thermal depolymerization:** Some plastics are not easily recycled because of additives or the nature of the resin. Plastics that have been used in agricultural or construction industries are particularly dirty and therefore costly or impossible to recycle. In these conditions, some of these plastics may go through a process called thermal depolymerization. Pellets are processed to supplement or replace other fuels, particularly coal. High levels of energy use and pollution are associated with this processing. It is significantly less desirable than recycling, because once it is burned as a fuel, the energy and resources cannot be recovered again.

Landfilling



Columbia Ridge Landfill near Arlington, Oregon



To bury and manage solid wastes (or ashes that result from incineration) underground. Landfills play an important role in the solid waste system. Without landfills, materials would be discarded in the environment in the form of pollution and litter. However, capturing materials through recovery is a priority so that there is less need to extract the natural resources. Landfills are also a major source of methane emissions which contribute to climate change. Some of the methane is collected for energy, but composting significantly reduces the impact of organic discards even when methane fuel capture is considered.

WHERE DOES IT GO?

Garbage

Contrary to popular belief our garbage cans and subsequently our landfills play an essential role in protecting the environment. Garbage, when it is not contained, is risky to our health and environment. Historians describe a time when there was no understanding that objects that were no longer needed should be placed somewhere special. People often set their discards wherever they were last used. This still happens today in places where people live further apart or their governments are not developed enough to have a plan for discards. Rotting organic waste, human waste, and even heaps of solid waste can spread disease and cause injury to people and wildlife and pollute the environment. In a city setting, these problems are compounded by the volume of material.

Around 500 B.C., Athens issued the first-known law against just throwing garbage into the streets. Instead, they required residents to dump waste no less than one mile outside the city walls. Over the 2,500 years that followed that decree, dumpsites became more concentrated and isolated from people. The result was that places like wetlands and river deltas

became ideal locations for garbage since they were deemed uninhabitable by people. These practices, that were problematic for the environment, became even more dangerous as the volume of waste increased and as this waste came to contain more and more toxic materials.

By the late 1980's, the public began to look around and realize that these practices were resulting in toxics in the water supply and air and land pollution from uncontained garbage. Municipalities were required to close and manage old landfills and utilize modern practices in managing waste.

At this time, landfills acquired a particularly bad reputation. Certainly it makes sense to try and use the building blocks of our products again, but some essential materials simply have no use after we are done with them. These items need a safe and near permanent place to go. Today these places are called sanitary landfills.

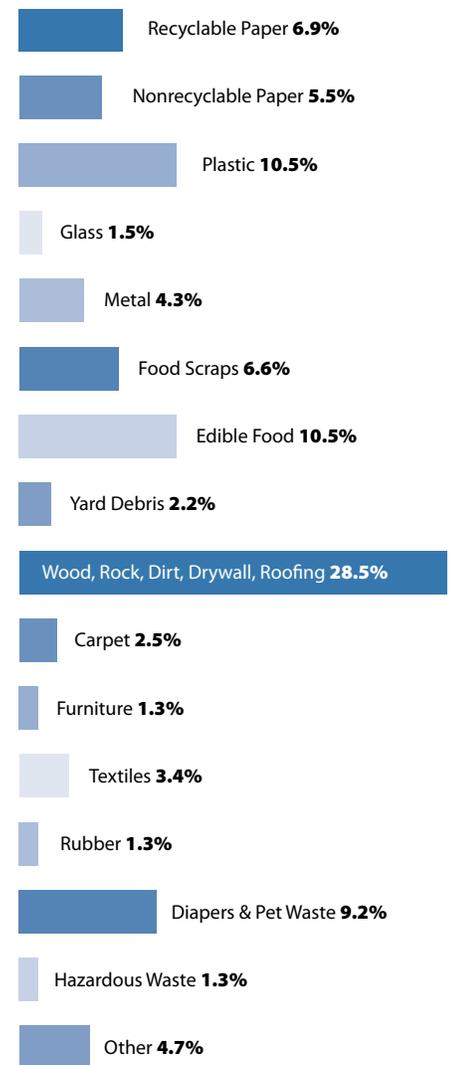
What is in Oregon's garbage?

The Oregon Department of Environmental Quality (DEQ) works with Metro and local jurisdictions to conduct a Waste Characterization and Composition Study every 2-5 years. It is a statewide study of the composition of municipal solid waste generated in Oregon and disposed at landfills, transfer stations, and incinerators in Oregon or transported out-of-state for disposal.

The study is conducted by obtaining samples of waste at the point of disposal, sorting the waste into different material categories, weighing each component, and then combining these results with disposal quantity information to determine the total amount of different materials being disposed in Oregon.

These studies are useful in assessing whether recycling education programs are effective in getting Oregonians to recover the materials on the list of accepted materials. The studies also help the state and region make decisions about policies and infrastructure that could recover new materials. As you can see from the Metro Garbage Graph, the last garbage composition study was conducted in 2016.

METRO GARBAGE



Source: Oregon DEQ (2016)

TERM

Franchise: Contracts between private garbage and recycling companies and local governments that allot specific territories and require standardized services and fees.



Columbia Ridge Landfill near Arlington, Oregon

What happens to our garbage after we set it out on the curb?

The EPA and Oregon DEQ set regulatory standards, but solid waste systems are managed at a local level. Local government and private companies work together to collect, transfer and dispose of waste. In our tri-county region, governmental responsibility is split; cities and counties are accountable for collection, while Metro oversees transfer and disposal.

A. Collection

Most metro area businesses and residents pay a fee to private garbage and recycling companies, known in the trade as “haulers,” for garbage collection. However, some businesses and individual residents decide to opt out of the collection process and haul waste directly themselves.

Most local governments have **franchises** that make collection for garbage and recycling happen for homes and small-plexes of 2-4 units throughout the region. Franchised haulers have contracts with the local government to serve allotted territories, and offer standardized services and fees. In Washington County, hauling certificates replace franchise contracts.

Multifamily and business garbage and recycling haulers are franchised or certified as well. The one exception is that haulers in Portland are not franchised. Haulers compete in a free market for commercial and multifamily customers and each hauler sets its own rates. In order to get a permit to haul commercial waste in Portland, haulers still need to meet certain levels of service, but they are allowed to offer a larger range of services and choose their rates.

B. Transfer

Most haulers in our region take collected garbage to Metro transfer stations, which prepare the garbage for transportation to a landfill. Metro owns the transfer stations, but a contract is placed out for bid by Metro every five years for companies to operate the stations. As part of the contract, facilities attempt to pull out more valuable and larger pieces of recyclable materials from the refuse. The remaining garbage is compacted into large trailers bound for a landfill disposal facility.

Transfer stations free haulers to spend their time collecting waste in our communities, rather than traveling great distances to dump their loads in distant landfills. Ninety percent of waste collected in the Metro region is deposited at the transfer stations, loaded into privately-owned trailer trucks and transported to the Columbia Ridge Landfill in Arlington, Oregon. Each landfill-bound semi-trailer — some 65 a day — carries six or seven garbage truckloads, saving energy, time and money while reducing truck traffic through the Columbia River Gorge.

MAP OF METRO CENTRAL AND METRO SOUTH



Two Metro-owned transfer stations presently accept most of the region’s waste:

Metro Central	Metro South
6161 NW 61st Avenue, Portland (between Front Ave. and St. Helens Rd.) Open 8 a.m. – 5 p.m. seven days a week.	2001 Washington Street, Oregon City Open 7 a.m. – 7 p.m. daily

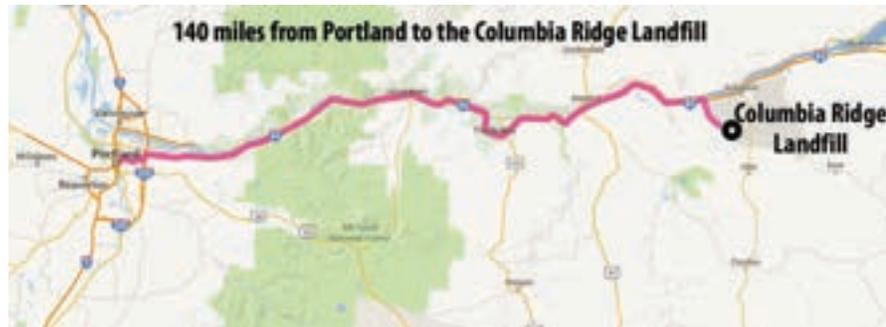
Call 503-224-3000 for more information.

C. Disposal

In the early 1990's, the metropolitan area had a landfill problem that has been predominantly solved today. Diminishing local space and the identification of groundwater pollution at landfills led to growing concern. Eventually, Metro led the way to find new disposal sites for the garbage generated in our region.

Before 1991, waste was disposed of at several local area landfills. Landfills in northeast Portland and Oregon City closed in the 1970's and 80's. Metro's St. Johns Landfill in North Portland stopped accepting waste in 1991.

Today, Columbia Ridge Landfill is the final destination for most of the area's waste. It is located 30 miles south of Arlington, in northeastern Oregon. The Riverbend Landfill in McMinnville and the Hillsboro Landfill are smaller local landfills permitted to receive only construction and demolition materials.

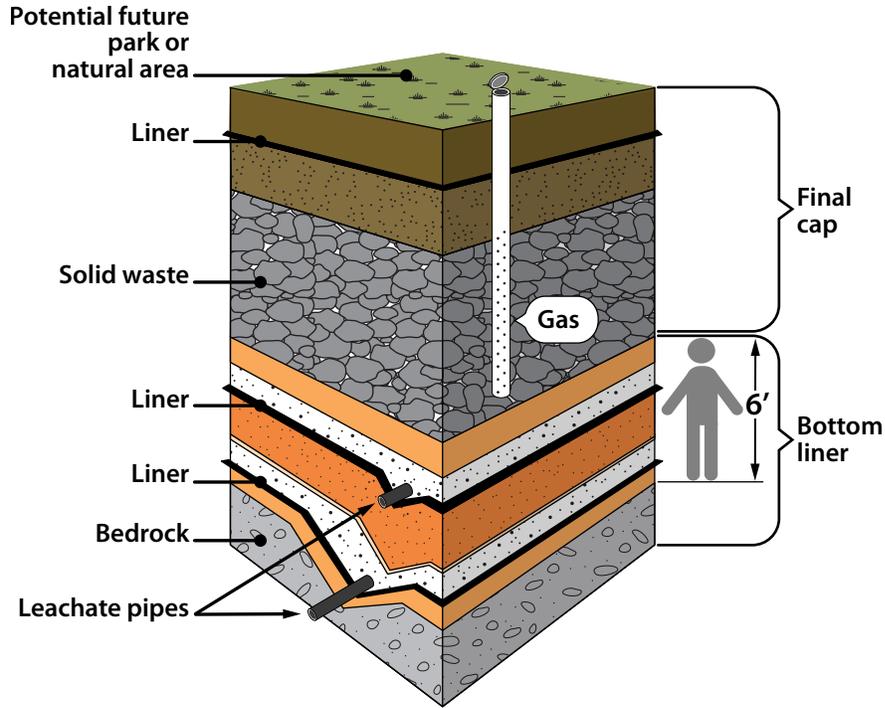


Landfilling is not ideal by any means. Since our primary landfill is 140 miles from Portland, the resource and monetary costs of hauling waste there are significant. In some landfills, high levels of yard debris, food scraps and paper waste are also a concern, as they produce the greenhouse gas methane.

But today, the two major regulators, the national Environmental Protection Agency (EPA) and Oregon Department of Environmental Quality (DEQ), agree that new landfills are less problematic than older facilities, due to today's stringent regulations for facility design, siting and operation.

The Columbia Ridge Landfill (CRL), our region's primary waste destination, is located in the desert, where it's less likely to contaminate groundwater than landfills in rainy locations. In contrast to the old Portland area landfills, CRL is geologically stable as it is on top of no faults, has a water table at least 200 feet deep, and receives only 9 inches of rain a year. This modern landfill uses liners, covers, and leachate collection systems to protect groundwater. A system of collection pipes reduces methane infiltration into surrounding soils and reduces (though it does not eliminate) emission to the atmosphere of this potent greenhouse gas. With 750 acres available, Columbia Ridge is expected to efficiently accommodate our waste until at least 2066.

LANDFILL PROFILE



DEEP DIVE

You can find a video tour of the Columbia Ridge Landfill created by Sustainable Today on YouTube.

Recycling

In the Metro area, responsibility for managing garbage is split; cities and counties handle collection, and Metro oversees transfer and disposal. Recycling management mirrors this system. However, there are several important components and players unique to recycling.

Successful recycling depends on the careful alignment of five key steps:

1. Source separation
2. Collection
3. Mixed recycling separation and marketing
4. Processing and manufacturing
5. Purchase of recycled products

In order to end up with quality recycled products, each player in the process must do their part with care. Those who receive materials depend on those before them to do their part by properly handling materials. Proper sorting ensures that the end material is pure enough to recycle into new products. The end goal of creating quality materials requires teamwork at all stages of the process: from homes and businesses, to companies that process materials, and local governments. The amount of work and level of quality are at a constant tension that is driven by economic pressures all along the system. Most of the pressure comes from the end where materials are returned as a commodity. The next chapter will go into detail about how these markets play a role. This section will follow the materials up to the point of those end markets.

TERM

Source separation: *the segregation of recyclables and garbage at the point of generation before collection.*

TERM

Curbside collection program: *an on-site garbage, recycling and compost collection system for residents and businesses.*

1. Source separation

The first step in any recycling system is picking out materials that can be recycled from those that will be disposed. This stage is called **source separation** in the waste management field.

There are two major players in this stage: the local jurisdictions and people. Local jurisdictions (Cities and Counties) are responsible for determining which containers should be included in a **curbside collection program** and what materials belong in each of these containers. They determine that a material is allowed in recycling by identifying and analyzing long-term markets that will use the material to make new products. They then examine the processes to ensure that there is a way to get the materials from the consumer to the markets. These Cities and Counties are also responsible for informing the public about how to use this system.

It is then the responsibility of the public to learn which materials go where and then to prepare materials properly so that they can be successfully recycled. Materials must be free of food and dirt. Some items must be removed such as plastic lids and caps. It is useful to keep materials in their original shape rather than flattening them. All of these actions help reduce contamination.

The word **contamination** is used frequently in the recycling field. Contamination can refer to soiled recyclables. But contamination also refers to mixing materials that are not compatible for collection, processing of discards or manufacturing of new materials. Improper source separation and preparation at home and at work not only results in the loss of quality material, but also it may actually contaminate other materials, thus losing valuable recyclable materials during the processing. Having to process materials that do not belong in the curbside programs is also costly for processors.

In 2008, regional jurisdictions and Metro determined a uniform list of accepted materials for recycling so that, no matter where you lived and worked in the region, the list would be the same. The list of accepted materials for recycling and how you sort those materials remains the same today.

For the most part, people in the region are doing a good job with source separation. Metro conducted a comprehensive study in 2014 to understand what levels of contamination exist in the curbside collection program. Overall, the study found that 14 percent of the material in residential garbage could have been placed in curbside recycling.

On the other side of that, nine percent of peoples' recycling loads were non-recyclable materials that should have been sent to the landfill or wasn't accepted in the curbside collection. Those are contaminants.

"There are still some recyclables in garbage," said Marta McGuire, a planner in Metro's Resource Conservation and Recycling division. "The study also found unacceptable items in the recycling cart. The question on the table is, can we do better? Do we want to do more?"

Ms. McGuire asked this question in 2014. As global markets became more conservative about contamination, the region and local governments are finding that the answer to this question is, "Yes."

The importance of avoiding contamination and ensuring proper preparation and separation at the source will become clearer as we continue to follow the journey of recyclable materials.

TERM

Contamination:

1) Unintended materials mixing with desired materials for recycling or compost (for example, glass is a contaminant in a paper stream); 2) Materials that are too soiled, such as with food, grease or dirt, to be recyclable.



2. Collection

Source separated recyclables are typically collected one of four ways: a deposit system, curbside collection, recycling depots or Metro Transfer Stations.

The Oregon Bottle Bill

Consumers in Oregon pay a dime deposit for most beverage containers larger than 4 ounces and smaller than 1.5 liters. When they return containers to local retailers that sell that beverage, their deposits are returned. Consumers can also return their bottles at redemption centers called Bottle Drop. Bottle Drop is a new system that gives consumers more options on how to return their containers and how to accumulate their returned money.

The Bottle Bill is great for recycling. Initially, the Bottle Bill yielded a return rate of more than 90 percent and reduced litter by 77 percent. Over time the recovery rate dropped with the drop of the value of the nickel. By 2015, numbers from the Oregon Liquor Control Commission (OLCC) showed Oregonians redeemed 68 percent of covered metal, glass and plastic containers.

Even with a dropping redemption rate, the 5 cent incentive got more materials recycled. The 2015 rate of recycling for containers that were made of the same types of materials – but were not accepted by the Bottle Bill – was only 37 percent. This is much lower than the 68 percent recovery rate for those containers covered by the Bottle Bill.

Under state law, consecutive years with redemption rates below 80 percent allow OLCC to raise the deposit from a nickel to a dime. As a result, the agency switched to a dime deposit in Spring 2017. In 2018, the redemption rate returned to 90 percent. Meanwhile, the program also expanded the accepted materials. In 2018, the program also saw a 50 percent increase in sign-ups for the BottleDrop service that allows consumers to drop off their bottles to be counted and credited to their accounts. More than 300,000 Oregonians now have BottleDrop accounts.

The deposit system is also good for recycling because it provides a steady supply of clean, sorted recyclables that boost local recycling markets.

 **DEEP DIVE** 

Visit Bottledropcenters.com for more information

Oregon's 2018 Bottle Bill Expansion
Additional beverage containers to be included

NEWLY INCLUDED

- Energy and Sports Drinks
- Coffee and Tea Drinks
- Ready-to-Drink Cocktail Mixers
- Kombucha
- Hard Cider
- Alc. Free Beer
- Protein and Wellness Drinks

These products must be made with 100% recycled plastic or glass and 100% recycled metal. They must also have a 100% recycled label and a 100% recycled cap.

Oregon's 2018 Bottle Bill Expansion
Additional beverage containers to be included

NOT INCLUDED

- Wine, Mead, and Distilled Spirits
- Milk (dairy and plant based)
- Infant Formula
- Meal Replacement Drinks
- Concentrated Cocktail Mixers

All quart, carton, and straw bottles, along with their containers, are not eligible for redemption. For more information about which containers are included and how to redeem them, visit www.oregon.gov/OLCC/recovery_bill.aspx.

Curbside collection

Oregon cities with a population of 4,000 or more must provide recycling along with their curbside garbage collection. Privately owned recycling trucks collect materials at the curbside of both residences and businesses. In the Metro area, jurisdictions franchise private garbage haulers to pickup residential recyclables in recycling trucks. Haulers provide containers to each household. For commercial collection, all haulers are required to include with their garbage service the same list of basic materials that they collect for residents. However, in Portland because it is not franchised, haulers can customize specialized pickup for materials for recycling for special rates.

Oregon recycling laws require that separate vehicles are used for garbage, mixed recycling and compost. Glass is always kept separate because it is breakable. Most companies send a separate truck to pickup glass.

Recycling and reuse depots

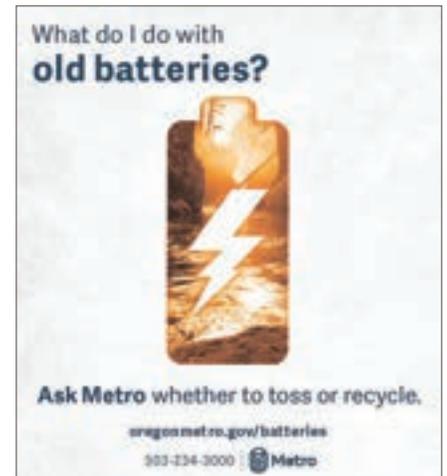
In addition to curbside collection, recycling and reuse depots often accept additional materials, such as Styrofoam, computers and plastic bags. Some materials are taken for no charge. Fees may be charged for materials that are costly to recycle. Recycling depots are used by business owners and operators, and rural residents who don't have curbside service. In addition, some of these businesses provide drop boxes for residents who want to recycle non-curbside materials.

There are also many depots and organizations that take discards so that they can be reused by someone else. From building materials to furniture, food to art supplies, it is worthwhile to seek locations that will take gently used materials before considering recyclers.

Metro's Recycling Information Center is a great resource for locating a depot for recycling and reuse for the materials you wish to discard. The RIC phone number is 503-234-3000. Metro also provides an online *find-a-recycler/reuse* page, which allows you to search for places that recycle many materials.

Metro's transfer stations

These transfer stations are not just for your trash. They are one-stop locations for waste deposit. Residents and businesses can take their garbage and recyclables to the transfer stations, which are also the drop-off points for garbage haulers. Transfer stations are particularly popular for bulky items. But they also have a hazardous waste collection program and receive many types of recycling and reuse materials.



TERM

Commingled recycling: a system in which paper, plastics, and metals are mixed in one container by the consumer, instead of being sorted by the consumer into separate commodities (newspaper, paperboard, corrugated fiberboard, plastic, etc.) and handled separately throughout the collection process.

TERM

Two-sort system: a recycling system in which paper, plastics, and metals are mixed in one container and glass is placed in a separate container.

TERM

Materials Recovery Facility (MRF): pronounced “murf.” A specialized plant that receives, separates, and prepares recyclable materials for end-user materials markets.

3. Mixed recycling separation and marketing

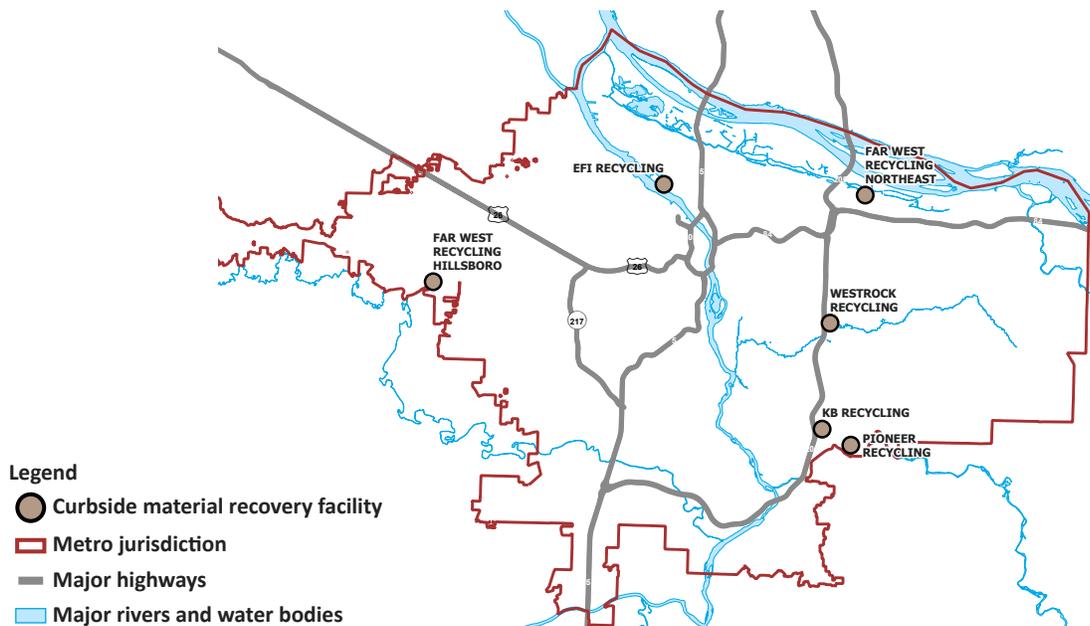
In the old days, source separation was rather involved. Newspapers were bundled by string, cans had to have labels removed and smashed. Paper went in one bag, metal and plastic bottles in another. Glass in another bag. Collection trucks needed multiple compartments to manage all of the categories. The result was that consumers were not recycling enough material to supply the demand of end markets.

For these reasons, by 2008, most Metro area communities were allowed to mix their paper, plastic and metal together in the same curbside containers with glass in a separate container. **Commingled recycling** means less source separation for the public and ultimately has resulted in an increase in recycling. However a **two-sort system** meant that materials would eventually have to be sorted by someone else.

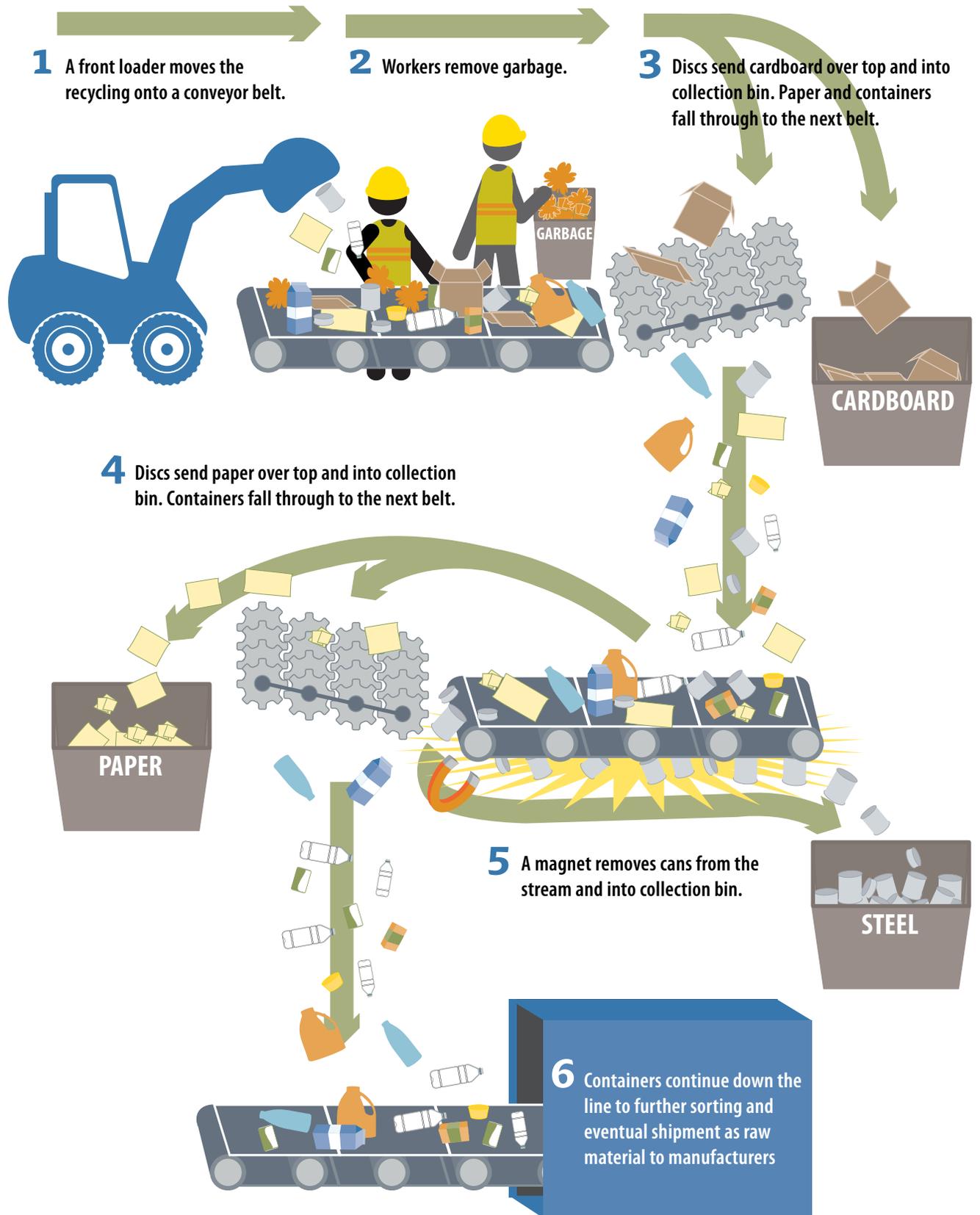
That need for a second stage of separation gave birth to the increasing role of facilities called **Material Recovery Facilities or MRF’s**. MRF’s are privately owned facilities who accept the materials collected by haulers, separate them with a combination of manual and mechanical means, and bale them up to truck and sell to the market that will yield the best price.

MRF’s are the linchpin of our recycling programs in the metro region. For this reason, the next chapter will take a deeper look at the relationship between MRF’s and the markets that will purchase the materials they prepare.

CURBSIDE COLLECTION MRF MAP



MATERIAL RECOVERY FACILITY (MRF) PROCESS



DEEP DIVE

Learn more through the Oregon DEQ The Truth About Packaging with Recycled Content fact sheet.

4. Processing and manufacturing

Material Recovery Facilities bale up the materials after they have sorted them and sell these materials as is to processors who will chip, melt, mix, sort or pelletize the materials. These companies understand what types of raw materials manufacturers use and how to prepare recyclables so that they will function just as well as virgin materials. All these materials compete against virgin materials, often in worldwide markets. As a result, the economics of utilizing recycled materials can change based on virgin commodity prices. For example, if wood chips are readily and cheaply available, prices for virgin paper pulp might be low.

The next step in recycling is the actual manufacturing of a new product and its purchase by individuals, businesses, and governments.

The volume of material available also affects prices manufacturers are willing to pay. When many communities began newspaper and cardboard recycling simultaneously, prices fell because the supply of recyclable material became so large. Alternatively, if too little material is available, no business will be interested in investing in the plant capacity to use it.



TERM

Post-consumer: content that comes from waste materials generated by households or businesses in their role as end users of the product.

TERM

Pre-consumer: content that comes from manufacturing waste, for example paper scraps recycled at a paper mill.

5. Purchase of recycled products

Just as the recycling cycle starts with the consumer, the last link is also the consumer. The cycle is not complete until goods made with recycled materials (or even better used goods) are purchased and used again.

Buying recycled sends a message to industry that recycled products are in demand. When recyclable materials become the raw materials of industry, they reduce the need for mineral and petroleum extraction and timber harvesting. Less water and energy are typically required to make products from existing (recovered) materials than from virgin materials. When you buy recycled products, you save vital natural resources and help stimulate economic growth through environmentally preferable technologies.

Look for products that say that they have recycled content. **Pre-consumer** and **post-consumer** products are both better than using virgin material, but it is better to give preference to those products with the highest level of post-consumer content. Post-consumer means the material has come from a product collected for recycling as compared to industrial scrap. Most products will also tell you how much of the material has come from a product collected for recycling as compared to industrial scrap. The intent behind choosing post-consumer products is to increase demand for them thereby reducing impacts resulting from extraction and processing of virgin materials.

Organic Discards

The Curbside and Beyond Chapter will provide information about backyard composting and wormbins. Backyard composting is the best way to go! Processing yard debris is most environmentally effective when it takes place close to the properties that generate the organic discards and will in turn utilize the fertilizer.

However, onsite composting is not an option for the volumes of material generated in commercial settings like schools, restaurants, hospitals and grocery stores. Furthermore, there are some organic discards such as meat, dairy and grains that should not be managed in backyard compost piles, because these piles do not get hot enough to break these types of discards down and they can attract rodents.

For these reasons, the region has been working to develop a large scale collection and processing infrastructure so that food scraps can be captured to be turned into soil amendment for agriculture, parks, roadsides and homes.

Successful composting depends on the careful alignment of steps that are similar to those for recycling:

1. Source separation
2. Collection
3. Processing at compost facilities
4. Purchase of compost and other by-products

Unlike recycling which is well-established and standardized throughout the region, the steps for composting look quite different depending on whether the organic material is coming from a residential or commercial source. Organic material that is collected in a residential setting is made up almost entirely of yard debris which is woody, fairly dry and high in carbon material which is fairly stable. Organic discards in a commercial setting are almost entirely made up of wet, heavy food scraps that are high in nitrogen and therefore more odorous and quick to break down. These differences require different collection processes and different types of compost facilities.

This organics infrastructure is still very much developing in our region, and the development is happening at different rates around the region. For that reason, these steps can also look quite different in Hillsboro than they do in Gresham or Portland.



1. Source separation

As the region works to develop a comprehensive food scrap collection system, businesses are the top priority source of food scraps for composting, because there is so much more to collect there. Grocery stores, restaurants and large institutions like hospitals, schools and colleges generate a lot of food waste. About 40 percent of the metro area garbage comes from the commercial sector, and 28 percent of that waste is food scraps. So, separating out those food scraps for composting would have a major impact.

Residents can help out by separating their yard debris from garbage by using it in their backyard compost or placing it in their yard debris container (where provided). Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County are currently the only places in the region where residents can also include food scraps with their yard debris.

Contamination is an even more important consideration when separating organic materials than it is for recycling. When you think about it, recycling will be sorted and separated by mechanical methods. Compost must be processed by biological creatures (bacteria). These creatures are amazing, but they only eat what they consider food. Some bacteria can only breakdown materials found in yard debris, while others like nitrogen-rich food scraps. None of these critters like to eat plastic.

For these reasons, the way in which the public separates out materials for composting is more important than ever. Places where source separation in recycling are most problematic, such as community events or multi-family housing, are often the least desirable places to collect food scraps. Programs in these areas will likely someday exist in a more rigorous manner, but first the places that can separate the food scraps in more pure loads will be prioritized.





2. Collection

Food scrap collection is available for businesses in Beaverton, Clackamas County, Gresham, Portland, Hillsboro, Sherwood, and Tualatin as well as unincorporated Washington County. Businesses in these areas can set up collection with their garbage and recycling company so that they can separate food scraps for composting. Accepted food scraps includes grains, dairy, seashells, meat and bones. Non-food items such as waxed cardboard, napkins, paper towels, service ware and plastics must all be separated and placed in the garbage.

Landscaping materials can be composted at many local yard debris sites throughout the region, but food scraps cannot be included in these loads.

Organic collection for residents varies greatly in the region. Some rural areas do not have yard debris pickup; some services provide roll carts; some use customer-provided carts; and some accept paper craft bag containers of extra yard debris. Standard container size is 60 gallons, but some cities allow for smaller containers for tight spaces. Frequency is usually every week in service programs throughout the region, although some cities in Washington County pickup only every other week. In Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County, you can include food scraps with your yard debris.

TERM

Anaerobic digestion: *the processing of organic waste with microorganisms in an oxygen-free environment, which generates methane and carbon dioxide for the purposes of fertilizer and burning for fuel.*

RESOURCE

For more information on anaerobic digestion you can watch the “How is food waste recycled?” video (available on YouTube).

TERM

Aerobic digestion: *the processing of organic waste with microorganisms and oxygen, carbon and water. This process generates fertilizer, mulch and soil amendments.*

3. Processing at compost facilities

Most compost facilities in the region are permitted for landscape material only. Their method for composting is to utilize large enough piles of material, air and water to turn materials into bark, mulch and soil amendment in about 45-60 days. These facilities do not use methods that get hot enough or cultivate bacteria that can process food scraps and therefore are not permitted to accept this material. Food scraps, other than the occasional unharvested veggies from the garden, are a contaminant for these facilities.

Most yard debris and landscaping from residents and businesses are collected and sold to these local facilities and in turn their products are sold mostly right in our region.

Most food scraps collected by businesses in the region were going to an anaerobic digestion facility in Junction City called JC Bio. This facility converted the food scraps into fertilizer and generated enough electricity to power 2,200 Oregon homes annually. Unfortunately, Shell Oil bought the company and discontinued the organics program. Business food scraps are temporarily going to some of the same facilities as residential scraps. However, as soon as summer of 2020, commercial food scraps received at the Metro Central Transfer Station could be put into a slurry-making machine and sent to Portland’s wastewater treatment plant for energy recovery in the anaerobic digesters.

Food scraps are rich in digestible sugars that break down easily in anaerobic digesters and provide the highest yield of energy. Fibrous material that is low in nitrogen such as woody debris, leaves, grass clippings and biodegradable plastics can take much longer to break down or may not break down at all. Yard debris and plastic also keep beneficial bacteria from getting to the food scraps. This is why commercial compost programs only accept food scraps.

A number of new facilities on the outskirts of the region or in other parts of Oregon can also accept food scraps along with yard debris. They utilize **aerobic digestion** process which generates a nutrient-rich compost product that is applied to local farms and gardens. This approach to composting utilizes aeration equipment to pull or push air through piles along with a rigorous turning schedule. This combination brings the rows of material to a high enough temperature to manage food scraps.

At this time, these windrow compost facilities are not large enough to accept all of the region’s residential organic material. Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County are the current areas collecting food scraps and are now utilizing all of the capacity of these facilities. More facilities are in the works, but in the meantime, most of the rest of the region is focusing on developing collection and education programs for commercial collection.



4. Purchase of compost and other by-products

The benefits of using compost are numerous. It builds good soil structure; enables soil to retain nutrients, water, and air; protects against drought; helps maintain a neutral pH, and protects plants from many diseases commonly found in the garden. It also feeds earthworms and other microbial life in the soil. In general, regardless of the kind of soil you have, it can be improved with the addition of compost.

All types of compost facilities in our region sell their finished products for fertilizer in agriculture and parks and for erosion control along public roads. Households can also buy these products directly from the source. Most of the facilities will deliver the compost right to your door for a fee, or you can drive up and purchase smaller loads from a hauler.



CONCLUSION

Discards and materials management

You will notice that even though this chapter was devoted to the part of the materials life cycle that comes after consumers are done with products, most of the discussion is not about landfills. This is not because landfills are to be avoided at all costs, but because the primary goal of recovering material is to turn those materials back into something new. As we learned in the materials management chapter, the most important environmental impacts of recovering materials come from displacing the need for raw materials in the manufacturing process. To ensure that recovery meets this important goal, materials must actually reach the intended manufacturers.

Discards processes and markets

As mentioned, recycling and composting is all about getting the natural resources embedded in our discards back into commerce in order to replace the need for raw materials. This means that many of the decisions that our local jurisdictions make about what is accepted curbside are related to the global economy. A material may technically be recyclable or compostable but not appropriate for curbside collection. For a material to be eligible for curbside pickup:

- The material must have a stable market so that it can remain on the list indefinitely.
- The hauling and sorting machinery necessary to collect and separate the mixed material must be economically feasible and safe for workers.

The next chapter will describe the dynamics of material recovery facilities and the global materials market and how they affect our ability to recycle in our region.

CHAPTER 6 RECOVERY MARKETS

INTRODUCTION

Why we recycle and why we recycle right

Recycling isn't just good for our environment; it's also about economics. If there isn't a market for the material collected at curbside, then recycling won't occur for that material; it's as simple as that.

While the central idea behind recycling — taking something old and turning it into something new — is simple, the devil is in the details. Some materials are turned into commodities used here in the metro region. Other materials are consumed out of state. Still more recyclables are sent overseas to be turned into products that we then, in turn, purchase here at home.

What follows is a basic description of the markets for recyclable materials (both domestic and international) as well as a look at most of the individual materials collected in our curbside rollcars.

THE CHALLENGE: SENDING MATERIALS TO THE RIGHT PLACE

Islands in the two-stream

As discussed in the last chapter, in the metro region, we have a two-stream or two-sort collection system for recyclable materials. Mixed paper, plastic and metal go together and glass is separated. Many places around the country have an even simpler system, with glass mixed in with the other recyclables. Our two-stream collection is a trade-off. With everything in one cart except glass, and thus picked up by one collection vehicle, there are massive savings on the collection side of the equation, since fewer trucks and drivers are needed. Also, it is much easier for consumers to put out recyclables. This provides more material for the recycling industry. But this system has led to rising costs for materials sorting which must occur after the materials are collected at curbside. Some have noted that this is akin to attempting to get eggs out of an omelet.

CREDIT

Much of this chapter was contributed by Resource Recycling's Executive Editor, Jerry Powell and Recycling Partnership's Dylan de Thomas. Resource Recycling, Inc. publishes business journals on the latest recycling trends, market analysis, research, equipment, and business news for the recycling and waste management industry. Recycling Partnership is a national nonprofit that invests in recycling systems through resources and technical assistance.

Why not one-stream?

Many communities in the U.S. allow residents to place glass in the container with mixed recycling.

Our region explored this option but discovered that domestic markets find glass to be problematic.

Broken glass ruins paper and metal and causes costly damage to equipment.

In an attempt to keep recycling local, the metro area decided to keep glass separate.

These challenges are met by both increased outreach and signage; through newsletters, flyers, and the large stickers on the lids of roll carts. The challenges are also met by the Master Recycler program, where educated residents are deputized to offer advice and guidance to their friends, families and neighbors.

Revisiting the concept of contamination

Anything that is collected for recycling in a curbside cart must be sorted before it is sold. With that in mind, let's ask the question: What is contamination? Well, there are two types of contamination:

1. Materials that consumers put in the curbside cart that do not belong (for example, plastic bags).
2. Recyclable materials that Material Recovery Facilities (MRF's) send to the wrong place (for example, plastic in a paper bale, or vice-versa).

Improper source separation and preparation at home and at work not only results in the loss of that material, it may actually contaminate other materials, thus wasting valuable recyclable materials. When Material Recovery Facilities send the wrong materials to a recycling company, this costs the recycler money and usually results in the material being thrown away.

Sorting it out

While outreach and education is an important way to minimize the first type of contamination, unwanted material will always be a problem. And education will not solve contamination from facilities. New, modern materials recovery facilities (MRFs) are able to lower both of these types of contamination.

With different types of screening processes that do a remarkable job in separating out two-dimensional material (such as paper) from three-dimensional material (such as containers), and optical sorting technology that can separate out different types of plastics by color and/or resin type, modern MRFs have the ability to sort both effectively and efficiently, reducing both types of contamination.

Unfortunately, the majority in our metropolitan region are not this type of facility. Our system is primarily the same sorting process that was originally designed when as much as 95 percent of the recycling was paper and sorting was primarily aimed at cleaning contaminants from the paper. A new infrastructure will require major investment in planning as well as expensive equipment. Both government and business are presently engaged in trying to address this aspect of the recycling industry here.

But, in the meantime, the level of contamination has both local and global implications to the economic sustainability of the recycling industry.

LOCAL AND INTERNATIONAL MARKETS

Local recycling markets are dependent on global manufacturing and trade.

While international markets have been key to the recycling industry almost since its inception, beginning in the late 1990s, the market for these materials, especially in China, grew rapidly. This rapid growth in the Chinese market had everything to do with their emergence as the largest manufacturing nation. This was coupled with a vast improvement of the export infrastructure (ports, piers, the size of westbound shipping lines, etc.). For the metro region, this had important impacts on the local market for recyclable materials.

One advantage this expanded international market had over local markets was its ability to accept material with contamination.

There were a number of reasons China was able to accept dirtier loads of material than local markets could. The first is that low-cost Chinese labor could be utilized to sort imported recyclable materials. China's recycling industry also formed later than it did in the United States and when it was built, there was a good deal of investment. So their sorting technology is sometimes superior to local sorting technology. Finally, China was dependent on the steady stream of recycling materials to lower the costs of manufacturing products.

In other words, until recently we have been able to pass the problem of contamination onto overseas markets which had the wherewithal to sort out the problem.





The Great Green Fence of China

Even with these two important advantages that the Chinese market enjoyed, the levels of contamination in much of the curbside-collected recyclable materials coming out of MRFs around the region, the country and Europe proved to be too high. Meanwhile, Chinese wages have increased and consumers there are beginning to create an increased level of their own discards, making them less and less dependent on the U.S. and Europe for material.

In 2013 and again in 2017, the Chinese government implemented customs enforcement actions called Green Fence and Green Sword to reduce contamination in imported plastics and paper recycling. Simply put, the Chinese did not want our trash anymore. It was not long after that other countries that received scrap paper and plastic, like India, Thailand, Vietnam and Malaysia, created policies refusing unwanted materials

The increased pickiness of overseas buyers meant that MRFs had to more effectively sort the incoming recyclable materials in order to sell them. Cleaner loads and a need for an alternative did result in increased opportunity for North American companies to compete with China. But it also left a gap in recycling for many materials.

Unfortunately, neither the MRFs nor the US paper and plastics facilities have invested enough in equipment to make US recycling sustainable. Recycling markets consultant Patty Moore stated in May 2017, “I’m really, really concerned about the impact this is going to have on recycling in [the U.S.], because we’ve gotten so used to being able to move that material to export. The U.S. sorting facilities are unequipped to provide the high grade of paper and plastic that China is now demanding.”

By 2019, local communities felt the impact of these international policy changes. In order to meet higher standards, Material Recovery Facilities slowed down their sorting lines, increased the number of people sorting materials; one even invested in optic and mechanical sorting. These changes made the cost of recycling go up. Some rural communities in Oregon deemed it more cost efficient to discontinue recycling collection as it became more expensive to recycle materials than to throw them away. The Metro area cities opted instead to raise the rates for collection in order to pay for the higher cost of recycling. The list of accepted materials for all parts of the Portland metro area that was created in 2008 remains the same list.

In June 2021, Oregon passed the Plastic Pollution and Recycling Modernization Act (Senate Bill 582). The Act will overhaul Oregon’s outdated recycling system by building on local community programs and leveraging the resources of packaging producers in order to create an innovative system that works for everyone in Oregon.



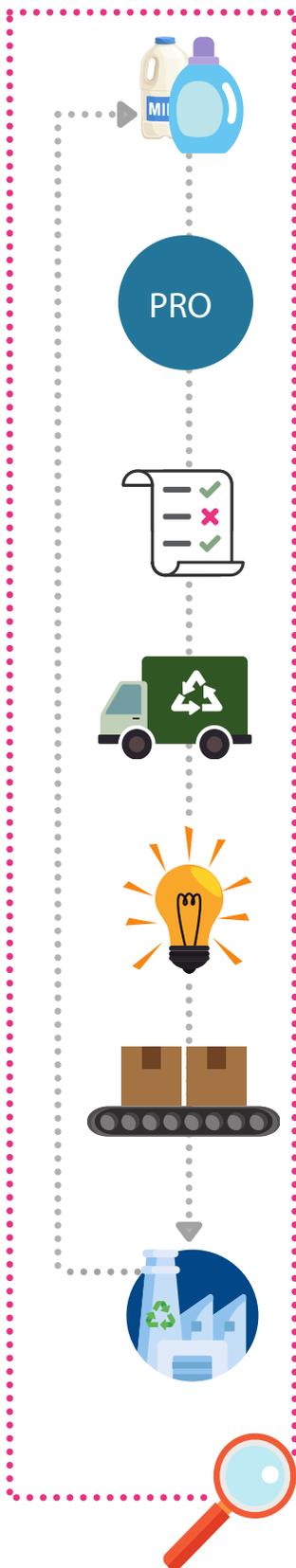
PLASTIC POLLUTION AND RECYCLING MODERNIZATION ACT

The Plastic Pollution and Recycling Modernization Act updates Oregon’s recycling system by building on local community programs and leveraging the resources of producers to create an innovative system that works for everyone. The new law requires packaging producers to share responsibility for effective management of their products after use. The law went into effect January 1, 2022 and program changes will start in July 2025.

Key benefits

	<p>Shares and scales responsibility across the recycling system. Producers will be brought into the recycling system to fund improvements and expand recycling services. Cost to producers will be based on what materials they use and how much they sell into Oregon.</p>		<p>Creates one statewide list of what can be recycled. The uniform collection list will provide clarity to households and businesses about what can be recycled, and create efficiencies in recycling operations across the state.</p>
	<p>Increases access to recycling. The new law will provide recycling services to people who didn’t previously have it, such as those who live in apartments and rural areas.</p>		<p>Incentivizes sustainable products. Producer fees will be higher for non-recyclable products and those creating more environmental pollution.</p>
	<p>Prevents plastic pollution. Ensures collected materials are recycled responsibly and keeps plastic and other trash out of our waterways and communities--both domestically and overseas.</p>		<p>Creates accountability to outcomes. DEQ will permit and audit recycling processors, and a Governor-appointed advisory council will review producer program plans, the statewide collection list and educational resources.</p>

How the Recycling Modernization Act Works



PRODUCERS will join and pay a membership fee to a nonprofit Producer Responsibility Organization (PRO) that will fund improvements and ensure that collected recyclables go to responsible end markets. Producers will also be required to meet new recycling goals for plastic packaging and food serviceware.

PRODUCER RESPONSIBILITY ORGANIZATIONS will collect producer membership fees and use them to ensure improved and expanded recycling services. Most collection will continue to be overseen by local governments, but PROs will provide services for certain hard-to-recycle materials. PROs will also fund waste prevention grants, and several studies to assess challenges and recommend improvements to improve multifamily recycling conditions, equity in the recycling system, and litter and marine debris.

ONE COLLECTION LIST will allow individuals and businesses to recycle the same items across the state, at home and at work. PRO funding will enable collection of the same items regardless of location or distance from recycling markets.

RECYCLING SERVICES will be expanded under the direction of local governments, with support from the PROs, especially for rural communities and people living in apartments. The same private collection companies will continue to provide recycling services.

EDUCATION about how to recycle will continue to be offered by local governments, along with new programs to reduce recycling contamination. PROs will create accessible educational resources that local governments can use and that meet the needs of diverse communities.

PROCESSING of recyclables will be done in facilities that meet new performance standards, including for material quality, reporting, and paying living wages to workers.

END MARKETS that can handle the material appropriately — without creating plastic pollution or other harms — can purchase it after sorting and recycle it into something new. Producers and processors will be obligated to make sure materials collected in Oregon reach responsible end markets.

OVERSIGHT AND INTEGRATION will be provided by DEQ, with accountability from all participants. DEQ will plan and implement changes required by the new law, and oversee the recycling system and provide enforcement where necessary. PROs, recycling processors and local governments will track and report more information about where our recyclables go and ensure that they are managed responsibly and used to make new products.

MARKETS FOR INDIVIDUAL COMMODITIES

Fiber (otherwise known as paper)

Even with the increased digitization of our media consumption and business communications, recovered fiber is still the single largest segment of the curbside bin, making up an average of around 60 percent by weight of the material stream inbound to MRFs.

MRFs previously marketed a number of different grades of paper and paperboard, but now most sell just two: highly valuable corrugated cardboard (OCC) and mixed paper, which combines much of the remaining fiber collected, and includes newspapers, office paper, and other paper products. Some MRFs simply produce one bale, which would include all fiber.

While some material does go overseas, much of the recovered office and newspaper collected curbside in the Metro region is turned right back into paper by Pacific Northwest mills. A key reason for this is the close relationships between many local MRFs and U.S. paper companies, either by ownership or by long-term contractual arrangements. The mills in this region are typically combination mills in that they use a mix of virgin and recovered fiber to make products.

Paper products that are made of mixed materials like cereal boxes, six pack carriers and milk cartons are often recycled into products like toilet tissue.

Contamination Concerns:

With fiber, much of the deleterious contamination is either broken glass that can stick to paper (especially if wet) or other two-dimensional material (plastic film or other flat packaging, such as pouches or plastic lids) which is largely why these forms of packaging aren't allowed in the curbside roll carts.

Beverage containers

With beverage containers, Oregon has a unique position because of the state beverage container redemption program, or bottle bill. Under the redemption system, a far greater percentage of beverage containers are recovered in Oregon than in parts of the country without such a system.

Not only does this system help recover more beverage containers of all types (PET, aluminum and glass), it helps keep those containers incredibly clean, which makes them more valuable on the open market. With PET containers, it even led to a unique partnership to help recycle this material locally.





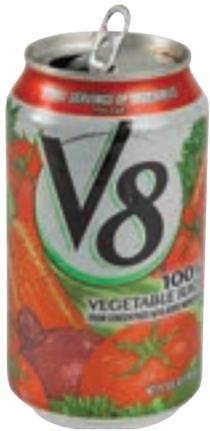
In 2013, a group of local investors signed a long-term agreement with the Oregon Beverage Recycling Cooperative, the industry-owned corporation that runs the state's redemption system, to purchase all of the PET containers collected under the bottle bill. The resulting facility, ORPET, is located in St. Helens, Oregon, and it also purchases some materials from local and regional MRFs, as well as redeemed containers from western Canada.

Previous to the building of the facility, a strong export market existed. This is a good example of local infrastructure responding to local markets within our state's recycling system.

Recycled PET is primarily used to make products that would have otherwise been made of polyester such as clothing, pillow stuffing and carpets.

Contamination Concerns:

With the bottle bill-collected material, contamination is negligible. The curbside-collected material can be contaminated by dirt, broken glass or even smaller bits of various materials. Also, a PET bale from a MRF may contain other recyclables, such as HDPE (No. 2) bottles. This can reduce the price garnered for the material from downstream consumers.



Aluminum beverage cans

Aluminum beverage containers, known in the recycling industry as UBCs (used beverage containers) are the single-most valuable commodity, by weight, recovered at a MRF.

Generally, this baled material sells for 50¢ to \$1 per pound (or from 1¢ to 3¢ per can), so the markets for UBCs are robust. Because the material collected via the bottle bill is of such high quality it is typically sold domestically.

Due to the special processing needed to handle UBCs – the top of cans is made of a different alloy than the body – as well as the specific processing needed to delacquer the scrap metal (think of it as paint removal), the local manufacturers able to handle UBCs are few and far between. Our UBCs mostly go to mills in Georgia, Indiana or New York.

There are also markets for other types of aluminum, such as foil or the tabs from cans (both different alloys) but these, too, are specialized.

Contamination Concerns:

Same as with the PET containers.

Glass bottles

Blessed by the bottle bill and robust recycling industry in the Pacific Northwest (Owens-Illinois off of I-205 and others), **cullet** — as commodity-grade recovered glass is known — has healthy markets here in the metro area. Owens-Illinois sells recycled glass bottles to our local brewers and wineries.

Markets for the glass collected curbside were at one time less robust due to high contamination. Today glass recycling trucks often bring glass directly to a facility called Glass to Glass who uses optical sorting that provides Owens the clean glass needed to make their products.

If not purchased by a glass container manufacturer, other markets include fiberglass manufacturers (for which cullet must be very clean) and for use in concrete. Alternative uses include landfill road base and alternative daily cover for landfills.

Contamination Concerns:

Glass container manufactures can only use food-grade bottles and jars. Other types of glass such as window panes, Pyrex or candle holders can cause imperfections and ruin glass containers. Glass collected through the bottle bill is more valuable because the scanners only accept food-grade bottles. People frequently contaminate the curbside collected glass with non-food-grade items.



TERM

Cullet: recycled or waste glass used in glassmaking.



Other plastics

There are robust domestic and foreign markets for No. 2 high-density polyethylene (HDPE) plastic containers. It is particularly important that HDPE is not mixed with contaminants for it to be useful to make new products. Unfortunately, few to no containers accepted in the bottle bill utilize HDPE. So the steady stream of uncontaminated material that other plastics recyclers enjoy is not available with HDPE. If noncarbonated beverage packaging were added to the bottle bill program, it would greatly increase the chances of a growing local HDPE industry.

There are emerging markets for other containers, particularly for polypropylene (PP, No. 5). For example, the nation's largest HDPE reclaimer in Alabama is expanding into handling PP.

Because of growing markets for these types of containers, there has been an attendant growth of secondary processing facilities, which either sort out the materials that MRFs would have otherwise landfilled or sort a mixed plastic bale.

These facilities, sometimes called PRFs (plastics recovery facilities), have come about due to growth and advances in sorting technology, particularly as that technology has become more readily available and competitively priced on the global market.

All of the efforts surrounding non-sorted plastics previously were overseas where inexpensive labor was employed and where sorting operations were able to supply local markets for resins in applications where quality has fewer issues, such as making drainage pipe, garden pots, parts for toys, etc.

Contamination Concerns:

Because mixed plastic bales typically consist of the plastic materials that are left over after sorting, they also can be considerably contaminated by unwanted materials. This is why they have typically gone overseas (before Operation Green Fence) or on to secondary processing.

Ferrous metals

Households are not large generators of ferrous metal scrap. A single household will likely never produce as much ferrous scrap as when junking a single unwanted car. Despite this small flow of material and few regional mills, much of this material is recycled back into ferrous metal locally.

Contamination Concerns:

Ferrous metals do not present much concern in the way of contamination. Magnets in MRFs efficiently and effectively sort ferrous metal. These metals also withstand more contamination than other materials, because they will be melted in extreme heat, burning off most unwanted materials.



Plastic bags

While this material is not, and should not be, collected curbside, clean bags are a desirable material. Bags are recycled into many products such as composite lumber that is used to make park benches, backyard decks and fences – even playground equipment. They also can be recycled into new plastic bags.

While thin single-use plastic grocery and shopping bags are banned in the State of Oregon, enforcement will be inconsistent, and other plastic bags still make it into the recycling (for example, vegetable bags from grocery stores or bags for newspapers). They should be kept clean and dry and then taken to depots or retailers, where a large number have take-back bins. Plastic bags from these locations are highly desired by plastics recyclers as they tend to be clean from contamination.

Contamination Concerns:

Plastic bags don't belong in the curbside, but many make it in there anyway. Markets for these plastic bags that end up in the curbside containers are extremely limited because of the level of contamination typically found in baled, recovered film from MRFs. Also, plastic bags are often cited by MRF operators as the most-common non-desired material because of how they can clog and damage sortation equipment of all types.

For bags returned to retail outlets, a common contaminant is the paper sales receipt left in the bag.

TERM

Ferrous metal: Metal that contains iron. Ferrous metals include mild steel, carbon steel, stainless steel, cast iron, and wrought iron. Aluminum is the most common non-ferrous metal.





CONCLUSION

After reading this chapter and touring a MRF, Master Recyclers might be concerned about the future of recycling. Hopefully the opinion of long-time recycling industry consultant, Patty Moore, will help ease concerns as well as provide some hope for how we can shape the future:

Recycling will thrive again

Recently, we've seen reports of the ruination of recycling. This is nothing new: A quick Internet search shows recycling's death has been predicted whenever scrap prices fall.

Prices are now slowly recovering, yet the doom-and-gloom has not abated. Why? Quite simply, the material mix has changed and MRF design has not kept up with the change. I believe the most pressing issue in recycling today is the lack of MRF separation technology. It's clear we need significant research and development and capital investment into post-consumer material separation infrastructure that reflects the product and packaging mix of today and tomorrow. MRFs are still predominantly built to separate two-dimensional paper items from three-dimensional bottle and container products.

Oregonians are hopeful the Recycling Modernization Act will bring new resources to a much needed comprehensive update that will put Oregon at the forefront of Recycling innovation once again.

CHAPTER 7 BEHAVIOR CHANGE THEORY

INTRODUCTION

Change is hard

We surprise even ourselves when we act in ways that are contrary to our core beliefs. For example, on New Year's Day we vow to take the bus to work, but on January 4th when the alarm goes off, the car seems a whole lot easier. People like to behave with integrity, but struggle to make changes to their regular habits in order to match their actions with their beliefs. Psychologists refer to this as the **intention-behavior gap**. The intention-behavior gap is the disconnect between knowing what you would like to do and actually doing it.

The environmental community often thinks that all that we need to do is give people information, and that will make them care enough to take action. Give everyone in the neighborhood a recycling brochure, and they will put all the materials in the right container after that.

Unfortunately, research doesn't show a strong correlation between having environmental values and acting on them. Harvard Professor Douglas Holt goes so far as to offer the cynical assessment that, "After 40 years of research that industriously sought out linkages between environmental concern and environmental behaviors, the answer is clear, the relationship barely exists."



TERM

Intention-behavior gap:

A psychological term for the gap between the possession of knowledge, values and awareness, and behavior.

DEEP DIVE

Holt, Douglas. 2012.
Constructing Sustainable Consumption: From Ethical Values to the Cultural Transformation of Unsustainable Markets,
The ANNALS of the American Academy of Political and Social Science 2012 644: 236.

TERM

Social marketing: *Theory and practice that seeks to develop and integrate marketing concepts with behavior science to benefit individuals and communities and further the greater social good.*

 DEEP DIVE 

To more fully explore the fascinating field of social marketing you can search online for: community-based social marketing (CBSM), ecopsychology, behavioral economics, and tools of engagement.

What works?

Whether it is getting folks to change the container in which they put waste, clean their home with non-toxic products, properly store food so it won't go bad, or fix something instead of buying something new, you as a Master Recycler will be challenging the very basic human tendency to resist change.

Let's be clear that Master Recyclers are not in the business of changing people's minds about the environment. We don't need to research shows that most people in our region are already open to recycling, composting, reducing toxics and consuming sustainably. This is fortunate because it is pretty tough to change a person's basic values.

The Master Recycler mission is to bridge the gap between intention and action by motivating people at home and at work to reduce waste. So we are in the business of helping people take the actions they already want to take.

You don't have to have a psychology degree to effectively change behavior. But it doesn't hurt to understand how people make decisions about taking new actions and changing behaviors. This chapter explores the relationship between the science of behavior and sustainable living. It will describe techniques that use this science to encourage behavior change. The techniques come from a number of **social marketing** theories and practices. The goal is to use science to help you motivate people to take action.

In a nutshell, research indicates that if you have had success in making pro-environmental changes in your own life, then you are well positioned to inspire those around you to make similar changes. You can do this by: 1) sharing your story about how you struggled and succeeded, 2) sharing your favorite places to go for resources and 3) helping build community support and systems for others to take action.

THE PROCESS OF CHANGE

Change is a process

Before exploring some reasons that people act or don't act, it is helpful to understand the process that people go through in order to make a lasting change in their habits. The environmental movement tends to operate as if behavior has an on - off switch. The theory goes that one day we throw a tin can in the garbage; we learn that we should recycle; the next day we decide to throw a tin can in the recycling and we never look back. Environmentalists who assume that information is the key to change get frustrated when people don't act in a way that is known to be good for the environment.

Health psychologists, however, have known since the 1970's that most people don't go from inaction to action just because they receive a piece of information. Rather there are stages to behavior change.

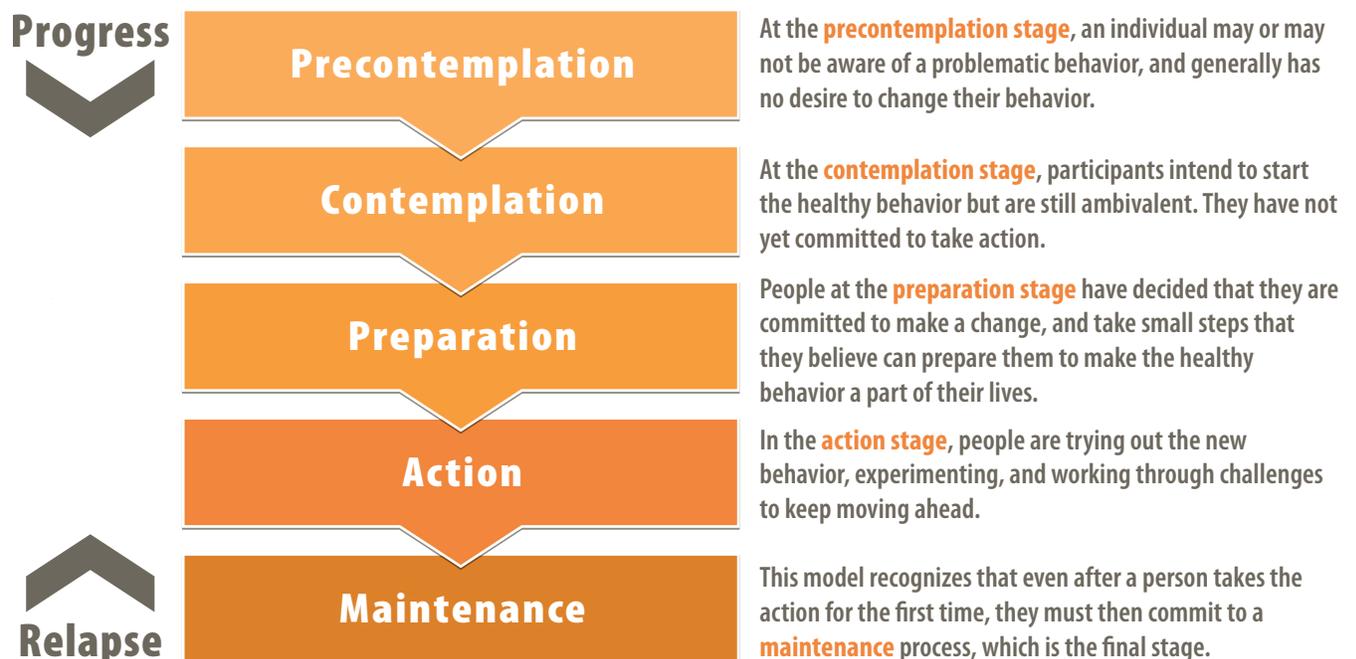
According to the Transtheoretical Model of Behavior Change there are five stages on a spectrum of readiness to act. These stages are: precontemplation, contemplation, preparation, action and maintenance. This model proposes that people must build up the motivation and know-how to change and that this motivation is dependent on a number of personal and social factors. (Note: This model was developed in the field of public health, so it refers to healthy and unhealthy behaviors. You can substitute sustainable and unsustainable.)



DEEP DIVE

More information about the Transtheoretical Model of Behavior Change is available online in **Stages of Changing Unhealthy Behaviors**. Boundless Psychology.

STAGES OF CHANGING UNHEALTHY BEHAVIORS



Importantly, the progression through these stages is not strictly linear. People may move back and forth between the stages as their motivation changes or as they run up against various barriers. Often people relapse in their behavior multiple times or may get stuck in one of the stages.

Environmental behaviorists believe that the best strategy for change is to identify some of the moments in this continuum when an intervention, such as a tool or piece of information, might help move a person through a barrier and motivate them to move to the next stage.

So, how might these stages actually play out? Let's take a closer look at the five stages in the context of a desired behavior change. We'll observe the visible behaviors and also speculate about the thinking that might produce these behaviors. Because we can't know what other people are thinking just by observing their behavior, we have included multiple possible explanations, even though these might be overwhelming.

Desired behavior: Keep plastic bags out of the recycling.

Precontemplative stage:

What it looks like: Plastic bags are in the mixed recycling.

Possible beliefs and thoughts: Not aware that bags cause problems for recycling and are a safety hazard to workers. Believes that sorting recycling is difficult, takes time, or doesn't make a difference. Believes that plastic bags belong in the recycling. Puts plastic bags in the recycling because they see bags there already. Uses plastic bags to collect and carry their recycling from the kitchen to outside containers.

Contemplative stage

What it looks like: Plastic bags are in the mixed recycling.

Possible beliefs and thoughts: Learned that plastic bags don't go in the recycling, but not sure if they are concerned enough to change their behavior. Believes that sorting recycling is difficult, takes time, or doesn't make a difference. Wonders how bad it really is to put plastic bags in the recycling. Doubts the source where they learned you shouldn't put plastic bags in the recycling. Sees plastic bags in other peoples' recycling containers. Detests the idea of putting plastic bags in the garbage. Believes that the City or hauler or recycler should figure out a way to recycle plastic bags.

Weighing alternative options. Not sure how else to get recycling from the kitchen to the outside containers. Not aware of waste prevention and alternative recycling options. Wondering if waste prevention and bringing plastic bags to alternative recycling locations is time consuming, takes up space or is unsanitary. Wondering if they bring plastic bags to a store will they really recycle them or just throw them away. Questioning if the production of durable bags and washing and reusing bags is better or worse for the environment.

Preparation stage

What it looks like: Plastic bags are in the recycling, or plastic bags are piling up in the kitchen, or plastic bags are in the garbage.

Possible beliefs and thoughts: Committed to not putting bags in the recycling. Talking to everyone in the household, apartment complex or office about making the switch. Asking people they know about alternatives. Looking online or making phone calls to learn about alternatives. Shopping around for an environmentally friendly or affordable reusable bag. Looking for a free durable bag. Creating a space in the kitchen to store and dry plastic bags. Looking into alternative options for carrying recycling to the recycling containers.

Action stage

What it looks like: Plastic bags are never or only sometimes in the recycling.

Possible beliefs and thoughts: Trying out the various options. Some people in the household, apartment complex or office have made the switch and some have not. Forgetting sometimes to put plastic bags in their new place. Feeling good about making the change. Feeling frustrated with the mess or fuss. Starting to notice that they use a lot of plastic bags because they are focused on them right now (this can lead to a decision to reduce the use of bags rather than just recycling them).

Maintenance Stage

What it looks like: Plastic bags are never or seldom in the recycling.

Possible beliefs and thoughts: This is something we do. Setting up a plan to inform new roommates, tenants or co-workers. Regularly taking plastic bags to recycling depot or cleaning reusable bags.

BARRIERS, BENEFITS AND SOCIAL NORMS

Environmental psychologists find that people will move from one stage to the next at different rates. Some people are early adopters, innovators and tinkerers and readily try new things. Most of us however, tend to move slower. Environmental behaviorists explore the sometimes unconscious reasons why people get stuck in a stage and what might motivate them to move forward. Only after understanding the benefits, barriers and pertinent social norms do they design programs, systems and strategies to address those specific issues.

Barriers and benefits

To take a new action or even move to a deeper level of commitment to take the action, people weigh the benefits and motivations against the barriers and costs of changing what they habitually do. They usually make this comparison in a completely unconscious state. It is as though they are mentally and emotionally collecting pebbles to place on a scale. Each pebble is placed on either the change side of the scale or the inertia side. If there are enough pebbles to tilt the scale from inertia to change, then they can move onto the next stage. One task for those of us wanting to help people to make change is to identify barriers that block people from taking the desired action and see if we can avoid, minimize or remove that barrier. There are several types of barriers.

Structural barriers

Some barriers to action are physical or structural. In some parts of our country recycling markets are not easily accessible. It becomes economically infeasible for the local government to build a collection system for recycling if there is a lack of local recyclers who will process the material, no local industry, and no port to easily get the materials to another area of production. Some local governments have also set up the collection system so that it costs the same, or even more, to place materials in the recycling container rather than the garbage. The lack of recycling infrastructure and charging to recycle are true barriers for many in the US.

In our state, recycling markets for the core materials accepted at curbside are strong, and the state offers a pay as you throw system, meaning you pay for the collection system based on the amount of garbage you throw out. So those two barriers are removed for many in our region. However, some communities still experience structural barriers. Consider the large apartment complex where the property manager and the local hauler have not communicated well and have not set up adequate recycling containers with clear signage. For people living in that complex, the recycling containers, overflowing with both garbage and recycling, is a structural barrier to getting their materials to a recycler.

Fear of risk and sacrifice as a barrier

Through researching benefits and barriers accounting, scientists have concluded that humans tend to resist change and avoid risk. We typically underestimate the benefits of changing and overestimate the costs. Short term gains are also typically given much more weight than long term solutions. So if we hear about, or even guess at, potential risks or costs associated with a change we are likely to avoid it, even when we believe it is the right thing to do. We will sometimes stay in intensely uncomfortable situations for a long time before we are willing to take the risks associated with a change.

Conservation movements have a long tradition of working counter to human psychology by calling on the public to sacrifice individual wants for the greater good of the planet. But even when President Jimmy Carter laid out the extreme costs of our level of energy consumption during the energy crisis of the 1970's, his message that we must sacrifice for the future fell flat for many Americans. Americans were generally unwilling to sacrifice present comforts for future benefits, even though President Carter had the weight of the Presidency on his side and many people were fed up with gas lines and international power struggles over oil. Even in these extreme circumstances the message of sacrifice was ineffective.

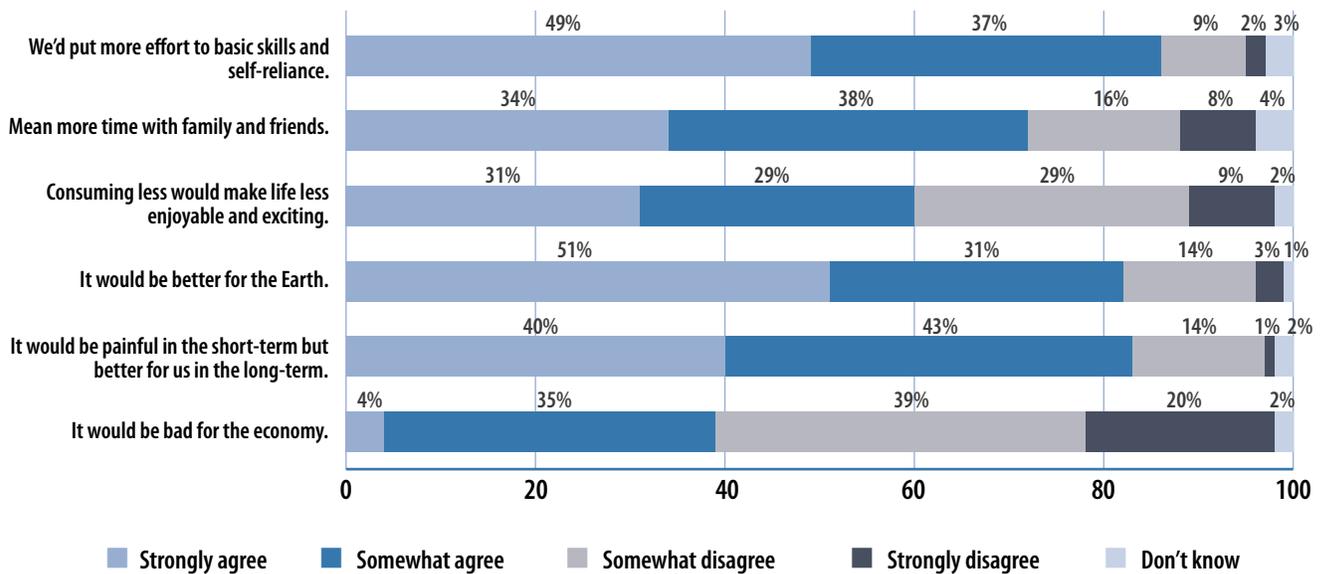
Happily, in the work we do as Master Recyclers, there are plenty of alternative ways to talk about actions and behavior change that don't focus on sacrifice. You will be learning about these later in the chapter and throughout the course.

Benefits: Make it positive

Choosing messages that describe actions that people can clearly see themselves taking can help make those actions seem easier. Two recent local polls showed that Oregonians want to consume less, but if this behavior change is framed as giving something up, most people are unlikely to change.

The first study was a statewide poll of a demographically, geographically and politically representative sample of Oregonians (see Tom Bowerman graph). Residents were asked a series of questions about what they thought might happen if Americans “consumed less.” Democrats and Republicans alike felt like it was the right thing to consume less. Eighty-five percent of those polled felt that it would be good for the earth if we consumed less. There was also a sense that it would build self-reliance and enable more time with family. But despite those anticipated benefits people felt that consuming less might make life less interesting and would be hard in the long run. They were fairly split about whether they thought the economy would suffer if we consumed less. These are troubling results if we want people to do more than think about consuming less.

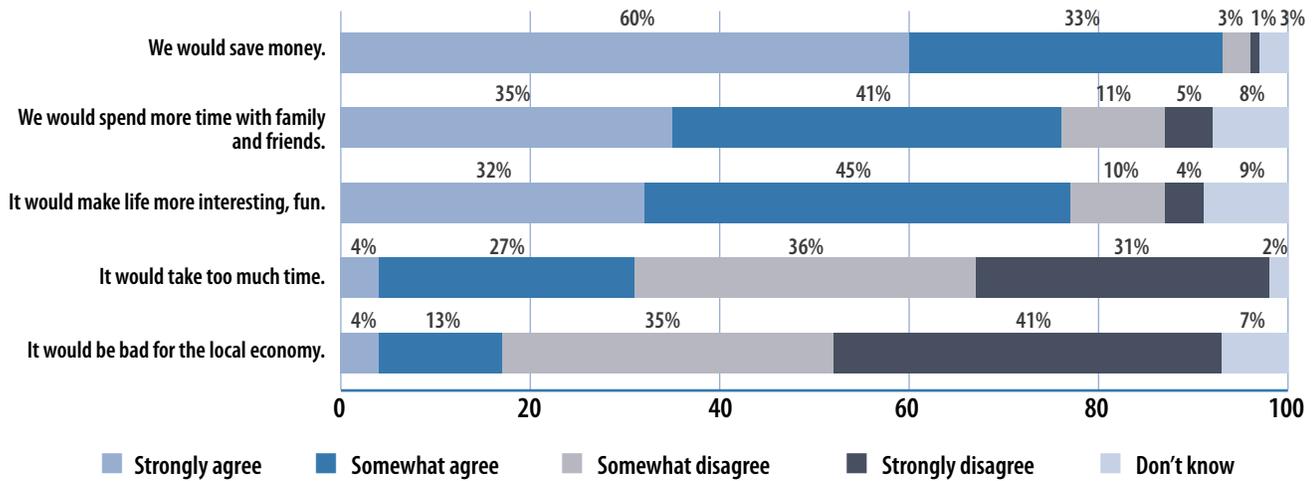
PERCEPTIONS ABOUT CONSUMING LESS – BOWERMAN 2009



Source: Bowerman (2009)

The second study, however, shows that if this change is framed in a way that highlights benefits rather than sacrifices, that people are much more likely to change their behavior. A demographically representative sample of Portland residents were asked about how willing they would be to reuse, borrow, share, rent or fix and maintain. After they discussed their willingness to try some of these activities, they were asked what they thought would happen if Portlanders did these activities.

PERCEPTIONS ABOUT RESOURCEFUL ACTIVITIES



Source: DHM Research (November 2011)

Like the Bowerman study, this study showed that people have a strong association with these activities and protecting the environment. But it also showed that they believed these activities would give them more time with their family, save them money and would make life more interesting. They also did not agree that it would necessarily be hard to take these actions, and they disagreed fairly strongly that it would be bad for the economy.

While this is only one study, it suggests that framing the solution positively, in terms of benefits, can be much more effective. The first study focused on people consuming less. This sounds a lot like giving something up. The second study described the desired activities in simple words and focused on things you would be doing rather than things you would be giving up. These actions seemed clear and easy to do and there was little perceived risk.

Benefits: Emphasize a variety of values

If we believe that an activity matches up with our existing core values, we will be more motivated to change. Similarly, if we believe that an activity is contrary to our core beliefs about who we are, we are not likely to even consider taking the action. People draw on many sets of beliefs – religious, cultural, ethical, environmental, economic – when deciding what that right thing to do is.

When promoting an action, it is important to apply a number of positive values to the activity rather than focusing just on the environmental benefit. If they do not consider environmentalism a core value, you will lose their attention. This is why you find a person that is actively biking to work, but throwing recyclables in the garbage. If you think that they are biking for environmental reasons, it may seem odd that they wouldn't also recycle. But perhaps they are biking for exercise, they don't have a car or they enjoy biking in the company of their coworkers. It doesn't really matter to the environment why they are biking. This activity still helps the environment.

Making climate-friendly food choices is good for our planet. It is also good for your family's health, better for our small farmers, keeps workers safe from pesticides and the food tastes fresh. But you have to pick your battles. Some activities will go against a core value of a large number of people. For instance, the most climate-friendly food choice you can make is to stop eating red meat. But research shows even in Portland, that many people will stop the conversation altogether when asked to consider this action. From hamburgers to carne asada, red meat is part of many family cultures. Instead, you may have focus on activities that are more broadly appealing, such as eating more unprocessed fruits, grains and vegetables.

Social norms

As social animals, it is important to us that we fit in. We are strongly compelled to live and act in a way that is socially acceptable to others in our community. People in the precontemplative and contemplative stages will consider what they perceive their peers and leaders think when deciding whether to take an action. It is important to understand how norms work in order to assure that you are not asking people to act contrary to what they consider socially acceptable behavior.

How do you think we understand what is normal in our community? What clues do you personally use to understand what is okay? From a young age we navigate our community's sense of right and wrong. Some of this is done through explicit communication ("We don't throw food."), while much of it happens through more subtle clues and observations (No one else seems to be throwing food).

Values and concepts that appeal to many Portlanders:

Personal well-being

Saving money

Health

Family

Community

Environment

TERM

Norm: 1: an authoritative standard. 2: a principle of right action binding the members of a group and serving to guide, control, or regulate proper and acceptable behavior.

Prescriptive norms

One way people understand what is acceptable behavior in the community is by listening to people they trust. Community leaders, authority figures and peers will tell people what they think is *the right thing to do* and so they believe it. Psychologists call this a prescriptive norm. People may even adjust their core values based on what they hear from trusted sources.

Community-based social marketers will utilize trust in community leaders by asking various figures to act as ambassadors of a message. Sometimes this is done by creating ambassadors to carry a message (like Smokey the Bear asking people to prevent forest fires) or by asking existing ambassadors to promote a cause (like Michael Jordan supporting Boys and Girls Club).

Prescriptive norms do not just come from leaders in a community. We also learn about what is right from peers. In this case, community-based social marketing may involve showing people who are similar to the intended audience, declaring that they voted, or gave blood or recycled, because they think it is the right thing to do.

This is one of the most powerful aspects of the Master Recycler program. Master Recyclers are members of diverse communities all over the region who wear a badge in order to show that you think that it is important to conserve our natural resources. You are all powerful and valuable ambassadors.

Descriptive norms

Another, more subtle way that people come to understand what is normal is through descriptive norms. People look for visual clues and other information that conveys what people around them think is normal. We will use littering as an example to illustrate how descriptive norms work. Studies have shown that people will walk down two different streets and make different decisions about what they should do with their trash. If there is already a lot of litter on the ground, many people will conclude that is acceptable and will litter, even when there are garbage cans and do not litter signs. If the street is pristine, people have been shown to carry their garbage a long distance instead of littering. Community-based social marketers would state that you need both the garbage cans with do not litter signs and consistent pickup of random trash to effectively stop litter. That way you have made the task easy, and the descriptive norms are consistent with the desired behavior and the prescriptive norms (that is, the do not litter signs).

Community-based social marketers feel that it is important to actively display environmentally friendly behavior as something everyone does. People can see their neighbors' solar panels. Helmets, bike bags and rain gear in the office are visual social cues that bike commuting is normal. But some actions are less visible and so may be perceived as not happening.

You cannot see that your neighbor has a pesticide-free garden or that they only put their garbage and recycling out once a month. Without prying into their desktop, you might not notice that your co-worker has switched to electronic filing. A common community-based social marketing strategy is to make visible activities that you cannot usually see by strategies such as signs, buttons and story-telling. For example, Metro's Pesticide Free Zone pledge includes a sign that you place in your garden so that people know that you have committed to not using pesticides.

Interestingly, misperceptions about what is normal can override what is actually normal. A study done by the National College Health Assessment demonstrates this phenomena. The study surveyed 76,145 students from 130 colleges. They asked the students how much they drink and how much they think their peers drink. They discovered that students believe that their peers are drinking more than they actually were. They also found that students felt that they had to keep up with the level they believed that their peers were drinking. So while the drinking was not at the same level as perceived, it was higher simply because of the misperception itself. The study concluded that schools that do not seek to reduce these misperceptions are neglecting a potentially powerful component of prevention.

These conclusions are directly applicable to the work of a Master Recycler. It is often perceived that most people don't care very much about recycling, and so maybe it is okay to occasionally join others and throw recyclables in the garbage. But when surveyed, the majority of the community considers themselves recyclers. The more that story is told, the more motivated people will be to place recycling in their proper container.

Why shaming does not work

Conservationists tend to believe that if you share data about what big consumers we are enough times, people will feel ashamed and stop. Perhaps, you've seen this dubious statistic that is found widely on the Internet and in public presentations: "Americans are big consumers: we make up 5 percent of the world's population and yet consume 95 percent of the world's resources." While this is clearly an exaggeration, the following statistic, which can be verified by the State of Oregon, is also commonly used to emphasize our overconsumption: "Oregonians throw away 3.5 pounds of trash every day." You also hear people trying to use shame to effect change in the break room with statements like, "No one in this office is properly sorting their recycling." Despite the frequent use of shame, behaviorists report that it is not an effective tool for behavior change.

Shaming has two main problems. First, it makes people feel bad without necessarily addressing the barriers that are keeping them from changing. Second, shaming can actually reinforce the sense that these environmentally unfriendly behaviors are normal. Americans, Oregonians and co-workers are peers. These statements make it clear that you will have to defy the norm if you want to consume less and produce less waste. Some people are willing to be unconventional in order to do the right thing, but many are not.

People are much more likely to take the environmentally friendly action if it is the right thing to do and they believe that it is also a normal thing to do. These are examples of ways to norm the desired behavior: "Oregonians are making a difference! We recycle enough to reduce the equivalent of 2.9 million tons of carbon dioxide. That's as if we removed 670,000 cars from the road every year." "Hey everyone, we are doing a great job working toward our goal of recycling in the office."



A grocery list is a tool that reduces food waste

TRICKS OF THE TRADE

Community-based social marketers use a number of techniques to emphasize social and personal benefits and remove barriers. By using a strategy that specifically addresses the barriers or benefits of the specific action, community-based social marketers believe they can propel individuals and communities through the stages of change.

Tools

Tools are especially helpful in addressing barriers or helping form habits. If a barrier to riding your bike to work is feeling unsafe, then an effective tool might be a map of the safest routes and a buddy who will ride with you the first time. A grocery list is an effective way to help people plan their shopping so that they do not waste food. A recycling box next to your desk will make it easier to recycle a piece of paper, than if you need to walk to the recycling box in the break room.

Commitments

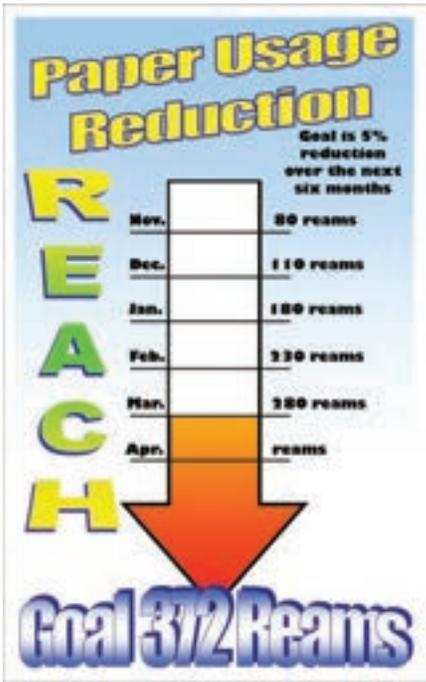
People are more likely to take action if they publicly state that they plan to do it. It is also true that if people try something for about 10 weeks, they will have worked out the biggest problems and have discovered it is easier than they thought it would be. So a popular technique is to ask people to commit to try it for a given period of time.

Prompts

Even after we make the commitment, it is sometimes hard to remember to take the action. How many times have we planned to use a reusable bag, but discovered when we got to the check stand that we left the bag in our car? Community-based social marketers use prompts carefully placed right where people are likely to take the action. Your car window or the parking lot of the store are great places for a decal that reminds us to take our bag out of the car.



Metro's Pesticide Free pledge



Progress chart builds team spirit

Transactional benefits

Sometimes we just need a little coaxing to tip the scale of benefits. Wherever possible, it is helpful to offer some extra incentives. Integrating prizes, public recognition, gold stars, even discounts and cash are great ways to tip folks toward commitment, or to help them stay motivated to keep going. Sometimes just demonstrating a group's success toward a goal in a public way can help people feel more connected to taking that action.

COMMUNITY-BASED SOCIAL MARKETING CHECK LIST

Whether you are starting a green team at work, improving recycling in your apartment complex or trying to reduce food waste in your household, these steps can help you develop strategies that can make the project fun, positive and effective.	<input checked="" type="checkbox"/> Identify a go-to positive behavior you want people to do.
	<input checked="" type="checkbox"/> Identify the barriers to the action.
	<input checked="" type="checkbox"/> Identify who is doing the action and what they value.
	<input checked="" type="checkbox"/> Create messages and tools that help overcome barriers and reinforce benefits.
	<input checked="" type="checkbox"/> Get people to try it.
	<input checked="" type="checkbox"/> Set goals and give feedback.

CONCLUSION

Can you really make a difference?

Some reputable people will challenge the value of a chapter focused on environmental behavior change. They worry that it is not enough to focus on individual actions given the scale of the environmental challenges we face today. They are concerned that manufacturers will not be willing to make the shifts in priorities. They argue that energy is better spent on city design, buildings and policy.

To be sure, we are facing global problems that will require global and systemic solutions. Today's level of consumption is at a scale such that our very climate, which makes the planet habitable, is at stake. With our consumption of resources dramatically overshooting the earth's capacity to renew those resources, slowly changing behaviors can seem futile. The global economies and inequities that drive unsustainable consumption must be addressed.

In light of these systemic problems, it leaves a person wondering what difference they can make.

As individuals and community leaders, Master Recyclers can play a unique role in making much needed change on both a systemic and individual level. So far, the handbook has explained materials management on a systems scale. The next section describes how these systems play out in our lives. You will learn specific individual actions that will effectively conserve natural resources, curb climate change and pollution, and help all people live healthier more satisfying lives.

You will also learn how you can leverage this information to make the biggest difference, not only by supporting individual change, but also by navigating existing systems to build change at a community level.



Master Recyclers and the System

Some of the barriers to action that people face are systemic. It may be problematic to tell people in an apartment complex to recycle properly when their containers are overflowing and unclearly marked. Simple access to the necessary tools and resources are often lacking. An economy that prioritizes the growth in production sometimes also results in laws (or the lack of them) that prohibit the environmental actions we are promoting.

Policy, infrastructure and program design will be described throughout the handbook as well as by presenters in class so that you are informed about where current laws are lacking or even get in the way of taking action. You can share this information in your own community, act on advisory committees or even let your local officials and representatives know where you stand on policies. You can also learn how to make systemic change by voting as a consumer.

Building a community of change

We don't have to wait for government and manufacturers to build systems change. Master Recyclers create projects in their own communities that bring together internal strengths and resources needed to take action. Your community is rich in assets and skills that will be needed to create community change. The Master Recycler program partners with over 50 community organizations so that you can join in building community infrastructure that supports sustainable consumption. You will learn about tool lending libraries, repair fairs, the Rebuilding Center, Community Warehouse, Scrap, seed swaps, and Free Geek, all of which are avenues for helping people conserve natural resources.

You will also learn how to work in your own community of friends, family, place of work, apartment complex, community of faith or neighborhood to build smaller scale systems together. Organize a recycling collection day or a garage sale in your block. Start a green team at your work or kids' school.

Even setting up an information booth at your local community gathering and connecting people to the resources they need to take action is helping build the community connections needed to make change.

Individual behavior makes a difference

Without a doubt, to bring systemic change, the systems must change. Laws and built environments must be designed to reduce consumption. But if people don't use them correctly, it could still amount to no change. Research shows that energy efficient buildings are only maximally efficient when the occupants learn to turn off lights, purchase efficient appliances and understand how to maintain the building. Cities have built compost facilities, created collection systems and then only get about 10 to 20 percent of the food recovered because people did not make the behavior change.

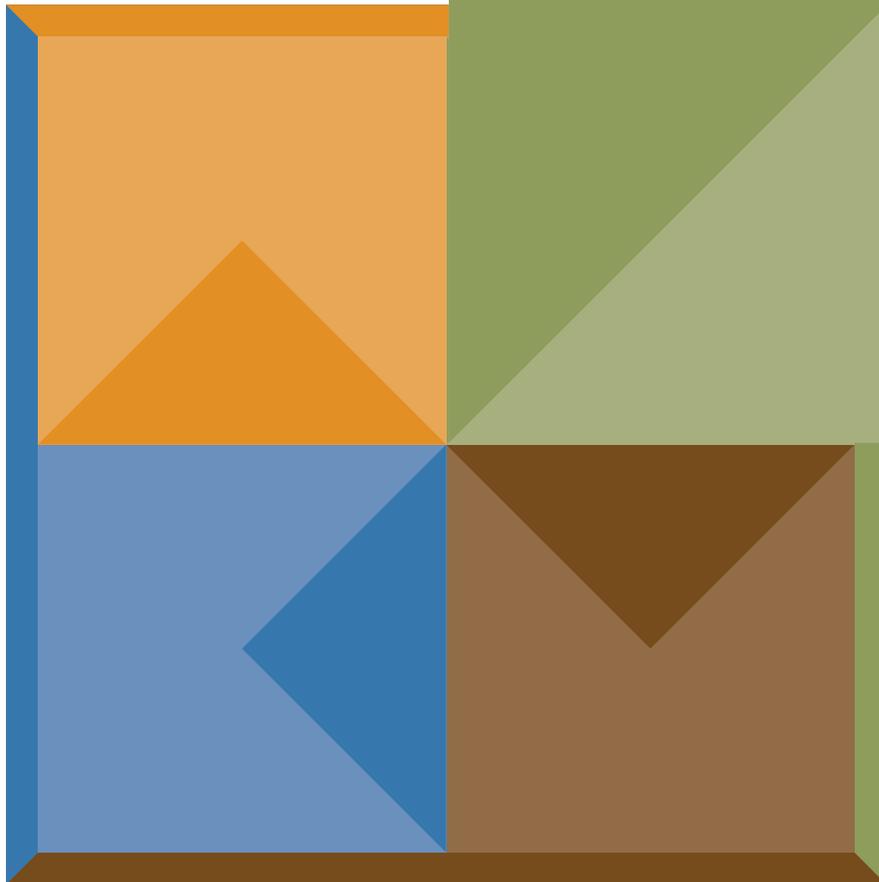
Climate experts at the Garrison Institute calculate that behavior change could amount to as much as 1 billion metric tons of carbon emissions reductions, which is not insignificant at 1/8th of what is needed to stabilize emissions. They are clear it is not all the change that is necessary, but it is a significant wedge of the pie, and one we cannot afford to ignore.

Individual behavior change is absolutely essential as is behavior change at the community level and these two kinds of change are interrelated. Supporting individual change and helping to build communities of change are the central concerns of Master Recyclers. You will all play important roles in helping individuals (including yourself) to make changes and in scaling those changes up to the community level. Sometimes this sort of change will lead the way and drive the development of new laws and policies, while other times it will be essential in ensuring that laws and policies produce the desired results.

The scope of our current environmental challenges is daunting, but be confident that you can and will make a real difference.

SECTION 2: OUR LIVES

- 
1. Curbside and Beyond
 2. Materials in Multifamily Communities
 3. Materials at Work
 4. Schools and Youth Programs
 5. Resourceful Living



How can we be most effective in taking actions in our homes, work, schools and other community gathering places?

CHAPTER 8 CURBSIDE AND BEYOND

- Your curbside collection system
- What is and isn't accepted
- Collection options and best practices within the home
- Food scrap collection and backyard composting
- Who to contact

CHAPTER 9 MATERIALS IN MULTIFAMILY COMMUNITIES

- Beyond the curbside options and cautions
- Opportunities and barriers
- Outreach strategies
- Beyond recycling
- Who to contact

CHAPTER 10 MATERIALS AT WORK

- Take advantage of free available resources and technical assistance
- Understanding recycling requirements
- Use tools and best practices such as green teams, waste assessments, and incentives
- Making change durable through policy
- Food in a commercial setting

CHAPTER 11 SCHOOLS AND YOUTH PROGRAMS

- Resources and programs for working in schools
- How to best connect with a school or school district
- Examples of Master Recycler projects

CHAPTER 12 RESOURCEFUL LIVING

- Explore places and ideas to reuse, fix and maintain, borrow, rent and share
 - Buy smart by planning ahead, thinking durable and gifting experiences
 - Strategies to engage others in these resourceful living strategies
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CHAPTER 8 CURBSIDE AND BEYOND

INTRODUCTION

We are quite good at recycling in the metropolitan area

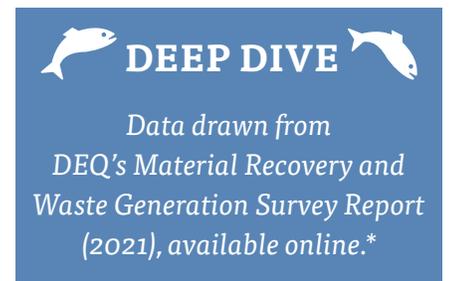
People in our region consider themselves recyclers. No matter the socioeconomic background or race, whether an apartment, fourplex or house dweller, residents resoundingly answer 'yes' when asked if they recycle.

The result of a motivated public combined with a good system is a recovery rate of 37.7. That means 2.4 million tons of material were returned to manufacturers so they can be reused again.*

There is, however, still more work to do. A 2014 Metro study showed that about 14 percent of curbside recyclables were still in the garbage. This means that about 36,000 tons of curbside recyclables, including paper, plastic bottles, aluminum cans and glass containers, are disposed of in garbage carts each year.**

Along with getting more recycled, we learned in previous chapters that recycling needs to be free of garbage in order to be useful for manufacturing. Metro's study found that about nine percent of what people put in their recycling doesn't belong there. That means that processors have to deal with about 9,000 tons of contaminants a year.

Metro, cities and counties work together with local collection and sorting facilities to improve the systems so that we can maximize recycling and minimize contamination. Master Recyclers are an important part of this work because you can help your friends, neighbors and coworkers understand how to best use this system.



DEEP DIVE

*Data drawn from DEQ's Material Recovery and Waste Generation Survey Report (2021), available online.**



DEEP DIVE

*To see the report look for Single-family recycling and waste composition studies 2014-15.***



Curbside education table at Washington Square Mall.

As individuals, we can move our community from being good at recycling to being really great at it. This chapter explains the residential curbside collection system for houses, duplexes, triplexes and fourplexes and how to make the most of it.

The accepted materials for recycling in single-family homes and apartments are the same. But because the collection systems are different, larger unit settings are the subject of the next chapter.

As a Master Recycler you will want to be familiar with both types of housing and their collection systems so that you can answer questions for everyone.

This chapter will also discuss tips and tricks that can be implemented inside any type of household and dive into ways to recover material above and beyond what the curbside collection system can accommodate. These sections will be relevant to people who live in houses or apartments and townhouses.

HOUSE OR SMALLPLEX COLLECTION SERVICE

The five components of your curbside collection system

In addition to understanding the five components of curbside collection systems, it is also important to realize that the entire service bill depends on the size and frequency of pickup. Given this, choosing the right size containers and the right pickup schedule can save substantial money.



1. Garbage – Garbage and recycling companies usually provide roll carts, but some customers still have their own containers. Standardized garbage cart size options vary throughout the region. Call your garbage company to find out what is available. Default pickup is weekly in most parts of the region. Portland is an exception, where default garbage pickup is every-other-week. There are options for most customers in the region to have garbage picked up monthly or even on-call. After a special occasion when you have more waste, you can set out an extra bag or can of garbage on your regular collection day for a small fee.



2. Mixed recycling – Companies provide standard roll carts that are usually about 60 gallons and vary in color throughout the region. Standard pickup varies throughout the region between weekly and every-other-week. Smaller containers are available for tight spaces in some parts of the region. Some rural parts of the region have bins instead of carts.



3. Glass recycling – Companies provide a curbside bin that varies in color throughout the region. Standard pickup varies from weekly-to-every other week and a few cities have monthly standard pickup. In areas where bins are still in use for mixed recycling, residents must use a separate bin or rigid container like a bucket for their glass.



4. Yard debris and food scrap compost – This container varies the most in the region. Some rural areas do not have yard debris pickup; some services provide roll carts; some use customer-provided carts; and some accept paper craft bag containers of extra yard debris. Standard container size is 60 gallons, but some cities allow for smaller containers for tight spaces. Frequency is usually every week in service programs throughout the region, although some cities in Washington County pickup only every other week. In Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County you can include food scraps.



5. Motor oil – The customer must place used motor oil in a clear one-gallon or smaller container with a twist lid next to one of the other containers. Clackamas County does not require that the container be clear. Motor oil collected at the curbside is not necessarily recycled. Call Metro's Recycling Information Center to find out where you can take motor oil for recycling.

Who to contact?

Multiple agencies, companies, and organizations share responsibilities for different aspects of the curbside collection system. It is helpful to understand these roles so you can help people find the right information. Below we explain how responsibilities are shared and who to contact for questions or services.

Garbage and Recycling Company

- To set up service. (Portland and Beaverton landlords must set up service in the owner's name.)
- To learn your pickup schedule, options and rates.
- To report a missed pickup and lost or stolen containers.

Find your company on the side of your provided roll carts or bins, go to Metro's *Find your hauler* webpage or call your local jurisdiction.

City or County Solid Waste and Recycling Program

- To find the garbage and recycling company in your area.
- With questions about garbage, recycling and composting.
- With a dispute with your garbage and recycling company.
- In Portland and Beaverton, report a rental unit without garbage, recycling and composting service. (Rental property owners are required to provide service for their tenants.)
- In Portland and Beaverton, for help if your garbage service has stopped due to the landlord's non-payment of the bill or the service is not meeting the minimum standard for tenants.
- In Washington County, to report abandoned or accumulating garbage.
- To sign up for collection schedule email reminders and mobile calendar options where available.

Find your local jurisdiction on Metro's *Your home recycling collection service* webpage or call Metro 503-234-3000.

Metro

- With garbage and recycling questions.
- About reuse, waste reduction and recycling of non-curbside items, such as many plastics.
- For transfer station locations, rates and hours.
- To find disposal options for items not accepted through curbside collection, such as computers, monitors and TVs, hazardous waste, needles, chemicals and compact fluorescent light bulbs (CFLs).

Online: Metro's *Find a recycler* webpage. 503-234-3000, askmetro@oregonmetro.gov

CURBSIDE COLLECTION MATERIALS YES/NO LISTS

- Every container has an important role to play to help us all recover as much material as possible.
- Even the garbage can is important. It keeps our recycling and compost free of materials that do not have viable markets, that degrade the more valuable materials, or that cause problems in sorting.
- Some materials don't even go in the garbage and must be taken somewhere special by residents.
- All accepted materials and preparation of those materials for garbage and recycling are the same wherever you live in the region. **Items that are bolded may have a non-curbside alternative.** You can call Metro's Recycle Information Center at 503-234-3000 or look the item up on the Metro's *Find a recycler* webpage to learn more.

Curbside Garbage

PUT THESE IN YOUR GARBAGE CONTAINER



- paper plates, coffee cups, frozen food boxes, and takeout containers and wrappers
- pet food bags
- facial tissue
- Styrofoam™
- **plastic bags**
- Used paper towels, napkins, tea bags, coffee filters and pizza delivery boxes (In Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County these can go in your compost cart)
- plastic containers labeled compostable
- **rigid plastics including clamshells, Tupperware®, Rubbermaid®, and other reusable dishware**
- painted or stained wood and plywood
- broken toys
- incandescent light bulbs
- **windows**
- Empty motor oil and pesticide containers

PLACED IN SEALED CONTAINER

- **kitchen fats, cooking oil and grease**



MUST BE BAGGED

- pet waste and cat litter
- diapers and feminine hygiene products
- ashes and sawdust
- **packaging peanuts**
- drinking glasses, flower vases, glass candle holders, pyrex, and eye glasses

KEEP THESE ITEMS OUT OF YOUR GARBAGE CONTAINER

- computers, monitors, TVs, printers, keyboards and mice (search online for DEQ's Oregon E-Cycles program to learn where to take these)
- hazardous waste, propane tanks and compact fluorescent light bulbs (CFLs)



Curbside Recycling | All items must be rinsed and free of food. Do not smash items.

PUT THESE ITEMS LOOSE IN YOUR RECYCLING ROLL CART UNLESS OTHERWISE INDICATED

Paper

- newspapers, magazines, catalogs, phone books
- cardboard boxes, flatten and cut to fit inside the cart or bin, do not bundle with twine or tape
- scrap paper and junk mail (mail, envelopes, fax paper, greeting cards, paper egg cartons, paper tubes, wrapping paper, tissue wrapping paper and cereal boxes)
- cartons: milk, juice, soup, and soy milk, aseptic boxes no need to smash
- shredded paper, must be in paper bag



Plastic (there are only 4 shape and size categories of plastic accepted)

- bottles with neck (6 oz. or larger)
- yogurt or margarine-like round containers (6 oz. or larger)
- plant pots (4 in. or larger)
- buckets (5 gal. or smaller)



Metal

- aluminum trays, pie plates, foil (make into a ball)
- tin and steel food cans (do not flatten, labels are ok, put lid inside can)
- empty, dry, metal paint cans (put lid inside)
- empty aerosol cans
- scrap metal smaller than 2 inches can go loose in the recycling cart or inside food cans and crimped closed (metal lids, bottle lids, screws, nails)
- metal must be smaller than 30 inches and weigh less than 30 pounds



GLASS RECYCLING BIN

Glass bottles and jars only

- mix all colors together, labels are ok



KEEP THESE ITEMS OUT OF RECYCLING

- coffee cups, freezer boxes, food soiled paper or takeout containers
- plastic bags, clamshells or lids
- tire chains or propane tanks
- light bulbs, drinking glasses, flower vases, ceramics, dishware, cookware, mirrors, windows or picture frames, or broken glass



Curbside Compost Collection

Some parts of the region do not have yard debris collection service. These lists are for 1-4 unit residential urban settings only. See the commercial and multifamily chapters to learn what to do with organics in those settings.

THESE ITEMS CAN GO IN YOUR COMPOST CONTAINER OR BACKYARD COMPOST

- weeds, leaves, vines, and grass
- small branches (less than 4 in. thick and 36 in. long)
- flowers
- house plants
- plant clippings
- pumpkins, windfall fruit and other vegetables from garden



FOOD SCRAPS CAN BE INCLUDED IN LIMITED AREAS IN THE REGION

In Beaverton, Cornelius, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville and unincorporated urban Washington County you can also place these items in your curbside compost container, **bolded items can also go in your back yard compost.**

- meat, poultry, fish, shellfish, bones and shells
- eggs, eggshells, cheese, dairy products
- bread, baked goods, pasta, rice, beans, nuts, and seeds
- **coffee grounds**, filters, and tea bags
- **vegetables and fruit**
- paper napkins and paper towels
- pizza delivery boxes
- food preparation scraps, plate scrapings, leftovers, and spoiled food
- kitchen pail liners: newspaper, paper bags, approved compostable plastic bags



KEEP THESE ITEMS OUT OF YOUR COMPOST CONTAINER

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> • large amounts of grease, cooking oil and liquid • ashes • dirt, rocks, and sod | <ul style="list-style-type: none"> • lumber, treated wood, sawdust, and stumps • pet waste • large branches (more than 4 in. thick or 36 in. long) | <ul style="list-style-type: none"> • corks • even if a plastic product says compostable, please leave it out • food scraps (unless you live in a city participating in food scraps collection) |
|--|---|---|



CURBSIDE BATTERY COLLECTION

Improperly disposed batteries in the garbage or recycling are known to cause fires at our local material recovery facilities, transfer stations, and garbage and recycling trucks. In response to this danger, the cities of Banks, Beaverton, Durham, Gresham, Hillsboro, King City, North Plains, Sherwood, Tigard, all of Clackamas County and cities within, and all unincorporated Washington County have started single-family curbside collection of batteries.



What batteries are accepted?

The proper identification of batteries poses a major challenge to their proper disposal. Some batteries (such as lithium-ion batteries) are more dangerous than others. Make sure to read the battery, as it will often say what type it is.

Accepted	Not Accepted
<ul style="list-style-type: none"> Alkaline batteries (often identified by the words heavy duty, super-heavy duty, alkaline, carbon zinc, 0% mercury, mercury free, or dry cell). The below batteries are accepted but their ends must be taped to reduce fire risk: <ul style="list-style-type: none"> 6-volt -- 9-volt batteries. Button cell batteries (like hearing aid and watch batteries). Lithium batteries. Rechargeable batteries (ex. Li-Ion, NiMH, NiCD). Battery packs (like laptop and cellphone batteries). 	<ul style="list-style-type: none"> Battery back-up (UPS) units. Lead-acid batteries (ex. vehicle batteries). Batteries that do not fit in the 1-quart bag. Damaged, defective, or recalled batteries.

How to include the batteries:

Step 1: Tape the end of batteries that require taping.

Step 2: Place batteries in a 1-quart, zip-sealed, clear plastic bag.

Step 3: Place the plastic bag in your glass recycling bin for collection. If your bin is full of glass, place the bag on top.



Battery safety tips:

- Batteries should be placed in a cool, dry area away from potential heat sources, flammable materials, and metals.
- Damaged batteries should be placed immediately in an absorbent, nonflammable material such as kitty litter or sand and taken to a Household Hazardous Waste Facility. If the material starts to smoke or combust, call 911.
- Never remove embedded or built-in rechargeable batteries. Some rechargeable batteries are not designed or intended to be removed. Take these items to a Household Hazardous Waste Facility.

SPECIAL RECYCLING SERVICES

Sometimes the social, economic, and environmental costs of recycling a particular product can outweigh recycling's benefits. These issues are some of many considered before an item is included on the regional "yes" list. We don't just want to recycle, but recycle responsibly. After all, "Reduce, Reuse, Recycle" is in that order for a reason.

However, not every item is avoidable, and the different lives we lead often dictate how much time and effort we can put into avoiding certain packaging. Many recyclers like to go above and beyond by bringing their non-curbside recycling to drop-off locations and special collection events. This has also given rise to a growing interest in the collection of non-curbside recycling directly from homes through subscription services. These services have caused conflict throughout the region as local jurisdictions debate whether subscription collection services fit within our region's rules and regulations for our franchised collection systems.

The services offered by James Recycling and Ridwell collect materials at homes within the territory of these garbage and recycling companies and outside of established standards and fees. For all intents and purposes, this activity violates long-standing administrative City of County ordinances throughout our region.

The reaction by local jurisdictions to this rule violation has varied. The City of Portland amended city code to allow for these services. Other jurisdictions responded by working with their franchised collection companies to offer the service Recycle+.



James' Pick Up

James Recycling is primarily known throughout the region for its collection events, but it also has James' Pick Up, which includes the collection and sending to markets many of the items not included in curbside recycling. This service is currently limited to the Bridlemile neighborhood in Southwest Portland.

Ridwell

Ridwell is a monthly subscription recycling service that will collect at your doorstep items currently only recyclable through a recycling depot for a fee. Currently, Ridwell operates in Beaverton, Hillsboro, Lake Oswego, Milwaukie, Portland (except for the Pearl District), Sauvie Island, Troutdale, Tualatin, and West Linn.



Recycle+

Recycle+ is a similar, on-call service provided by many local collection companies. To learn more, visit your local jurisdiction's or collection company's webpage. This service is currently offered in urban unincorporated Clackamas County, urban unincorporated Washington County, Beaverton, Durham, Gladstone, Gresham, Happy Valley, King City, North Plains, Oregon City, Sherwood, and Tigard.





RENTAL HOUSES OR SMALLPLEX

Unlike elsewhere in the region where renters can set up their own service, in Portland and Beaverton, landlords of houses and smallplexes (2-4 units) are required to directly pay for and provide adequate curbside collection service. In Beaverton, a rental agreement can override this requirement. In Portland an agreement cannot override the requirement.

The minimum required service is 20 gallons of garbage per unit collected every-other-week in Portland and weekly in Beaverton. Landlords may decide to provide service with larger garbage containers, but they may not change the frequency or provide less than one 20 gallon container per unit. Landlords are also required to provide containers for recycling and composting.

Landlords in Beaverton can apply for an exemption and haul materials from the rental themselves. Portland landlords cannot opt out of providing service for tenants.

Tenants moving into a home or smallplex in either of these cities should talk with the landlord or property manager to set up garbage service. If service is shut off because the landlord did not pay the bill, tenants can contact the City of Portland, 503-823-7202, wasteinfo@portlandoregon.gov or City of Beaverton, 503-526-2665.



PET WASTE

The eggs of certain roundworms and other parasites found in pet waste can linger in your soil, putting your children and pets at risk of exposure while gardening, playing sports or walking barefoot. Pet waste on the ground also contributes to runoff that pollutes waterways.

Always pick pet waste up and dispose of it in a bag in the garbage. Bagging waste protects garbage collectors and sanitation workers from harmful bacteria. Never put feces or litter in your home compost bin. Avoid utilizing the sewer system, as that system was designed to break down bacteria specific to human beings.

GETTING THE MOST OUT OF YOUR CURBSIDE SYSTEM

Understanding options for container size and collection frequency can help you save money and recover the most materials possible.

Right size your containers and frequency

You have all kinds of options!

Many people think that the standard service is the only service. The curbside collection system throughout the region was designed to balance overall system costs to the rate payer and incentives to recycle and compost.

Explore a few of these ideas to fit your household needs, help the environment and save money.

- **Learn all of the collection options in your area:** Contact your garbage and recycling company.
- **Size options:** Most parts of the region have about 4 size options for garbage and some cities even have a couple of size options for recycling and yard debris. People who live in tight quarters prefer smaller containers. Smaller containers for garbage also reduce the bill. Recycling and compost container sizes do not affect the bill.
- **Frequency of pickup:** Most programs also offer variations on how often garbage containers are picked up including monthly or on-call options. Recycling and yard debris pickup frequency changes are not an option except on-call in some cases.
- **Right size your container and frequency:** Watch over several months to see if any of the containers are regularly over- or under-full and make changes accordingly. You cannot change your service more than once in a year.
- **For the occasional extra garbage:** Many areas require the haulers to provide extra pickup service. There is a fee for this extra service, but during a party or the holidays this one-time fee makes it so you don't have to set up your regular service to meet the capacity of the largest events of the year.
- **Set compost containers out every pickup time:** This helps avoid odors and vermin.
- **Set recycling out when the cart is mostly full:** This reduces the number of stops for the collection driver.

RIGHT SIZE YOUR GARBAGE CONTAINER





CHANGES INSIDE YOUR HOME

Much of the activity related to recycling and composting doesn't happen out on the curb. It happens in our kitchens, bedrooms, family rooms, home offices and bathrooms. Strategies that create easy ways to separate waste right where it is generated in the house will increase the chance that things get to the right cart out on the curb and ultimately get recovered.

Walk through the house and ask yourself, "Is it as easy to recycle in this room as it is to throw things away? Are there certain recyclables that are getting tossed in some rooms but not others?"

Buddy system

One principle for good recycling is to provide a recycling container everywhere there is a garbage can. Even in the most motivated households, if you only have a garbage can in place, recyclables may get tossed in the garbage. If you only have a recycling container in place, garbage might end up in your recycling. Signs can help. You can ask your local jurisdiction for stickers or signs for your containers. Fix them or post them where they are visible.

It is also important to check the two containers to ensure that materials are in the right containers. People often make decisions about which container to use by looking into the container and seeing what is already there rather than reading signs or asking questions. One person's mistake can quickly become a household norm.

How clean is clean?

Rinse containers clean of food before you put them in recycling. That way containers do not leak onto paper recycling, and food does not attract rodents at the recycling facilities and shipping containers. They do not have to be sanitary enough to eat from, though. You do not have to use hot water to rinse them. Flower pots should be free of dirt. Paper products, cardboard and aluminum foil should not have any food or grease on them.

Making decisions about what goes in

Folks in our region are such motivated recyclers that some of the bigger recycling problems come from the wishful recyclers rather than missed recycling opportunities. When people do not understand where materials are going they will err on the side of recycling mystery items.

But the lists that are distributed in the community are well thought out, and based on discussions with recyclers and processors. It is important that only the materials that recyclers can use and processors can sort get in the recycling and compost containers. Just think about the huge volume

of materials they are processing. Workers and machines will not be able to take the time to look at each and every item.

What should you do if you don't know whether something should go in or not?

YES:

Check RecycleOrNot.org to look for the item. Don't see your item on the lists? Ask Metro 503-234-3000 or askmetro@oregonmetro.gov or send a photo of your item to @recycleornot.

NO:

Do NOT read the label of the container to determine if it is recyclable or compostable. Packaging labels can be misleading. They simply cannot ensure consistency with the varying rules of the multiple jurisdictions throughout the country.

WHEN IN DOUBT, THROW IT OUT.

RecycleOrNot.org



Household education

Once you know that your system is well set up, have a conversation with the whole household about how to use the system. If some in the house are less motivated to sort materials, aim for the easiest materials and the important *no list*. Let guests know how to use the system, as well. You can request Yes/No information and materials from your local jurisdiction to post next to containers inside the house.

Don't miss your garbage or recycling day again

Residents in Portland and Washington County can sign up for notifications to keep track of garbage and recycling pickup schedules. With the free tools, you can:

- Receive collection-day reminders by phone, email or text.
- Look up your garbage and recycling schedule.
- Print your collection calendar at home.
- Sync your collection schedule with your digital calendar.
- Get notified about schedule changes due to weather and holidays.
- Look up how to recycle or dispose of items.
- Get information on your mobile devices through the Garbage and Recycling Day app (Washington County) or Portland Garbage Day Reminder app. Both are available on Apple and Android.

Say NO to junk mail and phone books

Tired of filling your recycling container with mail you never even opened?

Metro's *Stop Junk Mail* webpage provides post cards and contacts to notify marketing firms that you want to stop their mailings. You can also get the kit from the Metro Recycling Information Center 503-234-3000. Here are some more tips to reduce junk mail:

- Contact catalogs and companies that send unwanted mail directly. Give the name and address exactly as it reads on the envelope.
- When unwanted mail comes with a postage-paid envelope, use it to return the mailing label along with a written request to remove your name from the organization's mailing list.
- Ask organizations you've donated to and anyone who sends you a bill not to sell or exchange your address.
- If you move, directly contact everyone yourself instead of submitting the post office change of address form.
- Don't submit product registration cards.
- Don't use a store's buyer's club card when making purchases.
- Avoid participating in sweepstakes or contests unless you are able to prevent your information from being shared.
- List only your telephone number in your local directory, or choose to be unlisted.

You can also visit Metro's *Opt out of phone books* webpage to find contacts to opt out of delivery.

MAKING THE MOST OF FOOD SCRAPS

Separating food scraps for composting takes a little getting used to but folks in our region are up for the challenge. This next section was designed for the Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County curbside collection of food scraps, but much of it is relevant for backyard composting which you can do anywhere you live in the region. So, even if you don't live in these cities you will find these hints about managing food scraps in your house useful.

Three simple steps for food scrap collection

1. Place your kitchen compost container in a convenient location in your kitchen. You can line your container with approved liners that are listed online. Lake Oswego does not accept compostable plastic bags.



2. Include the food! Collect food scraps while preparing meals, scraping plates and cleaning the fridge of leftovers - every little bit counts.



3. Empty your kitchen container, including the liner, into your compost roll cart as frequently as you like. Place your green roll cart out for weekly pickup.





DEALING WITH THE 'ICK FACTOR'

- Use an optional liner in your kitchen container. You can contain food in an approved compostable bag, newspaper or a paper bag to keep your food scraps from touching the inside of your compost roll cart.
- Line the bottom of your compost cart with newspaper, a paper bag or a pizza delivery box to help absorb moisture.
- Layer yard debris in between your food scraps to reduce odors and to contain messier foods.
- Sprinkle baking soda in your garbage and compost carts to reduce odors and deter insects.
- Store your cart in the shade in warm weather.
- Consider freezing some scraps and emptying them in the cart right before pickup day.
- Use soap and water to clean the compost roll cart. Pour dirty water onto grass or gravel, not down the storm drain.

Want some guidance?

Look online for Portland Composts to learn composting basics, explore kitchen container liner options and get tips on caring for your kitchen compost container and compost roll cart.



Kitchen compost containers

Did you know you can collect food scraps in a variety of containers? To collect food scraps in your kitchen, you can try one of these items you may already have in your household:

- Empty yogurt container and lid
- Tupperware type container
- Lidded pail or bucket
- Anything with a snug fitting lid that will fit under your sink or on your kitchen counter.



Tips for messy, stinky or wet food scraps

- Drain as much liquid as possible from food before putting in your container.
- Wrap the food in newspaper and then place in your container.
- Place food scraps in a container in the freezer and add them to the green roll cart the night before your pickup.
- Empty and rinse out your container frequently, and sprinkle baking soda in it or rub vinegar on the inside of the lid to avoid odors and fruit flies.
- Do not set your kitchen container out at the curb.

Optional kitchen container liners

- Newspaper
- Paper bags
- Approved compostable bags, including:
 - BioBag – *Certified Compostable*
 - EcNow Tech – *Compost Me*
 - EcoSafe – *6400 Line*
 - Glad – *Compostable Kitchen*
 - Natur-Tec – *Natur-Bag Compostable*

Note: These approved compostable bags are designed to break down quickly and safely at composting facilities. Other compostable bags and regular plastic bags are NOT allowed.



TERM

Recycling depots: facilities that accept an array of materials that may not be accepted at the curb, including many plastics.

BEYOND THE CURB

Just because something isn't accepted curbside doesn't necessarily mean you have to throw it away!

With a little extra planning, patience and space to store materials, you can take recovery in your household to the next level.

So far, this chapter has discussed the curbside collection recycling and compost, designed to maximize materials that have stable markets and facilities that can prepare those materials so they can be sent to those markets.

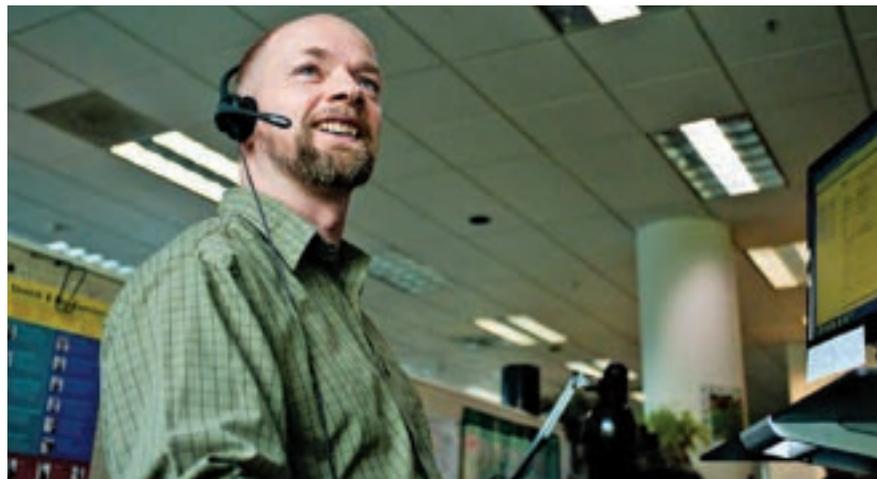
Residents can hand sort materials that machines cannot. If you have the space, you can also hold onto materials that sometimes have markets and sometimes do not. Some materials also have more value if you separate and haul them directly to recyclers who will buy them from you.

As a Master Recycler, you can familiarize yourself with the **recycling depots**, recycling drop off and reuse centers in your area and share them with people in the community.

Because depots accept material that often has a less stable market, it is important to explain to people that accepted materials will change at depots frequently. They should call ahead, read signs carefully and plan to take materials back home with them if they are not currently accepted.

RESOURCE

If there is only one resource you remember as a Master Recycler, it's the Metro Recycling Information Center! They also have bilingual staff ready to answer questions in Spanish. Call 503-234-3000 or consult Metro's Find a Recycler webpage.



Metro's Recycling Information Center (RIC) is an excellent resource to find out where recycling depots are located and what materials are accepted. The RIC live operators can be reached six days a week at 503-234-3000. Metro also maintains a **Find a Recycler** webpage, which lets you search for places that recycle many materials.

Caution for recycling drop off and reuse centers

When using drop-off centers and reuse organizations, it is important to ask questions about what happens to items after you leave them. In the Electronics chapter you will learn that improper practices in the recycling industry have led to human and environmental exposure to toxics in Asia and Africa where they are processed, as well as the potential for your personal data to get into the wrong hands. The reused clothing industry also has a surprisingly negative impact on the environment and on markets around the world.



According to National Public Radio (NPR), the average American discards more than 10 pounds of clothes each year. The EPA states that 13.1 million tons of textiles are landfilled each year. The recovery rate is about 15.3 percent. Several sources state that about half of that is recovered by going to reuse charities. Charities receive so many donations that they can only keep clothes in retail outlets for a very short time. Goodwill reports that they receive one billion pieces of clothing every year. In order to not get backed up, their inventory never stays in their hands more than three weeks. The vast majority is then exported. According to NPR, the United States exports 1,000 tons of used clothes every day. The clothes are sold in bulk for 6 to 12 cents per pound to companies that export the clothes to developing countries. According to Oxfam, about 50 percent of used clothes are shipped overseas to Africa and Latin America. Charities like Goodwill make about \$2 billion in exports every year according to Oxfam.

The assumption is that the clothes help the countries receiving them, but Oxfam and the United Nations want us to think again. In 2002, the UN estimated that tens of thousands of textile workers in Africa had lost their jobs due to the used clothes industry. Alarmed by this trend, the UN encouraged developing nations to ban the sale of used clothes. Thirty countries adopted such bans.

The fundamental cause is that garments are being made so cheaply that they have essentially become a disposable product. They aren't meant to last. So as long as we are hungry for cheap textiles, materials will continue to be pumped through at this alarming rate.

This trend is drastically affecting the livelihood and culture of communities all over the world.

What can we do?

We can take care of our clothes. Wash them on gentle cycles with cold water and low dryer level. Dry them on a clothes line whenever possible to avoid the extreme heat of the dryer that can be hard on clothes. We can also fix our clothes. You can sew buttons on clothes and take tougher jobs down the street to the local dry cleaner.

There will be many more ideas about reuse and waste prevention in the sustainable consumption chapter.

BACKYARD COMPOSTING

Composting is an easy way to manage household organic material (yard debris and some food scraps). Even where there is curbside food scrap collection, the backyard is still the preferred place to do most of your composting because it helps improve local soils and gardens, and can be used as a mulch to control weeds and save water right where you live. Where available, residents can use curbside program for materials you want to keep out of your backyard compost pile, like meat, bones, dairy, eggshells and weeds.



Although some people think it's difficult and requires a great deal of scientific knowledge to do it right, backyard composting is actually quite easy. As a Master Recycler, you can share how easy it is to backyard compost.

This section introduces the four basic ingredients needed for a successful backyard compost pile, do's and don'ts on what to put in your backyard compost, ideas for compost containment, how to use compost, and vermin control methods. The section also discusses how to use a worm bin to compost food scraps.

Four ingredients for a successful compost pile

Whether in a municipal-sized facility or your own backyard, composting takes advantage of nature's decomposition system, in which organisms feed on and break down organic materials. As materials decompose, they generate heat. Then, other organisms begin to participate.

Bacteria start the process. Fungi and protozoa follow. Finally, centipedes, millipedes, beetles and worms finish the job.

These beneficial organisms thrive on a four-ingredient recipe:

1. **Greens (one part)** – fresh grass clippings, green leaves, plant stalks, hedge trimmings, vegetable and fruit scraps, coffee filters and grinds and tea bags.
2. **Browns (two parts)** – old potting soil, dried grass, leaves and twigs, shredded newspaper, straw, and wood chips.
3. **Water** – to keep the pile as damp as a wrung-out sponge.
4. **Air** – provided through regularly turning the pile to allow all of the parts to remain well aerated.

All things rot. You can successfully compost without spending much time thinking about the combination of these ingredients. But the speed at which a pile breaks down depends on the health of the organisms. The more contact the greens and browns have with the water and air, the hotter the pile will get and the faster it will decompose. Attention to this combination will also help avoid some of the problems associated with backyard composting like odor and vermin.

The approaches to backyard composting vary. Some people simply place the materials in a pile or container, regularly watering and turning the contents. This method will produce a harvest about once or twice a year. Others use the hot compost method, where green and brown materials are layered and carefully balanced, and the pile frequently turned. Some home composters successfully harvest from these hot compost piles in as little as six weeks.

Whichever approach you choose, making sure greens and browns are chopped into small parts so that they have more surface area to have contact with the water and air will speed decomposition.

Materials to avoid

Some materials invite vermin, propagate weeds or disease, or produce an odor. These are best in your curbside garbage (G) or yard debris (YD) containers:

- Diseased plants (YD)
- Weeds and seed heads (YD)
- Invasive plants like ivy or morning glory (YD)
- Bread and grains (YD) in Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County, (G) in the rest of the region
- Meat, bones, sea and egg shells and dairy (YD) in Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, Milwaukie, North Plains, Portland, Sherwood, Tigard, Wilsonville, and unincorporated urban Washington County, (G) in the rest of the region
- Pet waste (G)
- Grease (G)



Backyard compost containers

While some choose to use elaborate backyard composting containers or bins, others use simple and inexpensive options.

Turning units allow waste to be conveniently mixed and aerated regularly. They usually have three partitions: one side for greens, one for browns and a middle bin, where the two are layered.

Despite the many, and sometimes expensive, options for containing compost piles, many simply use chicken wire. Others use no container at all, opting instead to (literally!) pile their compostable materials.



Problems that arise in backyard composting are often the result of imbalance in the four essential ingredients. The chart below summarizes the most common difficulties and offers solutions to them.

Troubleshooting compost piles

Symptoms	Problems	Solutions
The heap is wet and smells like rotten eggs. Is attracting rodents.	Not enough air; pile too wet, too much greens.	Turn it; add coarse, dry browns such as straw or corn stalks.
The center is dry and contains tough, woody wastes; never breaks down.	Not enough water in pile. Too much brown, not enough greens. Pieces are too big.	Turn and moisten; add fresh green wastes; chop or shred.
The heap is damp and warm right in the middle, but nowhere else.	Pile is too small; browns and greens are separated; not enough water.	Collect more material and mix; chop pieces and moisten.
The heap is damp and sweet-smelling, but will not heat up.	Lack of greens in pile. Compost is ready to harvest.	Mix in fresh grass clippings or nitrogen fertilizer. Harvest.

Worm composting

No space for a compost pile? Worm composting is an easy and fun alternative to backyard composting. Worms can be used when your yard does not produce enough yard debris for backyard composting. It is also useful when there are space constraints on the property or if you live in an apartment or townhouse. Kids love worms and will often actively participate in this household chore.

Most importantly, worms make the most of our food scraps by eating them and making a nutrient-rich fertilizer for household plants or top dressing for lawns, flower beds and gardens.

To set up a worm bin, you'll need:

- red worms
- a wide and shallow container
- bedding
- fruit and vegetable scraps from your kitchen

Fill the container three-quarters full with moistened bedding. Add the worms. Pull aside some of the bedding and put in some food scraps about once a week, and cover them up with bedding each time. In two to three months, the worms and microorganisms eat the original food waste and bedding and produce rich compost.

The worms

Red worms are recommended because they efficiently process food waste into compost. Regular earthworms and other garden varieties like to burrow deep into the ground and will not survive on the rich organic matter in a worm bin. Red worms are specialized surface dwellers who thrive in very rich organic matter like food scraps.

The amount of worms you need depends on how much food scraps you want them to process. A reasonable guideline to follow is 1/4-1/2 total worm weight in scraps per day. So if you have a pound of worms, they should be able to process roughly 1/4-1/2 lb of food scraps per day.

Keep in mind that red wigglers multiply quickly. You will need to remove worms from time to time or they will overpopulate. It is a great way to finish a presentation on worm bins to raffle off a bin and some worms from your growing population.

You can purchase red worms from local or mail order suppliers or get some from a friend's worm bin. Email: askmetro@oregonmetro.gov or call 503-234-3000 to ask Metro for a list of retail suppliers.

The container

The container should be between 8 and 16 inches deep, with holes drilled in the bottom and sides for aeration and drainage. You can build a wooden worm bin, or use a plastic tub with a lid.

Worm bins can handle about one pound (or one quart) of food scraps per week per square foot of bin surface area. This means a bin with a 1 by 2 foot floor will take about 2 quarts of food per week.

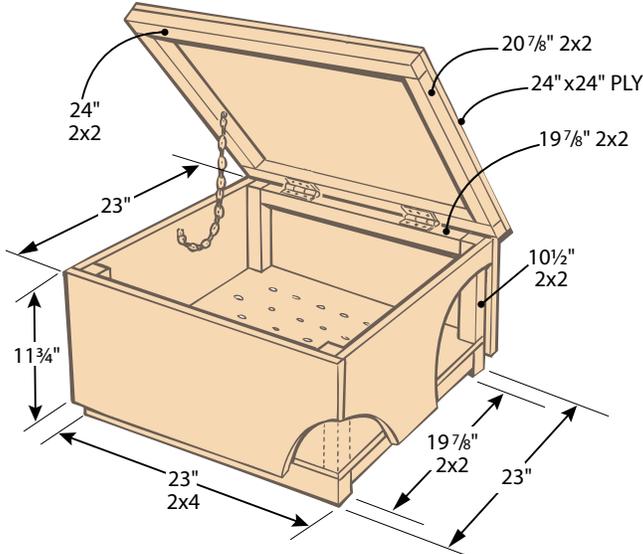
Worm bins need to keep worms moist, dark and not too hot or cold. When temperatures drop below freezing, bins should be moved indoors or be well-insulated. They may be located outdoors, or in the basement, shed, garage, balcony or under the kitchen counter.

You can even make your own worm bin.

Worm bin construction

Wood worm bin

Used mostly for fruit and vegetable trimmings. The bin may require occasional watering. The bin also doubles as a seat. Basic carpentry skills are needed for construction.



side for 2 x 2 uprights. Assemble box by nailing the 1 1/4" overhang of the side walls to the 2 x 2s on the base as drawn. Nail the front and back walls to the 2 x 2 uprights and to the 2 x 4s on the base as drawn. Be sure the hinge support is at the top of the bin.

Lid: Nail lid together as drawn. Attach to box with hinges, making sure to pre-drill screw holes into the 2 x 2s and position hinges as drawn. Attach chain with 1/2" wood screws so lid can rest in opened position.



Plastic worm bin

Used mostly for fruit and vegetable trimmings. It is very easy to build and tidy for indoor use. The plastic bins keep compost moist and will require regular additions of dry bedding.

Materials

1	4 x 4 ft. 1/2" exterior grade non-treated plywood.
3	6 ft., 2 x 2 wood
1	4 ft. 2 x 4 wood
1 lb.	4-penny galvanized nails
2	1/2" wood screws
2	2 inch hinges with Cd screws
1	solvent-free, low VOC, waterproof wood glue

Tools

saw, power or hand
hammer
measuring tape
pencil
square
drill with 1/4" and 3/32" bits
sandpaper

Use proper eye, ear and body protection.

Assembly: Glue all wood pieces before nailing.

Base: Nail two 23 inch – 2 x 4s and two 19 7/8 inch – 2 x 2s to bottom of 23 x 23 inch plywood as shown. Drill at least 24, 1/4" holes for drainage.

Sides: Nail the four 2 x 2 uprights to the two side walls along the 11 3/4" edge, with one end of each 2 x 2 flush with the top edge of the walls. Nail a 19 7/8 inch – 2 x 2 hinge support to the top edge of the back wall piece, leaving a 1 1/2" on each

Materials

1	plastic storage container with a tight fitting lid, measuring 12 to 18 inches tall; 12 x 24" base.
---	--

Tools

power drill with 1/4" and 3/32" bits

Use proper eye, ear and body protection.

Assembly for outdoor use: Drill at least six holes per side for ventilation about one-half to three-quarters of the way up the sides of the bin. Drill at least 12 holes in the bottom of the bin for drainage.

Assembly for indoor use: Drill at least six holes per side for ventilation about one-half to three-quarters of the way up the sides of the bin. To avoid a future mess from moisture dripping out the bottom of the worm bin, you can either forgo drainage holes, or drill drainage holes and use a second plastic storage bin as a catchment tray. If you forgo the drainage holes, be sure to monitor moisture levels and prevent puddling. When moisture content is high, add dry bedding under and on top of the food and worms to absorb excess moisture.

The bedding

Suitable bedding materials include:

- shredded newspaper or cardboard (not magazine pages)
- brown leaves
- straw
- coir (coconut fiber)
- untreated soft-wood sawdust or wood shavings

Setting up and maintaining a worm bin

Fill the bin three-quarters full with bedding that has been moistened so it is as wet as a wrung-out sponge. Add a handful of dirt, crushed eggshells or sand to provide necessary grit for the worms' digestion.

During the course of several months, the worms will eat the bedding. Add more moistened bedding as necessary to maintain the bin at three-quarters full. There should always be about 4 inches of bedding over the worms and compost.

Feeding your worms

When adding food waste to the bin, pull aside some of the bedding and bury the food. Bury successive loads in different locations in the bin.

YES – do feed your worms:	NO – do not feed your worms:
<ul style="list-style-type: none"> • fruit and vegetable scraps (including citrus peels) • coffee grounds and filters • tea bags 	<ul style="list-style-type: none"> • meat, fish or dairy products • greasy or oily foods • breads, grains or dry beans • pet waste (unless it is from a rabbit or chicken)

Harvest your worm compost

Harvest worm compost (also known as worm castings, vermicompost) from the bottom of the bin after several months or when it looks like soil. For small amounts, look for areas in the bin with soil-like compost and few worms and just grab handfuls.

For larger quantities, you can push the contents of your bin to one side and fill the empty half with new bedding, food and some of the active worm compost. Add all new food scraps to this new side for a few months. The worms should migrate over there, leaving pure compost on the side with the older material.



Uses for compost

As a soil amendment: Mix two to five inches of compost into vegetable and flower gardens each year before planting.

As a potting mixture: Add one part compost to two parts commercial potting soil, or make your own mixture by using equal parts of compost and sand or perlite.

As a mulch: Spread an inch or two of compost around annual flowers and vegetables and up to six inches around trees and shrubs.

Top-dressing for lawns: Top-dressing turf areas with compost is recommended to provide a slow release of nitrogen. Mix finely-sifted compost with sand and sprinkle evenly over lawn. Using compost also will improve the condition of your soil and allow for better water retention, which will allow you to use less water.



"I wanted to make sure that I put only what belongs in each cart so that valuable materials get to someone who can turn them into new products."

– Jocelyn

CONCLUSION

Practice at home then share what you learned

Jocelyn is one Master Recycler who learned during the course to get the most out of each container in her collection system. Jocelyn must be doing something right because now she only has to put her garbage out five times a year and when you look in her recycling and compost containers all you see are clean resource-rich materials!

One of the best ways you can be an effective Master Recycler is to try it yourself. Identify new goals for your household that aim to recover more materials and reduce contamination and then share your experiences in the community.

CHAPTER 9

MATERIALS IN MULTIFAMILY COMMUNITIES

INTRODUCTION

Welcome to the diverse world of multifamily recycling!

In the Curbside and Beyond chapter we learned about curbside collection for one to four unit properties as well as best practices that are universal no matter what type of housing you live in. This chapter will focus on the collections systems for multifamily settings, which are defined as five units or more. The chapter will also explore some challenges unique to multifamily properties and strategies that tenants, property managers, local jurisdictions and Master Recyclers can use to address these challenges.

Multifamily communities come in many shapes and sizes: they may be made up of multiple buildings on a single tax lot, a single structure with multiple units, or a property with commercial space on the first floor and housing above. In some parts of the region, micro-apartments with communal spaces are also popping up. Some properties may include five units while others may have 200 or more households. Multifamily housing can include these types of properties:

- Condominiums
- Townhouses
- Apartments
- Moorages
- Manufactured home parks
- College dormitories
- Senior living facilities
- Co-housing communities





Almost half of the residents in the metropolitan region live in multifamily communities. Portland's 5,000 multifamily communities house 40 percent of its population. Washington County's 775 properties house 30 percent of the population, while Beaverton's 264 multifamily communities house 50 percent of the population. In Clackamas County, 25 percent of the population lives in multifamily housing, but in some of its cities the percentages are higher with Lake Oswego at 31 percent, Milwaukie at 41 percent, and Wilsonville at 59 percent.

And this population is growing! In 2014, 80 percent of construction permits in Portland were for multifamily buildings. In Washington County multifamily households increased by 12 percent between 2014 and 2016.

Clearly, with this many people living in multifamily communities, ensuring good recovery programs for this type of housing can have significant impacts.



MULTIFAMILY RESIDENTS AND RECYCLING SYSTEMS

Curbside collection for single family homes can be uniform throughout a jurisdiction because the housing is fairly uniform. Multifamily housing includes a great variety of settings and so the way in which garbage and recycling is stored and collected varies from site to site.

Moreover, multifamily properties typically involve a number of stakeholders. With single family properties, usually the decision maker is the property owner or the renter. With multifamily communities there may be a number of extra players that may affect services. There may be a property manager who manages the bills and communicates with the garbage and recycling company. There may be a homeowner's association that sets rules about container enclosures or pickup services to ensure a specific aesthetic. In some cases such as in dormitories and senior living facilities there are also staff or custodians.

Such a variety of building structures and multiple stakeholders present a situation in which each community needs to be evaluated individually.

Collection services for multifamily communities are generally considered to be commercial accounts by the collection companies and the jurisdictions in which they are located. Except in Portland, the franchise or certificate system dictates which collection company is available to the multifamily community. In Portland, commercial accounts are set up individually, with the property owner choosing a garbage and recycling company based on cost and services provided.

Regardless of which commercial garbage and recycling service a multifamily community uses, the local governments (and thus the haulers that provide the collection service on behalf of the local governments) are responsible for providing recycling services according to Oregon State Law ORS459, ORS459A. In addition, the property managers are responsible for providing residents the opportunity to recycle per Oregon State law ORS 90.318.

Portland and Beaverton have gone one step further to directly require landlords to provide recycling services to their residents through local ordinance. Although other local governments may not have a local ordinance requiring landlords to provide recycling services, they often have adopted rules or code language that requires the haulers to provide recycling services to their multifamily customers. The combination of these hauler requirements and local government assistance programs allows multifamily managers to easily set up a recycling system that works for their community.

On-site collection systems also vary. Most communities use shared garbage and recycling areas with dumpsters and carts or even a compactor. Some multifamily housing has individual carts assigned to each unit. This is often found in single level settings such as manufactured home parks, townhomes and courtyard apartments.

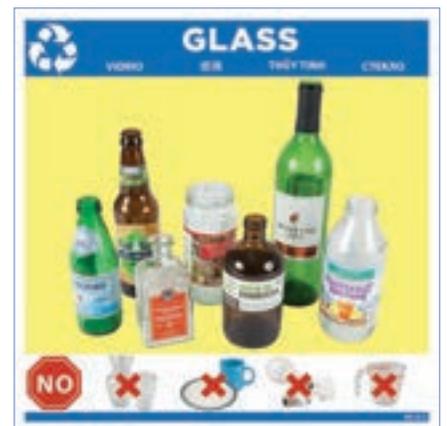
Although collection equipment may vary, the recycling program is the same in multifamily communities as in single-family homes with:

- Mixed recycling containers for paper, cardboard, metals and plastic.
- Containers for glass jars and bottles.

This is also known as a *two-sort* system and can be provided at all multifamily settings regardless of the garbage and recycling company used. Ideally, recycling bins are located near all garbage bins.

Unlike one to four unit properties, motor oil is not collected in multifamily settings. Yard debris is optional and usually not part of the collection system because most multifamily settings utilize landscaping companies that haul yard clippings when necessary. We will discuss how this affects renters' ability to collect food scraps for composting in a later section.

Nearly 90 percent of the region's multifamily households report that they recycle most of the time. So while one of the biggest self-identified challenges from property managers is better recycling, it isn't so much a question of getting residents to recycle, as it is assisting property managers with setting up their systems so they are easy to use. After that it is to recycle correctly.



OPPORTUNITIES

Examining barriers to recycling can be an excellent first step in discovering opportunities for change and improvement. So, what prevents multifamily residents from recycling correctly and consistently?

If you build it they will come and recycle

As we learned in the Behavior Change chapter some barriers to recycling may be very real physical ones. In multifamily settings the most common barriers are physical or structural. Some multifamily communities were built long before recycling was a standard expectation and therefore the enclosures are only designed to have space for garbage collection. This often means that recycling is squeezed in the back of the space, set outside the space or in a completely different building. Some buildings in the region even still have garbage chutes. Recycling must then be carried to a separate location. Cities for the most part, have updated their building requirements to address these problems in newer buildings.

Along with enclosure problems, property managers often do not know how many cubic yards of garbage and recycling is appropriate for their property. A site visit and advice from the multifamily specialist listed later in this chapter can help to overcome these barriers.

Location, location, location

We have learned that the buddy system where garbage and recycling are equally easy to access is an important strategy for ensuring that people recycle. Space inside some multifamily kitchens makes multiple containers for sorting more challenging. Often garbage collection is provided in multiple locations that are easy to access. Meanwhile, recycling containers may be in just one location and less accessible.



This creates a disincentive to recycle as tenants must transport their recyclables to this location. Unfortunately, they often opt to place recycling in a plastic bag which they then place in the recycling container which we have learned is a major problem for recycling processing facilities. Many local jurisdictions now provide durable, light-weight bags as part of their multifamily outreach efforts.

Common ground and social norms

Living in a multifamily community means living a shared life: shared walls, outdoor spaces, parking areas, and garbage and recycling areas. Frequently, residents share other resources as well including water, heat and other utility bills. This collective setting can be a benefit and a barrier to improving recycling. Individuals don't always see the rewards and benefits of preventing waste or conserving water when their personal bills are not significantly affected. However you can improve the recycling situation for hundreds of households at one time. Residents also often know each other, have established lines of communication and can build momentum for new recycling efforts.

Usually the central figure in these communities is the property manager. A property manager can take the lead in educating residents about recycling and sustainable practices and communicate the community expectations from the moment residents apply for housing or purchase a unit. Property managers can thus establish norms about recycling and common space. Working with a group of committed residents, facilitating a green team or working with the property management company to affect behavior change can be a wonderful opportunity for Master Recyclers.



Communication

Poor or out-of-date signage is a common problem that prevents successful recycling even for residents who want to do the right thing.

More people who live in multifamily communities will be linguistically isolated or speak English as a second language. Children who do not yet read, or are not tall enough to see signs, are often the ones tasked with taking out the garbage and recycling. The multifamily programs in the region have all designed signage, brochures and webpages with more pictures than words, color coding, and instructions on good sign placement.

Revolving doors

Another obstacle can arise in communities with high turnover, whether in management, ownership and/or residents. Residents who live in multifamily settings tend to move more often and be the newest members of a community. This may mean that they come with a lack of prior experience living in a city or they know a different recycling system. A constant revolving door at the front office or in management can create inconsistencies and shifts of priorities. Adopting a multifamily community by creating links between the property managers, the garbage and recycling company, and residents is a great way for a Master Recycler to make a difference.

SPECIAL MATERIALS CHALLENGES

Multifamily settings, much like single-family residences, face a number of challenges related to special materials. Fortunately there are resources designed to meet these challenges.

Hazardous waste disposal: Pesticides, batteries, paint thinners and fluorescent light bulbs don't go in the garbage. *Ask Metro* signage is available that tells people to call the Metro Recycling Information Center at 503-234-3000 about hazardous waste collection events and other options for safe disposal. This can help avoid accumulation of these items in waste enclosures. Some property managers will also provide a location for these items and regular pickup in order to avoid improper disposal.

Electronics: Landfills do not accept electronics. The Oregon E-cycles program will provide tenants and property managers information about the nearest location that provides free recycling of computers, monitors and televisions, keyboards, computers and mice.

Holiday waste reduction and tree disposal: Properties can coordinate holiday tree pickup and recycling with Boy and Girl Scout troops and other civic minded groups. Winter is a great time for Master Recycling outreach at community events and multifamily resident meetings with a focus on waste reduction and tree collection! The Metro Recycling Information Center will also provide information about how to reach groups collecting trees.

Bulky waste: When residents move out, they often leave a little (or a lot) behind in the form of abandoned furniture and other household items. This is consistently identified by property managers as the greatest resident-related garbage and recycling challenge. Sometimes the discarded objects even obstruct the regular collection of debris and prevent other residents from using the area. To address this issue, the Metro regional workgroup for multifamily recycling has developed English and Spanish language Resident Move-out Guides. Some creative property managers (and Master Recyclers) are also coordinating quarterly or seasonal clean-ups, yard sales, or community swap areas and bulletin boards to avoid illegal dumping and assist with timely and appropriate disposal.



COMPOSTING FOOD SCRAPS IN PORTLAND

For rentals of one to four units in Portland, landlords are required to provide food scrap compost collection as part of the service. Composting food scraps is optional at multifamily communities. Most properties do not provide this service for their tenants. Many do not even have containers for yard debris because landscaping is managed by a separate company from the garbage and recycling company.

Portland multifamily residents are highly interested in food scrap composting and if you volunteer in this city you will likely be asked questions about why they don't have food scrap composting in their community or how to get it started. Property managers and landlords pay for the services and will need to decide if it is right for their property. Here are some tips for property managers.



Knowing When to Get Started

While composting isn't required, it is increasingly popular with residents. Before a property manager kicks off a composting program at their multifamily property, determine if they are set up for success or whether it's best to hold off.

Evaluate the current system. Composting works best when multifamily residents already manage garbage and recycling well. Evaluate collection at the property to see if the set up needs to be fine-tuned. If problems exist in this area, it is best to focus on improving recycling before taking on the challenges of composting.

Assess interest. Composting is most successful when at least half of the residents will commit to participate. Send an email survey or post a tear-off sheet near the mail-boxes to assess interest at the property.

Think the property is ready?

Here are the next steps for the landlord.

- **Get in touch with the garbage and recycling company.** Together, you can discuss everything you need to get started:
 - Number of containers needed
 - The best location for collecting food scraps
 - Food scrap collection days and frequency
 - Potential costs
- **Update the set up.** Add signage to the collection area that includes food scraps, recycling, glass and garbage. Make sure all collection containers are clearly stickered. Free signs and stickers are available through your local jurisdiction.
- **Contact residents.** Email or post updates to ensure residents know about the new composting program and any changes in service frequency. Order the composting guide and magnets to give to residents and help them compost the right way. Ensure that new residents receive materials as they move in.
- **Define success.** Create a few measures to evaluate the success of food scrap composting at your multifamily property, such as:
 - High resident participation
 - Less garbage collected
 - Increased sense of *doing the right thing*
- **Odor and vermin control.** With a little care, food scrap collection should not increase odor or vermin problems. Don't forget that food scraps are already in the garbage containers. Food scraps should be picked up with the same frequency or even more frequently as garbage. Property managers are responsible for keeping these containers clean. Store the containers outside and out of the sun, whenever possible. Line newspaper along the bottom of the container to help reduce smell. Ask maintenance staff to wash out the container after collection. Check with your garbage and recycling company to see if they clean, line or switch out containers.

MASTER RECYCLER PROJECTS IN MULTIFAMILY COMMUNITIES

The potential for creating better recycling at multifamily communities is huge

Property managers don't always have the time, motivation or know-how to recycle better. A little technical assistance can go a long way. Volunteering in multifamily communities is rewarding because you can help conserve high volumes of natural resources. With relatively simple projects, you can directly help 20, 30 or even 300 households recycle better!

Here are just a few ways you can help:

Door to Doors

Look in the Master Recycler newsletter or calendar for door to door outreach efforts. Door to Doors are a great way to answer individual residents' questions and clarify what goes in each container. They can also help clarify why recycling problems may be happening at a property. This sort of outreach is frequently requested by property managers who have high levels of contaminated recycling and want help in educating their residents. They are best to conduct after any problems with containers and signage are resolved so that the instructions you give can be consistent and simple. Some jurisdictions even include a free bag as a hand out for residents.



Adopt-a-community

Another way to help is to commit to supporting a multifamily community's recycling efforts over a period of time. If you've identified a multifamily community to adopt for the summer or longer term, your first action should be to contact the multifamily specialist who serves the area for this property. These specialists are listed later in this section. Every local government provides free educational materials including durable signs for collection sites, container stickers, posters, and resident brochures or door hangers. They also have bags for recycling collection.

These specialists can provide a site visit and technical assistance. They can often also provide information about how to reach the property manager and any history of working with this manager on the property.

The next steps will vary depending on the community. They may include, but are not limited to, any of the following:

- Assessing the garbage and recycling situation and recommending changes to service.
- Stickers and posting signs at garbage/recycling enclosures, community rooms, laundry rooms or mail centers.
- Working with the hauler or property manager to shift container sizes, enclosures or locations.
- Monitoring recycling containers to identify contamination or measure increase in recycling or decrease in waste as a result of your actions.
- Distributing educational materials.
- Conducting a one-on-one door to door. (You can contact the Master Recycler Program Manager if you would like to invite more Master Recyclers to help you with this effort).
- Presenting at a resident meeting or facilitating a recycling and waste prevention discussion.
- Setting up a display or tabling at a resident event.
- Coordinating a community yard/garage sale.
- Coordinating a community recycling collection event.
- Designing a community swap bulletin board.
- Helping set up a community swap area.

Clean-up, swap or reuse collection events

These can be a great way to manage bulky items. A few tips about putting on a clean-up event at a multifamily community:

- Contact the local jurisdiction specialist to tell them about your project. They can provide assistance with planning, funding ideas and/or outreach materials.
- Read the Metro Community Cleanup Guide, available online.
- Create a team that includes a member of management, a facilities staff person, and at least one active member of the community.

Washington County Master Recyclers have organized many of these types of events and share these tips based on their experience: Learn as much about the residents as possible. What are the primary languages spoken in the home? You will want to translate the information into the top two or three languages. Are there many families with children? If so, plan to include a kids activity to maximize participation. How do they prefer to receive information? Do not rely on Facebook if only 10 percent of the community has liked the community's page.

Schedule your event to avoid other major events and to best serve your audience. A Saturday morning may not be the best if the residents are usually busy with other activities on Saturdays.

Be clear in advertising about what you want and don't want. Have a plan for any unclaimed, leftover materials and use the event to advertise year-round recycling and reuse options to attendees.

Start by contacting the multifamily recycling coordinator in your area

City of Beaverton:

Phone: 503-526-2665

Website: www.beavertonoregon.gov/recycling

Email: recyclingmail@beavertonoregon.gov

City of Portland

Phone: 503-823-7202

Website: www.portland.gov/bps/garbage-recycling/multifamily-recycling

Email: multifamily@portlandoregon.gov

Clackamas County

Phone: 503-557-6363

Website: www.clackamas.us/recycling/multifamily.html

Email: wasteinfo@clackamas.or.us

Washington County

Phone: 503-846-3605

Website: www.WashingtonCountyRecycles.com

Email: recycle@co.washington.or.us

City of Gresham

Phone: 503-618-2525

Website: www.greshamoregon.gov/recycling/

Email: recycle@greshamoregon.gov

RESOURCE

Find the Metro Community
Cleanup Guide online

BEYOND RECYCLING

Increasingly, multifamily property managers and residents want to incorporate other environmentally positive approaches to community living. Many local governments have resources that Master Recyclers should be aware of and share with interested parties. Some of these topics and areas include:



Energy savings. Tax credits and cash incentives are available to property owners in a variety of ways for simple things such as replacing windows and doors; insulating pipes; caulking and weather-stripping windows; and insulating attics, floors and walls. In addition, communities may be eligible for assistance with installing energy-efficient appliances. For more information, call Energy Trust of Oregon at 866-368-7878. Another option is free energy audits offered by metro-area utilities, including Portland General Electric, Pacific Power, NW Natural and Cascade Natural Gas. They help evaluate current energy use and provide assistance with energy-efficiency improvements.

RESOURCE

Look for information on multi-family water conservation online at Conserve H2O.

Water conservation. Time and money savers can include installing low-water fixtures and appliances. Check out the new outreach flyer specific to multifamily communities available at the Regional Water Providers Consortium's website. This site is dedicated to water conservation education and resources.



Alternative transportation. Residents can be encouraged to use available buses and light rail simply by providing them with information through Trimet. A popular way to encourage residents to bike is by providing safe, covered bike storage on-site; additional resources and ideas can be found at Metro's *Drive Less, Save More* site.

Natural gardening and composting . A landscape can look beautiful without toxic chemicals. Simple things like leaving grass clippings on the lawn reduces fertilizer needs by 50 percent and saves staff time usually spent bagging the clippings; using compost can save money on fertilizer, control weeds, nourish plants and reduce the need for water. On-site composting of yard and garden waste may be an option for some multifamily communities depending on size and approach; more information and assistance can be found through local governments and Metro. The City of Portland's commercial food composting program is available to commercial properties including multifamily communities when it is feasible for the site; region-wide residential food composting is under development.

RESOURCE

Call Metro at 503-234-3000 or visit Metro's Yard and Garden webpage for more on natural gardening.



CONCLUSION

For Master Recyclers who live in multifamily settings or for those of you who are looking to have a very big impact quite quickly, working to improve recycling and materials management in multifamily housing can be a terrific option. Multifamily settings are a wonderful opportunity to reach many people at once and change habits and behaviors for an entire community. It is also worth noting that multifamily housing is becoming more and more common as the region's population grows. Working in multifamily settings does pose some specific challenges. It is quite common for recycling and garbage collection areas to be poorly designed or sited, and recycling can be difficult in communities with high turnover. That said, there are many wonderful resources to help you with such projects.

Start by reaching out to the multifamily recycling coordinator in your area who can likely provide you with recycling history for this location and give you outreach materials, including signs and brochures. From there you can try some of the strategies presented in this chapter, including one-on-one outreach and cleanup events. Beyond recycling, multifamily settings afford opportunities to share resources about composting, gardening best practices, alternative transportation, green remodeling, and ways to save energy and water. Remember that any work that you do in multifamily settings has the potential to reach many, many people and to make a big difference!

CHAPTER 10 MATERIALS IN THE WORKPLACE

INTRODUCTION

Master Recyclers are usually the sustainability champions wherever they go, including the workplace.

As a Master Recycler, it is likely that your co-workers will look to you for information and motivation because they see your commitment. You can help keep momentum going, seek out answers and resources, and identify barriers in your workplace.

Sustainability champions should also realize that it is not sustainable to try and go at it alone. You can pull out recyclables from the garbage, bring your own mug to work, and lug special plastics to the local depot yourself, or you can get your workplace organized so everyone plays a part and policies are put in place that dramatically reduce the consumption of our natural resources.

The free resources available in our region work best when a workplace champion is onsite and can tailor the approach to their specific workplace. This chapter will help you think through the best way to utilize these resources.



COMMERCIAL MATERIALS MANAGEMENT

As you can imagine, there are many work sectors in the metro area and each use and discard a large quantity and variety of specific materials. The strategies to manage these materials are equally variable. Despite the wide range, some approaches can be generalized and tailored for each sector. Master Recyclers utilize their skills and enthusiasm to help conserve our natural resources in each and every one of these sectors, and in settings that range from a tiny office to a large factory. Master Recyclers have found making change at work to be rewarding because these changes can make a big impact.

Some Master Recyclers have also found that including the training and experience from the program on your résumé can greatly increase your value to potential employers who want to improve their sustainability practices.



COLLECTION PROGRAMS AT WORK

Standard collection services

Like in the residential collection system, in Washington County (excluding unincorporated areas), Clackamas County and Multnomah County (excluding Portland), garbage and recycling companies serving businesses are franchised. You will recall from previous chapters that means they contract to serve designated territories and offer standardized services and fees, much like the residential services.

Portland differs in that hauling companies compete with one another for commercial accounts. They also set their own rates and services. Haulers do, however, have to meet some basic requirements to receive a permit to operate in Portland. These basic requirements include providing at least the basic recycling and composting that is required of businesses. Commercial haulers in unincorporated Washington County have certificates that regulate a set of standards, much like the franchised system.

Throughout the region, the same materials that residents may leave at the curb are also accepted from businesses. However, businesses will often separate out more valuable materials like cardboard, scrap metal, or office paper to be sold or to reduce costs in hauler fees.

RESOURCE

Find the Business Food Separation Requirement factsheet online to learn more about the types of businesses and types of materials included in the policy. There is also an estimation guide to help you estimate the quantity of food scraps the business where you work generates.

Business Recycling Requirements (BRR)

Lots of businesses throughout the metropolitan region are doing their part by recycling at work. However, during an average year, businesses in the area still throw away more than 100,000 tons of recyclable paper and containers. These valuable materials should be recovered and processed to help us conserve natural resources.

For this reason, Metro adopted Business Recycling Requirements (BRR), where businesses must:

- Recycle paper, cardboard and containers (aluminum cans, plastic bottles, jugs, buckets, and round container, and glass bottles and jars).
- Ensure there are collection containers for these materials.
- Post signs at collection areas, indicating which materials should be recycled.

RESOURCE

To find your local contact go to Metro's guide to recycling at work online.

While this is a Metro requirement, local governments are responsible for enforcement and most cities and counties have adopted local ordinances to match the Metro rule. These requirements can sometimes seem complicated due to many players such as a landlord, property manager, multiple tenants and staff. Ultimately, it is the property manager's responsibility to ensure compliance with proper business recycling through hauler provided services.

In July 2018, the Metro Council adopted code language requiring most food producing businesses to separate their food scraps from other garbage by the end of 2024.



Metro and local jurisdictions focus on an assistance-based approach to gaining compliance and supporting businesses to achieve sustainability goals above and beyond basic recycling requirements.

Most Metro area jurisdictions provide free, customized assistance to all types of businesses. Recycling Specialists can help your business with:

- On-site evaluations
- Working with waste haulers and property managers
- Finding solutions for some items not accepted curbside
- Resources for sustainable purchasing
- Free education materials, containers and signage
- Presentations
- Employee training
- Additional business sustainability opportunities

Awards programs

Along with technical assistance, local jurisdictions also recognize businesses that go above and beyond. Clackamas and Washington Counties and the City of Gresham have certification programs to showcase businesses demonstrating a deeper commitment to sustainability. Visit your local business assistance program website to learn what is available. These programs are a great way to encourage your workplace to strive to do better.



MAKING A DIFFERENCE

What counts as Master Recycler volunteer hours at work?

Master Recyclers are a volunteer outreach corps. The program was not created to train professional sustainability coordinators or managers. However, that does not mean that projects at work are off limits for volunteer hours. On the contrary, it is incredibly valuable to have trained workplace champions.

If you decide to do a project at work, it will count as Master Recycler hours if the work involved with the project is above and beyond your normal job description. Master Recycler bartenders, administrative assistants, bus drivers, veterinarians, factory managers and nurses have implemented long lasting changes in their workplaces. Starting a green team, acting as an office champion, helping implement strategies and systems of change, organizing events and lunch and learn presentations all count as hours. Tasks that are expected of you as part of your job because you are a sustainability coordinator do not count as volunteer hours.

If you are thinking about doing a project in your workplace and are not sure if it would count as volunteer hours you can ask the Master Recycler Program Manager (masterrecycler@oregonmetro.gov).

FIVE PROJECTS

Getting started on a workplace project is easier than you think. The five ideas listed below (and discussed in greater detail in the rest of this chapter) are great potential projects. Business Recycling Specialists will help you tailor these strategies to fit the specific needs of your organization.

- 1. Form a green project team.** You may be the recycling champion who will track and guide your workplace efforts, but you don't have to do it alone. Starting a green project team spreads the work and improves communication with co-workers, business and building managers, custodial staff and haulers. Importantly, it also helps spread this knowledge out in your workplace and helps ensure the practices stay in place as people change jobs.
- 2. Conduct a sustainability assessment.** Examining purchasing, waste, and other aspects of your business can reveal opportunities for reducing consumption and disposal while improving your organization's financial, social and environmental bottom lines.
- 3. Implement best practices.** Put a few best practices in place and you will be pleasantly surprised at the results.
- 4. Promotion and outreach.** Once your workplace recycling system is set up, it's crucial to let co-workers know how to use the system through varied and ongoing outreach strategies.
- 5. Setting policy.** Sustain your efforts by setting purchasing policies, contracts and job descriptions.

Before you get started!

Find out if there is already a designated sustainability coordinator and then work collaboratively with them.

Form a green project team

Recruit committed co-workers

A motivated green project team will share the workload, build support among coworkers and make sure that your recycling efforts are successful.

A Recycling Specialist can help you identify a potential project and get a green project team started. If necessary, they can help you educate leadership and management on the importance of allocating resources and time to a green project team. Support from your management will also ensure that the project is a priority.

Invite committed co-workers who can devote time and energy to the project, and be sure to include a representative from your facilities, maintenance and purchasing departments when applicable to the project. Any co-workers that be directly affected by the project should help with its design.

Once your team is in place, clarify the roles and expectations for each member. Then work together to establish goals and objectives for your project.

Start with an assessment

A sustainability assessment can help evaluate the flow of materials through your organization. There are many different assessments you can conduct. A purchasing assessment includes everything from one-time large procurement, such as constructing a new building, to smaller day-to-day purchases such as office supplies. Purchasing entails contracts as well as one-time expenses. A waste assessment includes such activities as reviews of disposal records, walk-through evaluations of facilities and operations, and manual sorting of material pulled from garbage containers. Assessments may also include onsite use of materials or manufacturing options in certain sectors.

Policy assessment

A good place to start is by looking at current policies and contracts that control the flow of materials in and out of the workplace. An audit of the purchasing policies and waste contracts will help you get a good sense of the existing trends and priorities. Do your purchasing policies only focus on cost? If so, then you will know that a good place to start is by integrating environmental and social requirements into the policies. If the current policies include environmental and social requirements, are they being implemented?

A scan of policies and contracts can also alert you to specific obstacles that you may have to work around. Some policies may exist that will conflict with goals you may want to set. Contracts may already be in existence with paper purchasing or custodial companies that do not include new potential requirements or tasks. It will be helpful to know this ahead of time so that you can plan a work-around until the contract term ends and a new one can integrate the new requirements and tasks. Learn this ahead of time so that you can plan a work-around until the contract term ends and the new one starts that includes new requirements and tasks.

Waste assessment

A waste assessment can reveal opportunities for reducing disposal costs and improving your organization's financial and environmental bottom lines. It allows you to develop baseline data on the quantity and type of waste your organization generates. **Baseline data can be used to:**

- Estimate cost savings potential of recycling and waste prevention activities.
- Identify specific materials to target for inclusion in recycling and waste reduction efforts.
- Measure progress and communicate results to employees.

Conducting a waste assessment may involve many people within an organization. However, one person will need to be responsible for coordinating the assessment and recruiting a team. This individual should be familiar with the overall operations of the organization and in particular with purchasing, garbage collection services, and janitorial contracting. The team size will vary depending on the size of the organization. A small sort team may consist of one or two people and larger organizations may create a team that includes staff from environmental health and safety; building supervisors; officials involved with the technical/operational, administrative, facilities maintenance and/or purchasing aspects of your organization; or employees interested in waste reduction.

Conduct a facility walk-through

A facility walk-through provides the waste assessment coordinator with valuable information regarding the day-to-day activities that ultimately affect the waste stream. A walk-through can include more than just waste assessment. Most Recycling Specialists are trained to include other materials management goals when helping you with a walk-through.

A waste assessment walk-through lets you:

- Observe the types and amounts of waste produced.
- Identify waste-producing or waste-reducing activities.
- Account for all garbage and recycling collection equipment and locations.
- Detect inefficiencies in operations.
- Map the path by which waste moves through the organization.
- Observe the layout of operations.
- Observe current recycling and waste prevention educational efforts.

The facility walk-through and assessment provide the coordinator with the information necessary to plan a sort strategy. What is the date and time the waste should be collected for sorting? Where is a good location to conduct the sort? How much waste needs to be sorted? From which parts of the facilities should waste be pulled from to compile the sample? What material categories should waste be sorted into? Answering these questions along with information gained from employee interviews or surveys, will help the waste assessment coordinator properly manage the sort preparation and implementation.

Staying safe during the waste sort

Develop a health-and-safety plan for the unexpected injury or accident to occur while conducting a waste sort. Communication is crucial to ensure that each team member understands the correct procedures, the potential hazards, and the risk reduction plan.

Risks will vary for each workplace. However, common hazards include: sharp objects in the materials being sorted, such as needles or broken glass and chemical or infectious waste. Injury can also occur from lifting heavy waste bags or encountering on-site vehicles or machinery.

Plan the waste sort

Determine sort categories and prepare data sheets before the sort. Information gathered from the walk through will help determine what categories of waste to include on your data sheets. Determine sampling and sorting procedures and set a standardized process for all participants to follow. This will help maintain consistency and ensure data integrity.

Consider the following questions:

- Are there waste containers that should not be included in the waste audit because they include dangerous materials such as medical waste, potentially hazardous materials, loose animal or human waste, medical syringes, or broken glass?
- Are you going to audit all waste containers or sample from various parts of the work place?
- Are you going to focus on just one potential waste stream (like food waste or paper or plastics) or will all of the material be assessed?
- Are you sorting materials for curbside recycling or are there other materials you also want to identify (like non-curbside plastics)?
- When are containers most full, so that you don't set your sorting date right after containers are emptied?
- What is the safest location to sort?

Most local jurisdictions have waste audit scales, containers and instructions that you can check out, use, clean and return. Check with your local Recycle Specialist to see what is available.





Implement best practices

Once you have all key participants on board and have a plan for who will haul the recycling and compost where, you now know how materials should be separated. Next step is to get containers and signage. Smaller containers are best located close to workers and larger containers with clear signage to collect materials in one place for servicing by the garbage and recycling companies. Most local governments will provide free internal containers and signage that can be tailored for your work. Here are a few best practices that will maximize success.

Buddy system

Always pair garbage and recycling containers side-by-side. This will make it more likely to capture more recycling while keeping contamination to a minimum.

Most local governments can provide free desk-side recycling boxes to set next to garbage containers at desks or other work spaces. Unless you have a highly motivated group, do not consider removing the garbage can. This approach will likely result in contaminated recycling.



Centralized vs. distributed recycling pickup

Often custodial contracts include garbage collection at each desk, but office workers have to get up and empty their recycling when their desk side boxes are full. If deskside garbage pickup is provided, find out if recycling can be included. If not now, when it is time for contract renewal, consider including this option. You can also cut custodial costs by having office workers take both garbage and recycling to the central collection container.

Signage

Rather than making your own, request signage from your Recycling Specialist. These signs were designed to be the most effective tools possible in getting materials where they belong. They utilize more pictures than words, and can include specific languages that may be needed in your work place.





Promotion and outreach

Education, incentives and fun

Often people think that the reason that their co-workers are not recycling right is because they just don't know better or worse, don't care. It is more likely that the system is confusing. After ensuring the best practices above are in place, education is the next step.

Here are some ways to tell your co-workers how to use the new system:

- Send out periodic emails with instructions and eco-tips.
- Utilize existing communication channels such as a staff newsletter, lunchroom board, or employee website to share messages about changes, to give instructions and to keep people engaged.
- Offer green-bag lunch time presentations on special topics.
- Let everyone know about goals and how they can do their part to meet them. Post charts in prominent places that show the progress toward goals. Make announcements during meetings, by email, through an office newsletter or on a shared web page that let people know when you have passed a major milestone toward the goals.
- Consider prizes to reward folks who do a great job and encourage others.
- Competitions are effective, fun ways to give feedback. Teams or individuals can strive to get to certain goals first.
- Share stories about how co-workers are making changes and succeeding.
- Have co-workers wear buttons or place signs in their workplace to show they are on board with the changes.

Setting policy

Don't let all your great efforts go to waste. Take advantage of the positive support that current management is showing toward these sustainability efforts by ensuring that they will continue into the future. Setting policies that make clear requirements toward environmental and social goals, define who is responsible for carrying out these goals, and measure the progress will help ensure the shifts you made today become a lasting part of the institution where you work.

One place to focus is workplace purchasing. Sustainable procurement means taking into account your procurement actions and carefully evaluating what you buy. Make an impact by purchasing specific products and services with high environmental performance that include social and economic benefits.

Sustainable procurement activities can range from buying recycled paper or less-toxic cleaning products, to the retrofitting or construction of buildings with high energy efficiency standards or developing an alternative fuel fleet.

Contracts can also include socially responsible requirements such as paid sick leave for workers and safety training and standards.

Sustainable purchasing policies and contracting may include:

- Recycled content.** Setting a policy that supplies are made from 100 percent recycled material is likely not a realistic policy. Not all products are offered with such a high level of recycled materials and some are much more expensive than those made from virgin materials. But you could identify the top three supplies that must be made from at least some recycled content. Identify the supplies that are purchased most frequently in your work place and research if there is a similar product that is made from at least 30 percent post-consumer recycled content. Determine if the price of this alternative is within your organizational budget.
- Toxics.** Use cleaning products with less toxic chemicals. When chemicals must be used, train staff to use only what is needed. Require that products disclose ingredients used.
- Buildings.** Identify required standards for buildings, furniture and office fixtures that include sustainable material, reuse and salvage.
- Sweatshop free.** Purchase products or prioritize products that offer safe and dignified work for their employees and the contracted companies.
- Lunchroom.** Install a dishwasher and provide durable dishes. Pay for a service to wash and put away dishes so staff don't have to. Set up food scrap collection.



Your Recycling Specialist can help you get resources to meet these goals.

FOOD IN A COMMERCIAL SETTING

Whether you are managing food in your lunchroom or you work in a large food waste generator like a school, grocery or restaurant, food is an important part of any sustainability plan due to its high climate impact. As you will learn in the food chapter, the growing and processing of food requires enormous natural resources. Meanwhile there are people in our region who do not have access to fresh healthy food. Businesses can play a role in utilizing those resources to their maximum level with three words: Prevent. Donate. Compost.

Food Waste Stops with Me

As food professionals, businesses have the power to eliminate significant amounts of waste. They can order just the right amount, use it from tip to tail and root to leaf, show colleagues and customers what's possible—and delicious.

Food Waste Stops with Me is a great resource available on Metro's website that provides resources such as webinars, podcasts and case studies in three main categories: Prevention, donation and composting. Topics address different parts of the business food cycle – things like purchasing, menu planning, storage, food prep, staff training and inventory management.

Food Waste Stops with Me is a collaboration between Metro, the Oregon Restaurant & Lodging Association, the Oregon Department of Environmental Quality, as well as city and county governments to help food service businesses reduce food waste

Other resources available to businesses to help reduce food waste:

- The Oregon Department of Environmental Quality's "Wasted Food Wasted Money" campaign provides resources and information that can help food service businesses take meaningful steps to reduce their food waste and save money.
- Hotel Kitchen also provides a toolkit to help employees of food service businesses reduce waste at various stages in the preparation and serving of food.
- The National Restaurant Association's Conserve program provides information and practical tools that assists food service businesses to reduce food waste.
- The U.S. Environmental Protection Agency also provides tools to help businesses prevent and divert wasted food. These tools include guides for assessing and analyzing where food waste occurs, calculators for measuring the cost competitiveness of alternatives to food waste disposal, training webinars and other resources.



Explore Food Waste Stops with Me to learn more about how you can reduce food waste at work.





Food Donation

The long-term solution to hunger is not food donation, but to address the root causes of food insecurity—equitable access to food, housing, healthcare, transportation and more. The excess food that businesses have to donate is not the answer to food insecurity and food banks will never be able to eliminate hunger through collecting and distributing excess and donated food alone, no matter how big their networks may grow.

Secondly, surplus food being produced by businesses is a result of inefficiencies that point to opportunities to reduce waste and prevent the excess from happening in the first place.

That said, although we need to strive to prevent hunger while at the same time reducing surplus food waste in businesses, rescued and donated foods can still play a role in getting nutritious food to people who are experiencing food insecurity.

CREDIT

Oregon Food Bank's mission is "to eliminate hunger and its root causes...because no one should be hungry." Through a network of 21 Regional Food Banks and more than 1,200 food assistance sites, the organization works to end hunger on two fronts: helping people access nutritious food today; and building community power to eliminate the root causes of hunger for good.

Benefits to businesses:

While steps can be taken to plan and prepare food carefully, sometimes excess food and unused ingredients are inevitable. Benefits include:

- Support the community - Donating healthy, edible food can have a big impact in people's lives.
- Stay competitive - Employees and customers want to support businesses that have sustainable practices. By tracking the type and amount of donations, businesses may identify other opportunities to reduce food waste and costs through their operations.
- Conserve resources - donations help ensure that the valuable resources such as water, land and energy that went into producing, processing, shipping and storing food are not wasted.
- Liability and tax incentives - Federal and state laws protect businesses from liability when they donate food in good faith that they believe to be safe and edible (Bill Emerson Food Donation Act and Oregon Good Samaritan Law). Businesses that donate are eligible for federal tax deductions. They should work with their accountant or business manager for financial advice.

How to help connect food businesses to food rescue agencies:

Go to foodwastestopswithme.org/donate to connect with local government program staff who can:

- Help you identify local organizations serving donated food in the community.
- Help you identify supplies the businesses may need (e.g., labels, food-grade plastic bags, durable containers with lids, donation tracking logs).

- Provide free resources, technical assistance and food waste prevention tools.

Tips for successful donation:

- Build partnerships and get to know the food donation organizations in the community to understand what types of foods they can accept.
- Always call ahead. Food donation organizations need to assess the time, effort and coordination necessary to pick up or receive donated food.
- Prioritize the donation of healthy food most desired by food rescue organizations and the people they serve; avoid sending unusable food that they then may have to dispose of later.
- If possible, establish a regular frequency of donations and provide larger quantities of food rather than small sporadic donations. For small or infrequent quantities consider donating to employees first.
- Work with donation partners to establish a system for labeling and tracking donations.



Compost

Food waste that can't be donated (food prep scraps, uneaten plate waste, and food that's gone bad) can be composted. Composting has many benefits.

Wasted food that ends up in our closed landfills breaks down and emits methane which is a potent greenhouse gas. Our landfills are able to capture some of the methane, but the rest is released into the atmosphere. Food scraps from businesses in the region are transported to a compost facility and turned into biogas, compost, mulch and fertilizer.

Please note: We learned in the Recovery Infrastructure Chapter that residential and commercial organic waste go to different facilities that accept different materials. Facilities that accept food scraps from residential curbside collection program need a certain level of carbon matter to function correctly. Residential compost is made mostly of yard debris which is high in carbon materials like leaves and wood. Residential food scrap programs also accept some other fibrous materials such as paper products including napkins, teabags, coffee filters and pizza boxes.

To start food composting in your workplace, contact your local Recycling Specialist.





CONCLUSION

There are a lot of business people who believe that climate change is a problem and that we ought to take action now. Because our region started early on the path of green business practices and because we have been leaders in improving how we make products, we are able to prosper by exporting sustainable goods, services and ideas. People are moving to this community because they like the sustainability values that they see here.

As a Master Recycler, you are uniquely positioned to have significant impacts at your place of work. No one knows your workplace and its unique challenges like you do.

CHAPTER 11 MATERIALS IN SCHOOLS

INTRODUCTION

Master Recyclers care a lot about recycling. Master Recyclers are also parents, grandparents, uncles, aunts and neighbors to children and youth in our community. Some of you work in our school system or are retired teachers, janitors, administrative and district staff. A few of you are even young adults who want to give back to your old school. For these reasons, many of you will decide that you want to spend time making change in schools. Some of you may already be involved in a school and see a problem or have an idea about recycling or food waste. A few of you actually took the Master Recycler course to learn how to make improvements at a school. Some of you just like kids and think that the future of our environment depends on what children learn when they are young. Still others may be interested in doing a volunteer project that involves your kids and other families in your community.



This chapter will let you know about regional programs that offer technical assistance to schools in recycling, composting and waste prevention. You will also learn about the regional approach to educate youth on this topic, and ways you can get involved as a Master Recycler.

Some of the educational tools will also be useful for those of you who want to offer outreach and education for youth in other settings like your church, a sport team or scouts.

TECHNICAL ASSISTANCE AND RESOURCES FOR SCHOOLS

Operations technical assistance

Schools are considered a business as they relate to garbage and recycling services, which means in almost all parts of the region, local city and county recycling specialists who offer support to businesses also offer support for waste management and prevention in schools. These recycling specialists meet regularly to discuss how they support schools and collaborate across jurisdictions.

If you would like to get involved in waste reduction at a school, it is best to first reach out to your local jurisdiction. However, if the school is within the Portland Public Schools District, they have their own waste reduction program and prefer to be contacted directly (see sidebar for contact information).

RESOURCE

You can find more information about the support your local jurisdiction offers schools by visiting their website.

Portland:

Portland Public Schools
Sustainability Team
sustainability@pps.nett

Metro's website

has many resources and links to further information about recycling and schools.



Metro education program

Metro staff provide free classroom presentations and other educational materials on waste prevention. Metro's programs engage students in activities and discussions, encouraging them to think critically about how the choices we make impact our lives, resources and the future.

Elementary school classroom presentations. Metro's classroom presentations for first to fifth graders teach students about waste prevention, recycling, natural resources, composting and alternatives to toxics. Each presentation is approximately 45 minutes.

Elementary school curriculum resources. Resources to teach students about composting, recycling and waste prevention.

Middle and high school classroom presentations. Metro's interactive, hands-on presentations help middle and high school students learn about waste prevention and the connection between people, consumer products and nature. Presentations are approximately 50 minutes.

Waste reduction education at outdoor school. Metro provides curriculum resources for waste reduction education at outdoor school, helping to keep an Oregon tradition alive while inspiring students to make sustainable choices through learning in the natural environment.

Distance learning. Metro has online resources for youth and families who are interested in learning about reducing their waste, responding to climate change and protecting natural resources.

Additional education programs

Oregon Green Schools. At schools across Oregon, students, teachers and staff are making a difference in their communities with programs to recycle, reduce waste, save energy and conserve water.

Oregon Green Schools (OGS) helps with:

- Curriculum and funding resources
- Recognition and events

OGS is a nonprofit organization formed in 1997 with 25 regional coordinators throughout the state and nearly 300 participating schools. Regional coordinators help schools conduct waste audits, provide guidance and training for new programs and recommend curriculum resources and grant opportunities. They also help schools become Certified Green Schools.

Eco-School Networks. Eco-School Networks (ESNs) are composed of parents leading projects in elementary schools (K-5) in Portland Public Schools and Washington County (Beaverton, Hillsboro and Forest Grove districts). Their goal is to introduce sustainable practices and raise environmental awareness through the daily experiences of children in school. Parents in each network complete the Center's no-cost, four-session Eco-School Network Leadership Training. The training gives participants the tools and confidence needed to take on projects.

RESOURCE

Videos and handouts available on the Metro Resource Conservation and Recycling Education webpage.

RESOURCE

Additional information is available on the Oregon Green Schools website.

OREGON GREEN SCHOOL

This certificate is proudly presented to

East Gresham Elementary School

in recognition of outstanding efforts in waste reduction and resource conservation.
Certified May 21, 2015 through May 21, 2018.



Shanna Slocum and Gregg Harwood,
OGS Regional Coordinators
City of Gresham

Oregon Green Schools Association

Gresham Sustainability Services
Oregon Green Schools Sponsor

RESOURCE

Additional information is available on the Eco-Schools Networks webpage.



RESOURCE

Additional information is available on the Schoolhouse Supplies website.

RESOURCE

Additional information is available on the SCRAP PDX website.



Schoolhouse Supplies. Schoolhouse Supplies is a nonprofit that supports Portland public education by giving students and teachers free classroom supplies. Their Free Store for Teachers is stocked with gently used and new supplies donated by the community. The reuse program reduces the need to purchase new supplies.

SCRAP PDX. SCRAP is a nonprofit dedicated to inspiring creative reuse and environmentally sustainable behavior by providing educational programs and affordable materials to the community. SCRAP provides a number of educational offerings that promote creative reuse. You can bring a group of kids there for a tour or workshops or attend teacher trainings on creative reuse. SCRAP also donates art supplies and classroom education to one school every year.

TACKLING WASTE AT A SCHOOL

Helping a school improve their operations and become more sustainable can be extremely satisfying and such work might be a good fit if:

- You are good at organizing people and planning projects.
- You are interested in researching and working with the unique logistical and financial factors at play in schools surrounding waste management.
- You plan to devote a lot of time and energy to one project.
- You are a patient person who sees yourself playing an ongoing role as a partner in helping a school.

Certainly there are times when Master Recyclers and parents find themselves needing to play an advocacy role in improving sustainability at a school. But it is important to remember that it is most effective to consider yourself and others at the schools as working partners who are interested in shared goals. To get to that point, start by carefully investigating the current projects and roles of all players in a school, the resources available and the limitations of what you might be able to accomplish.



Start with your local resource

You will want to start by finding out if anything is already happening at your school, who the key players are, and what obstacles currently exist.

The Recycling Specialist or Conservation Coordinator at your local jurisdiction and Oregon Green Schools are great places to go to find someone who knows what is already happening in a school. Contact these organizations and find the person who is focused on your area. This person should be your number one local resource.

Before you call your local resource, consider: What is it you are really wanting to do? Is it specific, like you don't like seeing Styrofoam in the school lunches? Or is it more general like you see a lot of food or paper thrown away and would like to help? Or is it even broader like you just want to get involved in any way that is helpful and be a part of a larger effort. What does the school or district website say about current activities or programs? Once you have considered these questions you are ready to call your local resource and tell them about your goals. **Here are questions you should ask:**

- Are there sustainability activities already going on at the school? Is someone already trying to tackle this particular issue?
- Who are the key players at this school?
- Who are your allies and where are the sticky problem areas?
- Who in Facilities Operations manages the hauling contract and how do I reach them?
- Are there district-wide constraints I should know about?
- Is the project I am thinking of something that will last longer than I plan to stay involved?
- Is there any other homework that your resource suggests you do before calling the school?

Be sure and ask your resource for specific tools and resources such as curriculum, free signage and containers that they think will be helpful for your project. These programs are designed to equip you with what you need to succeed.

If there is absolutely nothing going on already at this school with respect to recycling or sustainability, ask them what they recommend you do to get the ball rolling? How can you help do some fact finding in order for your resource to best help you?

↔ RESOURCE ↔

Go to bit.ly/schoolwastereduction for a quick guide created by the Portland metro area School Resource Conservation Network.



↔ RESOURCE ↔

Look online for the Oakland Unified School District Food Donation Guide.



Connect with your school

You might ask your local resource which of these three options is the best approach to connecting with your school:

1. Have your local resource make an email introduction to your principal.
2. Meet with your principal to share your ideas, get their perspective, and learn about school protocols.
3. Have your principal connect you to the school's leadership, green team, or Parent Teacher Association (PTA).

Potential internal allies to consider in your project:

- Facilities staff
- Principals
- Other parents or a parent organization (like a PTA)
- Existing green team
- Student groups like Leadership, Student Council, volunteer or environmental club
- Teachers (especially science teachers)
- Local businesses who already partner with the school

Background checks

Most districts require volunteers to have gone through a district background check before working in a school. Master Recyclers can either do whatever background check each particular district requires or can register themselves with the *Oregon Online Central Background Registry* (application available online), which is utilized by all school districts.

Jump in!

Having done your homework, you're likely already on a successful path to making a difference at your school.

Examples of Master Recycler Projects

- Durable silverware drives to eliminate spork packages (plastic spork, plastic straw, paper napkin).
- Milk carton recycling (see case study).
- Fundraising for Steel Cow milk dispenser and durable cups.
- On-site food composting and wormbins.
- Conducting a waste audit for the school to assess potential goals and savings.

- Teacher and student school supply collection day in spring to gather and save materials for the fall.
- Designating a closet in the school for supplies and promoting its use especially in spring and fall.
- Setting up boxes to collect paper that has been used on one side, but can still be used on the other side.

RESOURCE

Look online for the EPA's Guide to Conducting Student Food Waste Audits: a Source for Schools.



SPECIAL EVENTS, FUNDRAISING AND COLLECTION EVENTS

Perhaps you were thinking of a project that would allow you to connect with other families, kids and teachers. Or a project that is a bit smaller and has a distinct beginning and end. From sporting events to fundraisers, environmental clubs to PTAs, there are lots ways for Master Recyclers to help with community gatherings at schools.

Many of the steps and resources are similar to those for recycling projects in schools. Oregon Green Schools and the Eco-School Networks have many great ideas and resources.

Examples of Master Recycler projects

(If you are considering doing any of these types of projects and they are larger than a single classroom, start working with the facility operations early in the process.)

- Waste-free lunch days.
- Waste-free auction and raffle prizes such as experiences, durables, and compost containers.
- Supplies, sporting equipment, costume, or clothing exchanges.
- Non-curbide recycling drives (electronics, Styrofoam, X-mas lights, etc.).
- Collection of gently used household goods donations for the Community Warehouse.

Party Packs Case Study



Where:

Skyline Elementary in NW Portland

Lead parent & Master Recycler:

Jill Inahara (Class 43) and
Jessica Zahn-Laughter (Class 43)

Problem:

Classroom parties create a lot of waste.

The Skyline Green team noticed that classroom parties were creating a lot of waste. They audited and found that the 200 parties each year each produced on average 30 gallons of extra garbage. The audit showed that party waste consisted of disposable plates, cups, juice boxes, napkins, plastic candy or chips wrappers, plastic cutlery, decorations, and tablecloths, as well as food packaging. The group piloted with two classrooms to see if they would use alternative durable packs and it was a success. They then worked with the Eco-School Networks to identify DEQ grant money to pay for party packs for each classroom in the school.

Plates, cups and bowls, tablecloths and napkins were purchased through a restaurant supply company, and tubs were used to store the kits and carry dishes to the cafeteria for cleaning. Instructions were included in each kit, including messaging for the kids about why they use durable goods instead of disposables.

Milk Cartons Case Study



Where:

Ridgewood Elementary
in Beaverton

Master Recycler:

Katie Reed (Class 37) and
Kristen Wesel (Class 39)

Problem:

Several tons of milk cartons were
being thrown away every month.

Milk cartons are a good source of fiber for some recyclers, but they can't be mixed with office paper because they have plastic injected into the pulp. This means they have to go to a separate recycler. On top of that, if not properly managed, milk in cartons can spill on other recyclables and even rot the paper in the cartons themselves before they get recycled.

When Katie approached the school about why they weren't recycling the cartons the custodian, Greg Poulin, decided to investigate what it would take for the closest material recovery facility, Far West Recycling to take them. Far West Recycling said cartons need to be emptied, rinsed and dried. So Katie, Kristen and others from the school formed a green team, they got a barrel into which kids can empty their milk and they got racks donated to dry milk cartons on. They organized a system where kids earn prizes for taking turns lightly rinsing and drying the cartons. Then parents bag milk cartons and hand them off to the custodian who pokes holes in the bags and hands them to the hauler.

This program resulted in a significant enough reduction in garbage that the school renegotiated its contract with the garbage hauler and continues to pay thousands of dollars less for garbage each year. The program was so successful that Oregon Green Schools and the Eco-School Networks asked Katie and Kristen to share their story. Today many schools in the Beaverton school district are recycling their milk cartons.

Unfortunately, the milk carton project lost steam at Ridgewood because the custodian was assigned new duties and the parents who managed the process left as their kids moved on to other grades. But what started as a milk carton project became so much more.

Kristen shares, "In order to create a legacy of sustainability for Ridgewood, we had a meeting of stakeholders including parents, teachers and garden volunteers to decide our future focus. We chose to re-start the Ridgewood Student Green Team. Our adult sustainability team connected more closely with the Ridgewood Parent-Teacher Co-op (PTC) to get more invested volunteers so that we can grow and continue the program without having gaps when committed parent volunteers leave the school and move on. Since then we have a very well established adult Sustainability Team and nearly forty 4th graders on our student Green Team. We organize clothing swaps and other events. Even though milk cartons are back in the garbage, the garbage service fee has not increased to its former level because the overall amount of discards is still less than it was previously. We are committed to keeping our trash low and will concentrate on Oregon Green Schools trash audits every three years to monitor our progress."



Earth Day Events

Where: Alameda Elementary School in NE Portland

Master Recycler: Jaylen Schmitt (Class 38)

The Alameda Green Team wanted to build a culture of sustainability in the school. One way they did that was to organize Earth Week activities. They started with an eco-friendly fundraiser. They sold 150 reusable sandwich wraps, 72 water bottles and 1 durable lunch kit for the green team. They then held an Earth Day assembly where kids learned about their carbon footprints and went home to log activities they did at home. The 200 kids who turned in a form entered a raffle for prizes such as compact fluorescent light bulbs, bike helmets, waste-free lunch boxes and garden kits. Logs were entered and the school newsletter featured the collective carbon footprint of participating students and specific action items that would make the biggest difference.

The following two years the green team used the Metro Community Cleanup Guide to plan a collection event. In the first year they collected about 40 cubic feet of Styrofoam that was recycled at Recology, 250 pounds of batteries that were recycled at Batteries Plus, nearly 200 pairs of shoes that were reused by a church with some recycled for sports surfaces, and 37 pairs of eye glasses that were reused by the Lions Club.

CLASSROOM EDUCATION AND CURRICULUM RESOURCES

Perhaps you like public speaking, creating interactive activities or have a group of kids or youth you would like to share ideas with. If you don't already have a school community, the contacts listed to the left can help you find one where you can carry out a project.

You can take groups to see the great materials management facilities we have in this region! To find facilities that host school field trips look on Metro's website for the *Portland Metropolitan Area Field Trip and Resource Guide*. Organizing a field trip to facilities listed in this guide would count as volunteer hours.

The following websites and webpages are deep with resources, curriculum, games, activities and options for joining clubs.

- Facing the Future
- EPA Lesson Plans, Teacher Guides and Online Resources for Educators
- Green Education Foundation
- Resources for Rethinking

DISTRICT LEVEL CAFETERIA ACTIVITIES

Activities in individual schools are driven primarily by their principals and parents. However, some problems are better tackled at the district level.

Tackling such problems especially in the cafeteria on a district level, can effectively capture impressive amounts of waste for compost and recycling, reduce waste at impactful levels and save schools money. According to LeanPath, a Portland-based company that provides food waste tracking systems to the hospitality, foodservice and restaurant industries, 45 percent of all waste generated by weight by the average K-5 school is food related and 31 percent of waste at middle and high schools is food related.

Wasted food is not only an environmental problem, but also a barrier to kids' health and well-being. In 2012 the U.S. passed the Healthy, Hunger-Free Kids Act. The act set new standards for healthy meals for kids. A U.S. General Accountability Office survey released in January 2014 found that 48 of 50 states reported that food waste and the costs have been their two top challenges in implementing the rules. Their research is finding that the wasted food tends also to be some of the healthier food. Studying waste and student attitudes about waste helps the U.S. school meals programs make better decisions about how and what to serve students so that less food is wasted and kids get balanced nutrition.

Replacing Styrofoam™ trays

In 2010, all school lunches in Portland Public Schools (PPS) were delivered on Styrofoam™ trays. The David Douglas and Parkrose Districts in Portland had not done away with their dishwashers and continued to use durable trays, but school by school, PPS had moved to disposables because of what they thought at the time was a cost savings. It turns out that disposable trays must be bought over and over again and they pile up in the garbage, so the schools were actually spending more money because of this change. Meanwhile a group of parents in eight different schools in Portland who were involved with the Eco-School Networks decided that they wanted to change this practice. They learned that Nutrition Services was receptive to budgeting money for labor to wash durable trays, but facilities did not have the initial resources to pay for the dishwashing machines and durable trays. The Eco-School Networks' parents appealed to the City of Portland, Bureau of Planning and Sustainability who identified one time funds to pay for trays. It took several more years for the procurement of dishwashers and the implementation process, but by 2014 almost all elementary schools were using durable trays.



↪ RESOURCE ↩

Look online for the Oakland USD School Food Donation Guide for step-by-step instructions and customizable templates.

↪ RESOURCE ↩

Information is available online about the Milk Dispensers in Clackamas County Schools program.

Milk carton recycling

A number of individual schools in the region have tried milk carton recycling. The Hillsboro School District (HSD) partnered with the Washington County Solid Waste & Recycling program to establish milk carton recycling at 33 of the district’s 35 schools, and the impacts are impressive. The HSD purchases upwards of three million milk cartons per year, weighing in at nearly 48 tons of material. Eliminating milk cartons along with the wet weight of leftover milk, allowed HSD to decrease service pickups for a garbage cost savings of about \$85,000 per year.

Food donation

Two state and federal policies have made it so both the Portland Public Schools and Hillsboro School District could set a district-wide policy aimed at donating food not eaten during school breakfast and lunches to local food pantries and the Oregon Food Bank.

First, the Oregon Department of Education School Food Safety Inspection Requirements state that prepared food and food that has been handed to the consumer cannot be donated to hunger organizations. However, pre-packaged products, such as pre-packaged vegetables and sandwiches, can be recovered for redistribution, as long as they are not labeled potentially hazardous. The packaging on a potentially hazardous product will almost always indicate whether or not a food item needs to remain refrigerated at all times or after opening (indicating that the food is potentially hazardous and thus, not allowed to be re-served/resold).

The second is the U.S. Department of Agriculture’s, *Offer Versus Serve* policy. This policy allows servers to give children choices of the food they want, so that food that does not get chosen can be donated.



Recess before lunch: a waste prevention strategy

U.S. Department of Agriculture, the School Nutrition Association, and the Centers for Disease Control and Prevention have studied the timing of lunch in relation to recess to understand if children will eat or waste more food. Studies show that implementing recess-before-lunch (RbL) results in children consuming significantly more food during the lunch period and wasting significantly less food. Recess before lunch also increases the average student's productivity levels post lunch. As noted in a study conducted by the *University of Mississippi's National Food Service Management Institute*, "When students go to recess before lunch they do not rush through lunch and tend to eat a more well-balanced meal including more foods containing vitamins, such as milk, vegetables and fruits."

When recess is before lunch, an average school's student population:

- Wastes less food (on average, a 27 to 40 percent decrease in waste).
- Consumes as much as 35 percent more calcium and protein.
- Decreases its number of post-recess nurse visits, for such issues such as headaches and stomachaches.
- Is calmer and ready to get to work immediately instead of needing cool-down time.
- Increases its post-recess on-task classroom time.
- Decreases its discipline referrals.
- Decreases the need for cafeteria-based supervision.
- Decreases the number of lunch break-related accidents.
- Generates less litter on school grounds and inside the school.



Several schools in the Hillsboro School District already implemented recess before lunch. Larger school districts will likely not have the same opportunity as lunch and recess are carefully timed between grades. However, in districts where it is possible, it is clear that recess before lunch is a win-win.

How to get involved in district-wide programs

Whether you have an idea or concern or just want to get involved, discussions concerning efforts of this magnitude can be tricky, as they will most likely involve numerous people, mostly administrators. The best approach is to start with your local resource as described in the first section of this chapter. They would know what might already be underway, what resources are available and how you might best connect with key decision makers.



CONCLUSION

Working with schools and other youth groups is appealing to many Master Recyclers. Even though it is a cliché, youth are our collective future and it is vitally important that we educate them about recycling and sustainability. Projects focused on recycling, composting, and other sustainability efforts can be terrific ways not just to reduce waste at schools, but also to engage young people in this work. Many of the strategies and resources that you would use in a school setting are similar to those you would use at an event or in residential settings. But there are important differences and special considerations and this chapter explored many of those. You now hopefully have a good sense of how to find a school to work with, how to establish effective relationships with key players, and how to find and use resources such as curriculum, presentations, and field trips. While many Master Recyclers are interested in working with one school, there are also opportunities to connect with district-wide initiatives focused on recycling and waste reduction.

CHAPTER 12 RESOURCEFUL LIVING

INTRODUCTION

By making simple changes in our everyday choices, it is possible to consume in ways that benefit ourselves, our families and our communities.

In the sustainable consumption chapter we learned that there is a need on a systems level to shift not only how much we consume but also how we consume. Economic metrics currently focus on the movement of consumable products and the money exchanged. Research shows that such metrics do not do a good job of measuring satisfaction and whether basic needs are being met. The chapter described different ways that we can measure success so that it includes values such as the protection of our natural resources and improved quality of life for all people.

But what does this look like on a personal level? Are there ways that we can refocus our lives in the same way? The material world is an essential component of the human experience. Food, medicine, clothing, housing, art and books all contribute to our well-being. But evidence mounts that the accumulation of material possessions, once our basic needs are met, does not help us feel more creative, connected, secure and healthy. There is indeed such a thing as enough when it comes to possessions.

This chapter will focus on four broad strategies that have been shown to satisfy residents' desires to save money, support the community, conserve natural resources and reduce climate emissions, all while enjoying more time with friends and family. The four broad strategies are: 1. reuse, 2. borrow, rent or share, 3. fix and maintain and 4. buy smart. You will learn about how to find specific resources that will help you and your community practice these strategies.

This chapter will also share how Master Recyclers can focus volunteer hours on resourceful living by connecting people to these existing resources and organizing projects in your own communities that create even more opportunities to take these four actions.



Four strategies of resourceful living:

1. *Reuse*
2. *Borrow, rent or share*
3. *Fix and maintain*
4. *Buy Smart*



Upcycled or repurposed, second hand, salvage and vintage – all of these words essentially mean **reuse**, and reusing can save you money and space and avoid waste. Need clothes, storage solutions, back-to-school supplies or craft materials? Many of these items can easily be found at second-hand stores, or you may even have what you need on-hand but not recognize it.

The easiest form of reuse is to use durable products instead of disposable products. We don't usually think of using our dinner plates as reusing them, but when we are at a food cart our food is delivered in a disposable single use container. We can reuse a coffee mug or water bottle, a take-away container, and packaging for lunch at work. We can even use durable boxes for moving instead of cardboard boxes that need to be recycled.

TERM

Reuse is about reusing something exactly as it was meant to be used without having to process it like we do for recycling. Reuse can also be about thinking differently about the objects around us and seeing if they can meet new needs.

Purchase reused

Explore our region's many second-hand stores to find new-to-you clothing, furniture, electronics, household or craft items, salvaged building materials and more.

It is important to close the loop with reuse. To fully recycle we don't just place recyclables in the cart, we must also make a market for those recycled products by purchasing products that are made from recycled material. The same is true for reuse. Some reuse organizations are about getting materials to communities who do not have the resources to purchase new, but many of the organizations that we donate to also depend on the resale of reused materials to help with operation costs. The reuse business community is entirely about the resale of products, so they need customers. If we want to see the reuse community (be it non-profit or for-profit) thrive we must see them as not just a place to donate but also a place to get what we need. Free Geek, SCRAP, and the Community Warehouse are non-profits that serve important purposes in our community. They also all have shops packed with all sorts of treasures!

Non-profit and for-profit resale shops exist in all parts of our region. Do some internet searching using phrases like: resale, vintage, consignment, second hand and gently used. You will find places to buy used furniture, tools, an electrical cord, clothes and baby accessories. Also, check your local library to find out when their next book sale will take place and find reading treasures while you support an important resource in the community.

RESOURCE

- **Free Geek** provides free computers, technology and education to people who would not otherwise have access through the reuse and recycling of old computers.
- **SCRAP** inspires creative reuse and art through education projects and the creative reuse and donation center.
- **Community Warehouse** is Oregon's only furniture bank. They provide gently used household items to people transitioning back into housing and have locations in Northeast Portland and Tualatin.



Online reuse shopping

Did you think just because you prefer to use your laptop to shop that you would be left out of reuse shopping? Well, think again! There are many great resources for the online shopper. Most of us are familiar with Freecycle or Craigslist as great ways to find bargains, but there are many more resources for reuse online. Through websites like Poshmark, Threadflip and eBay you can shop closets all over America and sell your clothes too! Support Free Geek and Community Warehouse by exploring some of their special finds listed online.

Can reuse be communal?

Swapping is nothing new, but it is experiencing a revival. People in our region swap everything from tools, clothes, baby accessories, plants and seeds, and skills and knowledge.

Swap Positive promotes *free frugal and fun* by listing over 25 regular Free Swap events that take place from Sherwood to Beaverton, Portland to Milwaukie.

Portland community centers, called Swap n Plays, exist in Northeast and North Portland. These community hubs are gathering places for play, conversation and swapping children's toys, accessories and clothes.

Repurposing



So far we have been talking about reusing items in the way that they were originally meant to be used. We can also avoid having to run to the store every time we have a need by **repurposing** the objects that we already have around to meet a new or different need.

The objects around us can have so much more use if we expand our concept of what we can do with them. If a solid wood door is taken out of a house before demolition and doesn't fit any of the new door frames, it has outlived its purpose. But that is true only if we consider it a door. If we consider it a solid slab of wood, the potential uses multiply. It could be used as a desktop or fit together with other doors to make a solid wood floor.

RESOURCE

- **Swap Positive** is a non-profit that provides training and ground rules for coordinators to organize Free Swaps. The website lists 25 regular Free Swaps plus a blog for one-time Free Swaps. Coordinators focus on sizes and types of items to be swapped. If you love clothes (or electronics, toys or other stuff), and you love being with fun, thrifty, kind people – why not start a swap? They also organize a holiday gift Free Swap each year.

- **St. Johns Swapnplay and NE Swap and Play** are cooperatives that include indoor play areas, ongoing exchange of kid's clothing and toys, and all sorts of events and classes. This model encourages reuse instead of buying new as well as building positive relationships — a great message to pass on to kids.

TERM

Repurpose: the use of something for a purpose other than its original one.



Reuse for Master Recycler hours

Want to see more opportunities for people to reuse, repurpose and swap in your area? Make it happen! Master Recyclers spend hundreds of hours every year helping their neighbors and coworkers reuse, repurpose and swap.

Reuse projects can be small-scale. Invite your friends and family to a party where everyone brings items that are in good condition. Put on some music. Add some food. And let folks peruse for new found treasures. Some Master Recyclers have these parties so frequently they actually rotate the topic. At one party, they swap clothes, while the next is focused on kitchen supplies or books.

Save your company money by repurposing the supply room to a reuse and supply room. (One Master Recycler calls it *the room of requirement*. For those of you who haven't read the Harry Potter series this is a magical room that appears when you are in great need of it). You can regularly encourage coworkers to replace unused supplies and go there first before looking for new supplies. You can even set up a process so that the office purchaser calls on the staff to return supplies and inventories of existing materials before new ones are ordered.

Help neighbors make a little money by organizing a neighborhood-wide garage sale. In Portland, Master Recyclers participate in their local neighborhood cleanups by organizing a reuse or you-price-it area.

Perhaps you want to organize a larger scale project. Swap Positive (mentioned before) and the Center for a New Dream both offer extensive information (available online) on how to organize a community swap event. Find videos, instructions and case studies focusing on how to organize a community swap on the New American Dream's website. There they talk about swapping everything from seeds to toys, food to books. Don't forget you can invite other Master Recyclers to join you in the planning by putting an announcement in the Newsletter. Apartments and condo communities are also fantastic settings for a swap event.

A team of Master Recyclers helped solve a huge, bulky waste problem at Pacific University by organizing swap events in the spring, right before the students left for the summer and dumped their extra futons, night stands and desks. The University stored what didn't get taken and then had a free stuff event in the fall for incoming students.

BORROW, RENT OR SHARE

Who doesn't have a drill that sits charged and ready for that moment when you decide to tighten the screw on the loose cabinet door in the kitchen? There are many objects in our lives that sit idle waiting for a seasonal or temporary time when we need them. From power washers to snow shoes, we can reduce clutter and free up space by borrowing, sharing or renting these products. Sharing, borrowing and renting can be as simple as loaning a specialty baking pan to your neighbor, renting a rototiller from your hardware store down the street, or simply checking out books from the library. Renting supports the local service industry while purchasing new may support unfair labor practices in other countries. Borrowing and sharing builds community by fostering connections with neighbors and friends, which makes the region a better place for all of us.

Libraries: more than just books to borrow

There is something truly satisfying about curling up to a good book and our libraries have millions of them. But did you know that there is so much more you can borrow in our local libraries? Movies, video games and music are available at just about every library branch in our region. Library community spaces are free to reserve and use for meetings and workshops. Each library is a hidden source of fun stuff to check out. Many local libraries have a Cultural Pass or My Discovery program, which lets families check out one-day passes to local cultural venues such as the Evergreen Aviation and Space Museum, and the Oregon Zoo. Find out if your local library has a Library of Things. Many of our region's libraries now have stuff that you can borrow with your library card, including: slow cookers, cherry pitters, puzzles, tortilla presses, and even a Jack-o-Lantern cake pan.

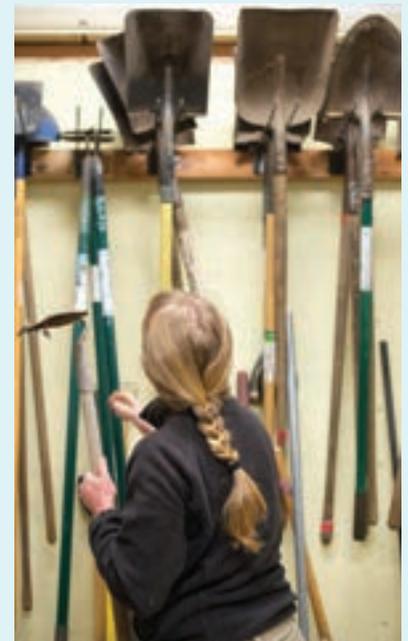
Tools when you need them

The easiest way to reduce the number of tools you have to store in your shed is to get in the habit of borrowing and loaning tools with your neighbors. However, some folks find it hard to do this if they don't know their neighbors well enough to trust them with expensive equipment or they may be afraid of breaking their neighbor's prized power tool.

Luckily, the community has other ways to get tools you need. Tool libraries are membership-based resources that build community and foster sustainability by providing nearby neighbors with tools and empowering them to use them. Most local hardware stores as well as large ones like Home Depot have rental services as well.

Cooking tools are becoming increasingly available to borrow or rent as well. The NE and SE Kitchen Shares are cooperatives that loan out dehydrators, canning equipment, ice cream makers, juicers, mixers, bread makers, durable dishes and more.

TOOL LIBRARIES



Southeast Portland Tool Library, Northeast Portland Tool Library, North Portland Tool Library and Green Lents Tool Library all check out tools to residents of the area they serve.



Special events

Planning a wedding, birthday party or community gathering can be expensive and end up generating a lot of waste. We often clutter our lives with table settings, furniture and formal wear just so that they can be used for events that happen sometimes years apart. We even live in larger living quarters to accommodate the occasions when we need to cook large meals, house guests and have large gatherings. Some people are choosing to break free of these objects and live in smaller quarters by looking to community space to serve these special events. Churches, schools and some restaurants will loan or rent kitchen space. Linens, table settings, and furniture for events can all be rented at a price usually much less than the cost of purchasing them. Search on the internet for words like *party rental* or *event rental* and you will find affordable options all over the region. Several of the Swap n Plays mentioned earlier also have dishware that local residents can check out for family reunions or company picnics.

Master Recyclers and sharing

Just about any community that you are a member of could benefit from a little more sharing. It takes trust to share, but research shows that sharing also builds trust. Two Master Recyclers in Hillsboro organized a tool sharing program with their home owners' association. Thanks to another Master Recycler's project, the Alameda Elementary School has a classroom party kit that teachers share. Rather than every classroom needing its own set of dishes, napkins and party decorations, one set is stored in the supply room for teachers to check out. A Master Recycler in the Pearl District of Portland helped her neighbors save space in their studio apartment building by identifying a communal space where shared tools, equipment, kitchen gadgets and cleaning supplies can be stored.

If you are feeling more ambitious, the *New Dream Guide to Sharing* (available online) has step-by-step instructions on how to start a lending library in your area.

FIX AND MAINTAIN

There is a growing repair movement that is empowering people to make their stuff last longer.

Maintenance and repair can be surprisingly easy and creative, too. If you're a do-it-yourselfer, how-to classes and online tutorials can help you improve your sewing, bike or home repair skills quickly. YouTube has an endless supply of resourceful people who have uploaded their success in fixing just about anything you could possibly need to fix. iFixit.com includes a forum where people upload step by step instructions for fixing everything from your smart phone to your coffee maker. iFixit even sells parts and tools that might be necessary to do the job.

Not feeling so handy yourself? You would be surprised how economical it can be to take your broken object to a local repair shop. There is a lively economy based on the repair industry. Simply Google tailor, alterations, furniture restoration, cobbler, computer repair, or lawn mower repair and you'll likely discover a nearby business that is ready to help.

An ounce of prevention is worth a pound of cure. Basic maintenance extends the life of your stuff, saving you money while reducing waste. Keeping our appliances running smoothly and efficiently can even save energy during the use phase of these products.

Repair events

Master Recyclers participate in events aimed at extending the life of stuff in our area. In these events handy volunteers (often Master Recyclers) offer to help fix small appliances, sew hems and tune up bikes. Events in Portland and Gresham are called by Repair Cafes and events in Clackamas and Washington Counties are called Repair Fairs. Master Recyclers also help organize, promote and greet fair goers for volunteer hours.



BUY SMART

All of the strategies mentioned so far are about ways to get what we need without having to purchase a new product. But there are times when you do need to purchase something new. Planning ahead, researching product choices and rethinking gifts are three areas where we can maximize our purchasing power and minimize our negative impacts.

Plan before you shop

For groceries, make a list based on your plans for the week, then shop your cupboards and fridge first, crossing off the items you already have on hand. At the store, stick to your list. Consider purchasing in bulk so that you can buy the exact quantity you need. For consumable products, such as paint or decking stain, measure the area that you plan to cover and check your shelves to see if you already have some on hand. At the store, read the label to find out the amount you can expect to need to cover the area you measured.





How was the product made?

Choose quality, durable products rather than disposable items. For example, buy Mason jar drinking glasses or stainless steel canteens, rather than disposable cups or bottled water. Select items that are durable and that can be repaired when they wear out. For example, buy shoes which can be resoled. Consider the materials options for each product. For each material, can you weigh the carbon footprint of the extraction and production, its toxicity, and how workers were treated?

Think outside the gift box

Holidays, birthdays, weddings and anniversaries bring special pressures to purchase the perfect gift. Gifts of experiences (rather than stuff) offer loved ones a chance for a memorable outing, and remove the potential for pressure to find space for something they may not need. Who doesn't love tickets to a show or a special spa service? How about donating to a cause or organization important to the person? Does the person you want to buy for have a special talent or want to learn something new? If so, a class might make a perfect gift. How about taking your loved one on a tour of a local vineyard or a historic area? If you have a lifetime event where people will want you to set up a registry, consider companies that offer options for gifts of experiences. So Kind Registry is one non-profit registry. There are also some for-profit online platforms that will help you set up a registry so that your guests can purchase part of your honeymoon.

TRANSITIONS

Major life transitions such as a move or the birth or adoption of a child as well as seasonal transitions such as spring cleaning, back-to-school and holidays are often times of heightened consumption. They are also times of heightened advertising pressure and consumers are bombarded with messaging. Rather than let advertisers and businesses suggest what you want and need, why not decide more independently and carefully consider your personal needs and resources. This could lead to decreased consumption, lower expenses, and increased satisfaction. To be sure, a new baby needs a place to sleep, clothes to wear and toys that entertain and provide stimulus. But these needs can likely be met creatively and at a lower cost by using some of the strategies presented in this chapter.

Times of major life transitions can also be opportunities for behavior change. People may be more receptive to new ideas and new ways of doing things. Just as sharing, borrowing and creative purchasing help us bring more meaning to our daily lives, these strategies can also help us ensure that our life transitions reflect our values.

RESOURCEFUL PDX

The City of Portland developed the Resourceful PDX program to give Portland residents tools and ideas for reducing waste, and specifically, to let them know how to take action and where to find resources.

The City conducted research through phone surveys and focus groups and learned that a diverse range of Portlanders feel that taking the actions described in this chapter would make life more interesting. It would leave them with more time to spend with their families. They would save money and feel more creative. They also thought that it would be good for the local economy and the environment.

What Portlanders also said is that they do not know where to go or how to do some of these actions. So the program focuses not on why we should make these changes, but on how to do so and where to go.



RESOURCE

Visit the Resourceful PDX website and blog for more information.

The Resourceful PDX campaign:

- Connects residents with resources, including community-based organizations, local businesses, government agencies, and each other, to help them be successful in reducing waste.
- Offers resources specific to times of life transition that are often periods of increased stress, pressure, clutter, consumption and waste. These transitions create opportunities to try simple changes and reduce waste. The program focuses on a number of specific transitions: Moving, Growing Family, Home Improvement, and Kids in School.
- Provides on-going ideas and tips of how to use these resources.

To get these resources out in the community, Resourceful PDX uses a blog, a website and advertisements, as well as an information booth (staffed by Master Recyclers, of course). Resourceful PDX also partners with community groups to help spread their key messages.

MAKE EVERY THREAD COUNT

Choose quality clothes that save money, last longer and reduce waste. Poorly made clothes wear out quickly, clutter closets and use up precious natural resources. Well-made clothes are available for every budget, are built to last, and can be worn often and for years to come. Quality clothes just make sense.

RESOURCE

Visit the Resourceful PDX website and blog for more information.



Three ways to help

Quality doesn't have to be code for expensive. Well-made clothes aren't determined by the price tag and simple care can make those pieces last, which saves you the hassle and cost of replacing them. You can extend the life of your clothes and your investment by taking a few easy steps:

Step 1: Look for quality

- **Fabrics:** All types of fabrics, whether natural or synthetic, have advantages and disadvantages. Consider the quality of the fabric itself (thickness, softness, stretch, etc.) and how suitable the fabric is for that particular item. Will it be comfortable and durable?
- **Good quality thread and strong, even stitches:** Give the fabric a gentle pull to see if the thread breaks or pops. Check for rippled, puckered or twisted hems and seams. Avoid garments that don't appear to hang smoothly.
- **Edges and hems:** Cut or raw edges and hems can lead to unraveling and loose, hanging threads. Be careful in choosing vgarments with these features as they may require special laundering.
- **Matched patterns:** If the garment has stripes or plaid, the pattern should match up at the seams.
- **Linings:** For suits and other lined garments, check to see if the lining hangs loosely and doesn't cause any pulling or puckering.
- **Quality buttons and buttonholes:** Buttonholes should be well stitched with no loose threads or raw fabric showing. Test the button in the buttonhole to make sure it's easy to button up the garment.



Step 2: Care for your clothes

- **Clean correctly:** Follow labels when washing your clothes to keep them looking better and lasting longer.
- **Consider cold water:** For most laundry, you can use cold water and less detergent than directed. This prevents exposure to excess heat or chemicals that contribute to fading or wearing out.
- **Group similar items and turn inside out:** When washing, turn jeans and graphic shirts inside out to prevent fading and wear. Wash similar items together (for example, all jeans) to prevent harsher fabrics from wearing on softer ones.
- **Use the dryer sparingly:** High heat fades and shrinks material, and also breaks down elastic fibers in clothes, causing breakage and stretching. When possible, line or flat dry your clothes. If you must dry your clothes, use the lowest setting.
- **Stain removal:** Discover what sort of care is best for the stain. Cold water, hot water or stain treatment? Some quick online research can save that garment you love.
- **Simple fixes:** Learn the simple but satisfying art of re-attaching a button, mending a tear or applying a patch.
- **Call in the experts:** Locate a good dry cleaner and tailor that can help keep your clothes clean and well-fitted.



Step 3: Wear those clothes often and for years to come!

- **Every item in your closet has a cost-per-wear:** the longer you wear that shirt or pair of jeans, the more you get out of your investment. A closet carefully stocked with several quality items will outlast a closet packed with poorly made, disposable clothes. So choose quality — you'll look good, save money and help care for our environment.



CONCLUSION

Let's face it: materials matter. From the delicious pasta shared with a friend, to the pendant given as a gift, materials contribute much toward our health and well-being. They are sustaining parts of the human experience.

Unfortunately, the rate at which we produce, consume, use and discard materials has serious global environmental and social consequences. The United States' relentless fixation on low price products has created a marketplace that is full of cheap, disposable products that people discard with little thought.



Today, our relationship with our material possessions is, all too often, turned on its head. Instead of seeking material possessions that meet our personal needs, we are increasingly becoming defined by our things. Popular culture (driven by massive advertising campaigns) has manufactured portraits of who we should be. Teens are especially vulnerable to relying on their things to feel accepted, attractive, and good about themselves. And the drive to purchase all this stuff leaves Americans on what is often referred to as a *work-to-spend treadmill*. Many of us are working harder and working longer hours so we can consume more.



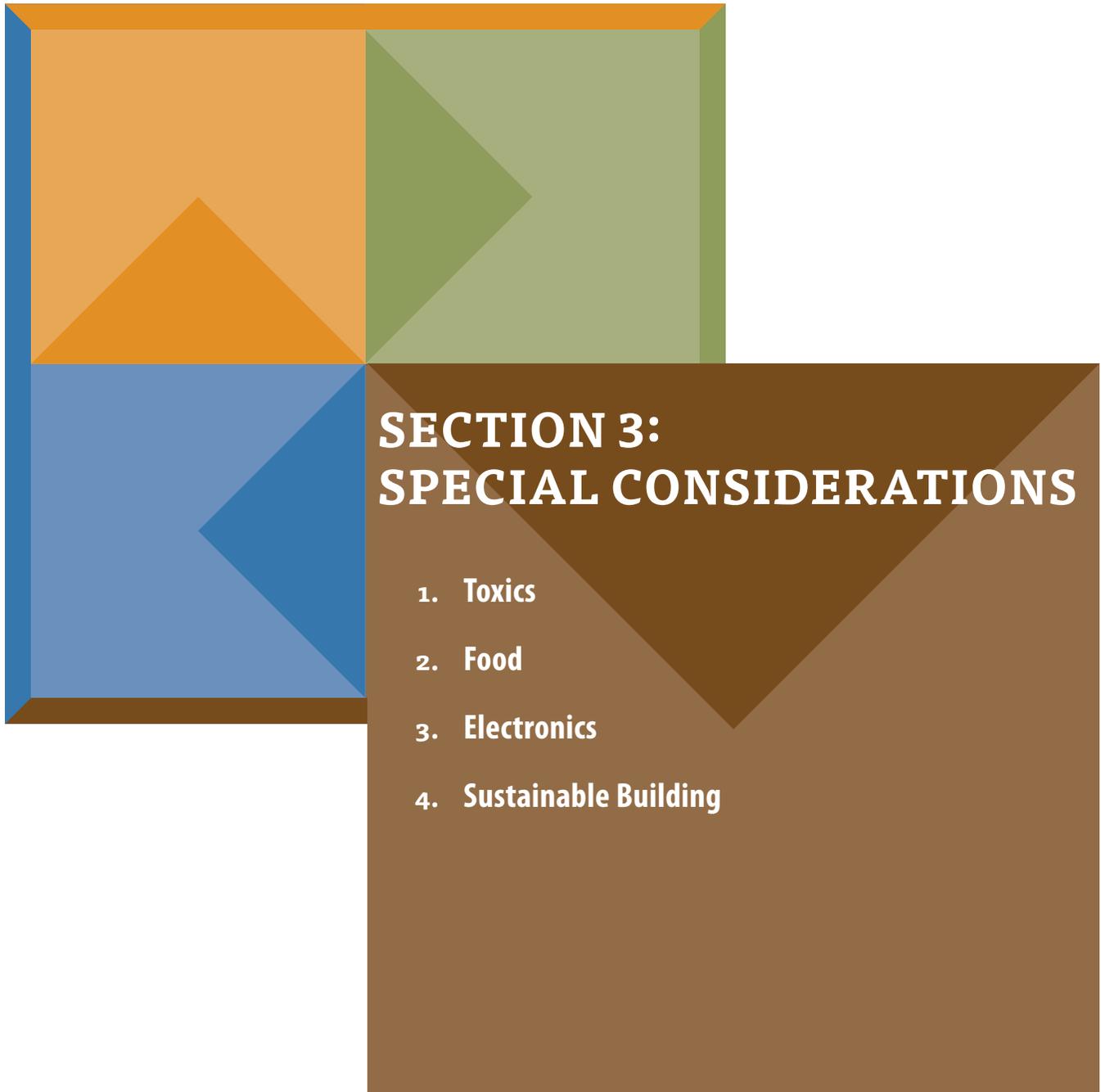
We can, however, do things differently. We can decide for ourselves what it is we need (or even want) rather than waiting for someone else to tell us. We can determine for ourselves what is enough stuff based on our internal values rather than someone else's profit margin. We might decide to fill some needs with things, but research shows that we are most satisfied by making connections in our community and family, and by focusing on our health and that of our families. Many of the activities, like sharing and borrowing, described throughout this chapter give us opportunities to connect with others in our community. Even investing in local services helps us feel more connected to the people around us.



Another key way of changing our relationship with our stuff is to recognize that materials are actually vibrant parts of our experience on this planet. The discount culture has cheapened their value. But turning against materialism is not necessarily the answer as it denies the physical world that is our reality.



What if we turned around instead and learned again to truly love our possessions? If we cared deeply about our things again, we would want to find out where they came from and what they are made of. We would ask who made them. We would take care of them and share them with others. We would fix them when they get damaged. And we would find a good place for their next life cycle — be it reuse, repurposing or recycling.



Some materials have higher environmental and social impacts than others. Toxics, food, electronics and buildings require more resources and are more challenging to manage sustainably.

CHAPTER 13 TOXICS

- Current public policy and what needs to change
- Health and environmental impacts of toxics in our products
- Personal choices that can reduce toxics in our lives
- Disposing of household hazardous waste

CHAPTER 14 FOOD

- Americans waste a lot of food
- Strategies that work to reduce food waste
- Resources to get involved

CHAPTER 15 ELECTRONICS

- The special life cycle impacts of electronics
- Consumer choices that can tackle obsolescence and e-waste
- Laws regarding electronics
- The Right to Repair Movement

CHAPTER 16 SUSTAINABLE BUILDING

- Embodied energy in buildings
 - Building, remodeling and maintaining sustainable buildings
 - Construction, demolition and deconstruction
-

CHAPTER 13 TOXICS

INTRODUCTION

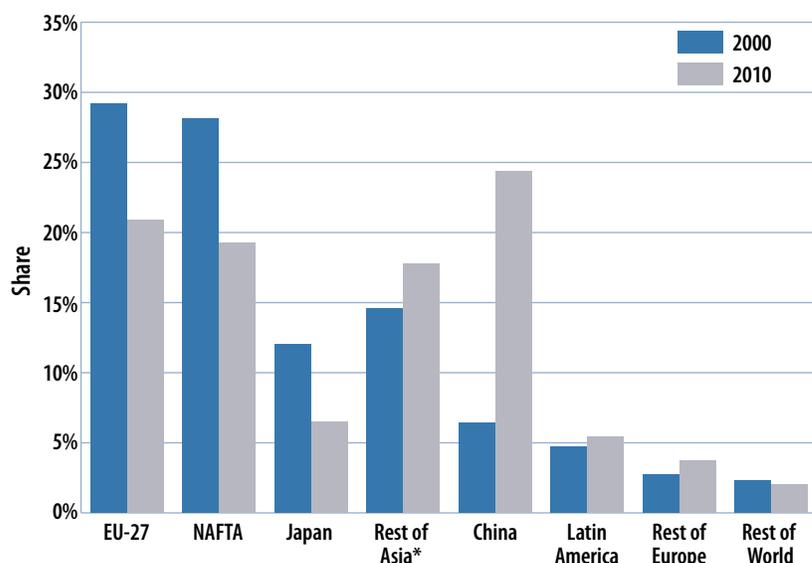
According to Aristotle, science begins with wonder: “It is owing to wonder that people began to philosophize, and wonder remains the beginning of knowledge.”

To begin wrapping your head around how chemicals and chemistry influence your life, first consider the electronic device you likely use every day for information, communication and entertainment. The chemicals and heavy metals used to make it are many; some are very toxic and some you may never have heard of. Here are just a few: brominated flame retardants, lead, chromium hexavalent, polyvinyl chloride (PVC), and phthalate esters.

In 2018, global chemicals sales exceeded \$4 trillion. Fueled by emerging markets, world chemicals output has more than doubled over the last decade. This means that every single person in the world, on average, uses \$500 worth of chemicals a year. The main users of chemicals are in developed countries where each person uses approximately \$1200 worth of chemicals annually. (Data from the website of The Essential Chemistry Industry.)

In the United States, the chemical industry is one of the largest industries, an \$812 billion enterprise that creates hundreds of thousands of jobs. The products of chemistry are present in some form in nearly every facet of the American economy. In fact, over 96 percent of all manufactured goods are directly touched by chemistry.

WORLD CHEMICAL SALES



Unless specified, chemicals industry excludes pharmaceuticals. Unless specified, EU refers to EU-27.

* Asia excluding China and Japan.

Source: Cefic Chemdata International

CREDIT

Much of this Chapter was written by Lisa Heigh. Lisa is a Senior Solid Waste planner in toxics reduction for Metro regional government. Her primary areas of interest are:

chemical policy, program evaluation, sustainable consumption, community-based social marketing, and government in-house sustainability.

TERM

Precautionary principle: *the principle that the introduction of a new product or process whose ultimate effects are disputed or unknown should be delayed until scientific consensus is established that it is not harmful.*

Chemical manufacturing creates products by transforming organic and inorganic raw materials through chemical processes. There are approximately 13,500 chemical manufacturing facilities in the United States owned by more than 9,000 companies. Facilities are located all over the country, with many companies in Texas, Ohio, New Jersey, Illinois, Louisiana, Pennsylvania, and the Carolinas. (Data from United States Environmental Protection Agency.)

With over 85,000 commercially produced chemicals, the chemical combinations in consumer products and their wastes are practically infinite. These products and byproducts bring us great benefits and also many negative consequences. Unfortunately, most chemicals have never been tested for possible health or environmental impacts. This creates significant health and environmental risks. (Data from the American Chemistry Council.)

There are two schools of thought when it comes to protecting the public from the potential harmful effects of chemicals. One is often called the **precautionary principle**. According to the precautionary principle the burden is on the manufacturer to prove that their new product or chemical is safe to expose to the public before they can introduce it commercially. U.S. regulations follow a second school of thought, markedly different from the precautionary principle. In the U.S., government and consumer advocates must identify problematic products and then prove that they cause harm. In practice, however, it is extremely difficult and costly to prove harm.

This chapter will explore the problems with current federal legislation in regards to toxics. It will also make the case that the cost of leaving laws as they are is significant in terms of human health and the environment.

This will entail an exploration of the health and environmental impacts of chemicals in the wrong places. After this initial examination of public health and environmental impacts we will shift our focus to individual lives. First we will explore where you are likely to encounter toxics in your everyday life. The final sections focus on strategies and personal choices that can very significantly lessen your exposure to toxic chemicals. You can minimize your use of hazardous products by buying only what you need and seeking out safer alternatives (whether store bought or homemade). We'll also discuss health considerations of plastics used in food packaging.

Master Recyclers can play a significant role in sharing this information so that more people in our region are empowered to make healthier personal choices. Master Recyclers are also well situated to participate in the conversation about changing the regulatory system so that community health comes first. With toxics infused in so many products around us, systemic change is necessary.

PROBLEMS WITH CURRENT POLICY

While chemicals and advances in chemistry have greatly improved our lives and welfare, some can have negative effects both on people and the environment. For example, some chemicals can pose serious risks if they are ingested or inhaled, some are known to cause cancer, and some are hazardous to the atmosphere. Unfortunately, because of the way the chemical industry is regulated, we know very little about most chemicals. In fact, we only know a good amount about just a handful of chemicals.

The federal Environmental Protection Agency (EPA) has access to only limited information about potential health or environmental hazards. And manufacturers have the right to withhold what they consider to be confidential business information. Because of this lack of information, in many instances it is impossible for the EPA to determine whether a chemical is safe or whether it poses a risk. With a weak federal regulatory structure, industry has little incentive to develop safer alternatives.

It is well documented that federal chemicals policy has not been effective in assessing chemical hazards or controlling chemicals of concern. Since the printing of this handbook, Congress passed reform legislation. Visit the EPA website to learn more.

A brief overview of current federal regulations governing chemicals and regulatory shortcomings will help set the stage for exploring possible state and local solutions.

FEDERAL REGULATIONS

Toxic Substances Control Act of 1976 (TSCA) provides EPA with authority to require reporting, record-keeping and testing, and to restrict chemical substances and/or mixtures if they are proven to pose unreasonable risks to public health or the environment. Certain substances are generally excluded from TSCA, including food, over the counter drugs, cosmetics and pesticides, among others. TSCA was amended in 2016 with the Frank R. Lautenberg Chemical Safety for the 21st Century Act. The Lautenberg Act strengthened TSCA in several key areas, including requiring review of existing chemicals in the market (not just new ones), strengthening the way risk assessments are done, calling for protection of vulnerable populations, and expanding testing authority and funding.

- Primary weaknesses:** Even with improvements made in 2016, TSCA remains inadequate to protect human health and the environment. Under the law, EPA must prove that a chemical poses unreasonable risk to public health or the environment before it can be regulated. When the law first passed, it allowed 62,000 chemicals remain on the market without testing. There are now 85,000 chemicals in the inventory required by TSCA to be managed by EPA. However, only 20 high priority chemicals are required to be evaluated for risk assessment at any given time, and the agency can take several years to evaluate each chemical. This means that only a small fraction of chemicals on the market will end up in review in the next century. Additionally, in deciding whether to approve chemicals under TSCA, the EPA does not holistically consider emission impacts from a chemical to air, water and land because these emissions are regulated by other laws.



DEEP DIVE



*More information about the **Toxic Substances Control Act (TSCA)** is available on the EPA's website.*



DEEP DIVE



*To learn more about what you can do about chemical policy and to follow recent proposals, visit the **Environmental Defense Act** website.*



More information about the **Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)** is available on the EPA's website.

The Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)

FIFRA provides federal control of pesticide distribution, sale and use. All pesticides used in the United States must be registered (licensed) by EPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, they will not cause unreasonable harm to the environment. Use of each registered pesticide must be consistent with use directions contained on the label or labeling.

- **Primary weaknesses:** Provisions that restrict or prohibit information disclosure about the pesticide and pesticide application (for example, chemical composition or location of use) on the grounds that this is confidential business information.



More information about the **Federal Food, Drug, and Cosmetic Act (FFDCA)** is available on the EPA's website.

The Federal Food, Drug, and Cosmetic Act of 1938 (FFDCA)

FFDCA is a set of laws that authorizes the Food and Drug Administration to oversee the safety, effectiveness and marketing of foods, drugs, cosmetics and medical devices. The law has been amended many times.

- **Primary weaknesses:** FDA lacks sufficient resources to handle the number of violations it encounters. The FDA has come to rely heavily on the cosmetic industry to regulate itself. FDA regulation under the Act has primarily been limited to regulation of cosmetic products after their release into the marketplace; neither products nor ingredients are reviewed or approved before they are sold to the public.

CHEMICALS REFORM: EMERGING SOLUTIONS

In the absence of adequate federal regulations, other countries, states and even the chemistry profession itself, have been developing new and promising ways to tackle problems associated with chemicals.

European Union

In Europe, policy developments have, with a nod to the precautionary principle, shifted the burden of proof away from government and onto industry. The European Union's Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) regulatory framework requires registration by producers and users for an estimated 30,000 chemicals. Canada has also developed a Domestic Substances List that identifies more than 4,300 chemicals requiring further investigation for potential risks. This is great news for consumers worldwide since much of the information gathered from these programs will be universally accessible.

States, local and tribal governments

Recognizing the backlog in assessment and regulatory action at the federal level, a number of states have taken action. Of particular note are California's Green Chemistry Initiative, Washington's Children's Safe Product Act of 2008, and Massachusetts' Toxic Use Reduction Initiative.

The Interstate Chemicals Clearinghouse (IC2) has worked to coordinate these state efforts. The IC2 is an association of state, local, and tribal governments that promotes a clean environment, healthy communities, and a vital economy through the development and use of safer chemicals and products. The goals of the IC2 are to:

- Avoid duplication and enhance efficiency and effectiveness of agency initiatives on chemicals through collaboration and coordination.

- Build government capacity to identify and promote safer chemicals and products.
- Ensure that agencies, businesses and the public have ready access to high quality and authoritative chemicals data, information and assessment methods.
- Ensure that manufacturers will replace harmful chemicals with safer alternatives.

Oregon

Oregon's regulation and monitoring of toxic chemicals are fragmented among seven agencies, with little coordination. The safety of consumer products is a particular concern, as state agencies lack essential information needed to scientifically assess potential hazards. State tracking of exposure to toxic chemicals in communities and the workplace is incomplete and largely unanalyzed. There is a particular lack of data about health impacts on subpopulations — groups of people who may be more susceptible to risk if exposed. Some of these subpopulations also experience disproportionate exposure to chemicals.

In 2015, the Oregon legislature passed toxics reduction legislation aimed at protecting some of Oregon's most vulnerable residents. The Toxics Free Kids Act (Senate Bill 478) establishes a list of chemicals that harm children's health and:

- Requires manufacturers to notify health officials when their children's products (such as toys and car seats) contain these chemicals.
- Authorizes health officials to collect and track this data.
- Ensures manufacturers will replace harmful chemicals with safer alternatives.

At the local level, a number of local governments in Oregon have initiated and passed toxics reduction policy that influences such things as what products government buys and how government manages facilities and landscapes. For example, Multnomah County has adopted a Green Cleaning Policy for County Facilities, in 2014 Metro initiated an Integrated Pest Management Policy for Metro Properties, the City of Eugene banned specific pesticides on City properties through City Council Resolution and the City of Portland has toxic reduction goals associated with the city's Sustainable City Principles Policy.



DEEP DIVE

You can find more information on the Interstate Chemicals Clearinghouse on their website.

DEEP DIVE

To learn what you can do about Oregon Policy on toxics-free environment visit the Oregon Environmental Council.

TERM

Green chemistry: *The design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green chemistry applies across the life cycle of a chemical product, including its design, manufacture, use, and ultimate disposal. Green chemistry is also known as sustainable chemistry.*

CHANGE WITHIN THE INDUSTRY

While the role of government is changing, important changes are also taking place within the chemical industry itself. Traditionally, organic chemistry is taught in a vacuum. Chemists are taught how chemicals work without regard to the consequences of their use. There is no ethics course in the old school chemistry department.

Today in some academic settings, chemistry and the chemical enterprise are progressing towards a sustainable chemistry philosophy and practice. The federal Green Chemistry Research and Development Program promotes and coordinates federal research, development, demonstration, education and technology related to **green chemistry**.

Oregon is a leader in educating the next generation of more environmentally aware chemists. In 1998 the University of Oregon developed a groundbreaking approach to teaching organic chemistry that placed environmental concerns in the forefront. Since the development of UO's Green Chemistry Program, over 200 schools across the country have adopted the UO model, and the UO chemistry department has recently been enlisted by the National Science Foundation to share the program with institutions around the world. Perhaps as a result, Oregon also leads in some areas of greener chemicals, such as the design and development of chemical products and processes that reduce or eliminate the use or generation of hazardous substances.

TOXIC IMPACTS OF CHEMICALS IN THE WRONG PLACE

Chemicals are not static. Rather they move through the environment throughout their life cycle (production, transport, use and disposal). And they often move in unintended and unexpected ways. It is difficult to fully understand the toxic impact of individual chemicals at these myriad points; and we are just beginning to consider the impact of the almost infinite combination of chemicals on living organisms and the planet. It is clear, however, that there are significant public health impacts from chemicals and that chemical contamination is widespread.

Public and governmental awareness of how chemicals can increase cancer risk and other negative health outcomes has increased substantially in recent years as scientific and health care communities, policymakers, and individuals strive to understand and ameliorate the causes and toll of human disease. A growing body of research documents established and suspected environmental factors (including chemical contamination) linked to genetic, immune and endocrine dysfunction that can lead to cancer and other diseases.

While all Americans now carry many foreign chemicals in their bodies, women often have higher levels of many toxic and hormone-disrupting substances than do men. Some of these chemicals have been found in maternal blood, placental tissue, and breast milk samples from pregnant women and mothers who recently gave birth.

Research on chemical contaminants in breast milk spans several decades and dozens of countries. The ability to use this research as an environmental indicator is limited because of a lack of consistent protocols. For example, most studies have focused only on a small panel of persistent organic pollutants, despite indications that a wide range of additional chemical contaminants may also enter breast milk. Despite these shortcomings scientists have detected many different chemicals in breast milk throughout the world. Chemicals often tested for and found in breast milk globally include: organochlorine pesticides, polychlorinated biphenyls (PCBs), polychlorinated dibenzodioxins (PCDDs), polybrominated diphenyl ethers (PBDEs), metals, and solvents. This substantial body of research shows that chemicals often end up in the wrong place — in this case in human breast milk.

Humans and all other organisms are exposed to many chemical mixtures present in the surrounding environment (water, air, soil), in food or in consumer products. However, with a few exceptions, chemical risk assessment considers the effects of single substances in isolation, an approach that is only justified if the exposure to mixtures does not bear the risk of increased toxicity. This would be the case, for example, if only one chemical of the mixture is toxic while the others are biologically inert.

However, there is strong evidence that chemicals with common specific modes of action work together to produce combination effects that are larger than the effects of each component applied singly. Fewer studies have been conducted with mixtures composed of chemicals with diverse modes of action, but results clearly point in the same direction: the effects of such mixtures are also higher than those of the individual components. Recent research shows that this applies to a host of different endpoints of relevance to mammalian toxicology and ecotoxicology, and holds true for a diverse set of chemicals.

“The question is not whether we should feed our babies chemically contaminated, yet clearly superior, breast milk or chemically un-contaminated, yet clearly inferior, formula. The question is, what do we need to do to get chemical contaminants out of clearly superior breast milk?”

Sandra Steingraber,
Having Faith: An Ecologist’s
Journey to Motherhood.

HEALTH IMPACTS OF TOXICS

Asthma inducing toxics

Asthma, a chronic lung disease that narrows and inflames airways, is often triggered by airborne chemicals. Nearly 27 million Americans have at one time in their lives been diagnosed with asthma by a physician. People of all ages have asthma; it occurs in all countries and among all populations around the world. Over the past 20 years, asthma has become increasingly common in many parts of the industrialized world. We are in the midst, some physicians would say, of an “asthma epidemic” and increased chemical exposure is likely one of the drivers of this.

The causes of asthma are not fully understood. Its symptoms are caused by inflammation, which makes the airways red, swollen, narrower and extra-sensitive to irritants. Asthma is probably usually caused by a mixture of hereditary factors that you are born with and environmental factors. But how these factors work together is still largely unknown.

There are many environmental asthma triggers and some come easily to mind: secondhand smoke (composed of as many as 7,000 chemicals, 250 of which are known to be harmful, and at least 69 of which cause cancer), outdoor air pollution (small particles and ground level ozone from car exhaust, road dust and factory emissions), mold, dust mites, and smoke from wood-burning stoves and fireplaces (which contains a mixture of harmful gases and small particles).

At sufficient concentrations in the air, many chemicals in any number of products in your home can trigger an asthmatic reaction. As well, asthma can be worsened by the presence of products such as cleaners, paints, adhesives, pesticides, cosmetics and air fresheners.

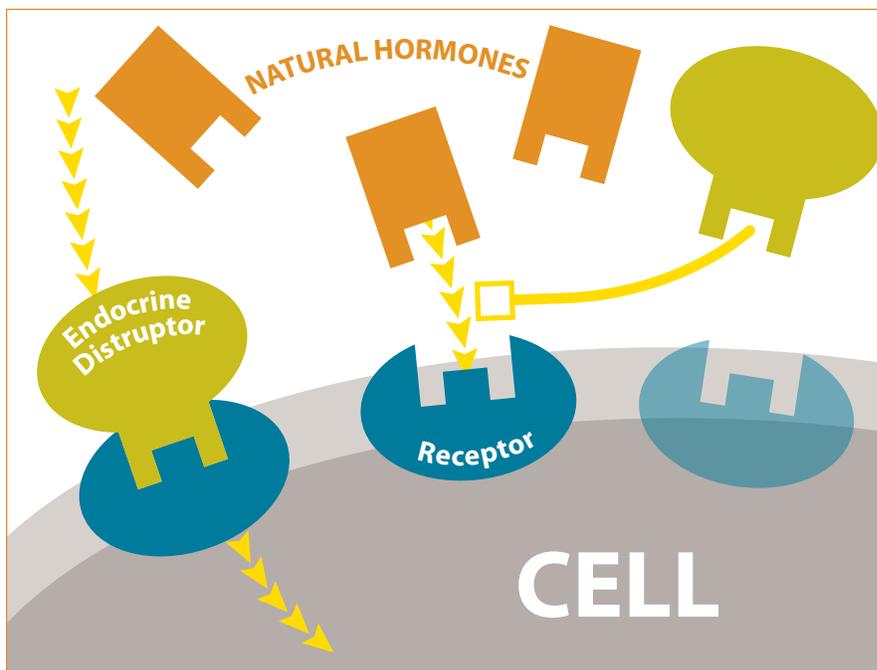
Perhaps one of the most ubiquitous groups of chemicals that can be found in indoor air is the fragrance chemicals. People who have asthma may be more sensitive to fragrances and may experience allergy symptoms, or worsening asthma symptoms, from exposure to perfumes, fragrances, and other chemicals. Once the primary arena of the perfumer and derived primarily from natural sources, synthetic fragrance development is a growing multi-billion dollar industry. Fragrances can be found in most products. They are used to add flavor or scent to a product or to mask a product’s unpleasant smell. They may come from natural (animals or plants) or synthetic sources. Consider the variety: perfumes and colognes, scented candles, facial tissue and toilet papers, household cleaners, car care products, soaps, cleansers, cosmetics, detergents, hair care products, creams and lotions, fabric softener and some foods and beverages.

Hormone and endocrine disruptors

Endocrine disruptors are chemicals that can interrupt the healthy functioning of the human body by preventing hormone systems from working properly. Hormone systems, also referred to as endocrine systems, are found in all mammals, birds, fish, and many other types of living organisms and are essential for most biological processes.

Simply put, the endocrine system is a network of glands that secrete chemicals called hormones to help your body function properly. This system regulates all biological processes in the body from conception through adulthood and into old age. Hormones interact with cells that contain matching receptors on their surfaces. The hormone binds with the receptor, much like a key would fit into a lock. The hormones, or keys, need to find compatible receptors, or locks, to work properly. Once a receptor and a hormone bind, the receptor carries out the hormone's instructions.

Chemicals in the environment can disrupt the endocrine system in a variety of ways. For example, some chemicals mimic natural hormones, fooling the body into over-responding to the stimulus or responding at inappropriate times. Other endocrine disrupting chemicals block the effects of a hormone from certain receptors. Still others directly stimulate or inhibit the endocrine system and cause overproduction or underproduction of hormones. Certain drugs are used to intentionally cause some of these effects, such as birth control pills. In many situations involving environmental chemicals, however, an endocrine effect is not desirable nor is it intended.



When absorbed in the body, an endocrine disruptor can decrease or increase normal hormone levels (left), mimic the body's natural hormones (middle), or alter the natural production of hormones (right).

The Dirty Dozen of hormone disrupters:

- BPA
- dioxin
- atrazine
- phthalates
- perchlorate
- fire retardants
- perfluorinated chemicals
- glycol ethers
- organophosphate pesticides.

In recent years, some scientists have proposed that chemicals might inadvertently be disrupting the endocrine systems of humans and wildlife. A variety of chemicals have been found to disrupt the endocrine systems of animals in laboratory studies, and there is strong evidence that chemical exposure is associated with adverse developmental and reproductive effects on fish and wildlife in particular locations. The relationship of human diseases of the endocrine system and exposure to environmental contaminants, however, is poorly understood and scientifically controversial.

There is growing recognition in the scientific community, however, that exposure to even low doses of certain chemicals, particularly in the womb or during early childhood, can disturb our hormonal, reproductive, and immune systems, and that multiple chemicals can act together to harm human health.

Of the many known and suspected endocrine disruptors, Bisphenol A (BPA) has received perhaps the most public attention in recent years. BPA is used in numerous plastic products, including baby bottles, and food and beverage can liners. It disrupts the endocrine system by mimicking the estrogen hormone. Extensive research has linked the disruption from BPA to breast cancer, obesity, diabetes and other serious medical problems.

Cancer causing toxics

Despite overall decreases in incidence and mortality, cancer continues to shatter and often steal the lives of Americans. Approximately 41 percent of Americans will be diagnosed with cancer at some point in their lives, and about 21 percent will die from cancer. The incidence of some cancers, including some most common among children, is increasing for unexplained reasons.

Factors impeding control of environmental cancer risks include limited research on environmental influences on cancer; conflicting or inadequate exposure measurement, assessment and classification; and ineffective regulation of environmental, chemical and other hazardous exposures.

Known carcinogens: arsenic, asbestos, benzene, bisphenol A (BPA), chromium hexavalent compounds, dioxins, formaldehyde, polybrominated diphenylethers (PBDE), polycyclic aromatic hydrocarbons (PAHs) and vinyl chloride.

Toxics that affect brain development

According to the U.S. Centers for Disease Control and Prevention (CDC), about 1.8 million more children in the U.S. were diagnosed with developmental disabilities between 2006 and 2008 than a decade earlier. During this time, the prevalence of autism climbed nearly 300 percent, while that of attention deficit hyperactivity disorder increased 33 percent. CDC figures also show that 10 to 15 percent of all babies born in the U.S. have some type of neurobehavioral developmental disorder. Still more are affected by neurological disorders that don't rise to the level of clinical diagnosis.

While earlier and more rigorous diagnosis accounts for some of this increase, it doesn't explain all of it. Researchers credit genetic factors for 30 to 40 percent of the cases. But a growing body of research suggests that exposure to environmental pollutants is implicated in the rise in children's neurological disorders. The benefits of avoiding exposure to known, suspected or potential neurotoxicants are clear.

For a brain to develop properly, neurons must move to precise places in a precise sequence. They do so under the direction of hormones and chemical neurotransmitters. The process is an intricate, fast-paced dance on a very tiny scale. At any point, neurotoxins have the potential to disrupt this dance, in a slight or serious fashion.

One of the main problems in studying the effect of chemical exposures on subsequent brain function is the possibility of a long latency period between exposure and recognition of functional deficit. For example, impaired language or reading skills may not become apparent until school age.

Our understanding of what constitutes safe thresholds of known neurotoxins has been continually revised downward as scientific knowledge advances. For example, the initial safe level of blood lead was set at 60 micrograms/dl in 1960. That was revised to 10 micrograms/dl in 1990, and by 2012 that number was 5 micrograms/dl. Today, no safe blood lead level has been identified. Any lead in blood for children is shown to affect IQ. It is estimated that over half a million U.S. children (ages 1 to 5) have blood lead levels at, or above, 5 micrograms/dl.

Classifying human neurotoxins can be tricky and expensive. While laboratory research has identified more than 1,000 chemicals to be animal neurotoxins, the known list for humans is small by comparison. Only 214 chemicals have been classified as human neurotoxins, and only 12 have been identified as affecting fetal and child development. Much more research is needed in these areas, and as this occurs, the list of known neurotoxicants will likely grow dramatically.

Even if developmental toxicity can be measured in lost IQ points during childhood, it is much more difficult for researchers to explore the impacts of chemicals in later life. Could in-utero exposure increase the chance of developing neurodegenerative diseases like dementia? And if the effects do not show up until a person's sixth decade, will we continue to expose future generations to these chemicals?

The Dirty Dozen for Child Development:

- *methylmercury*
- *polychlorinated biphenyls*
- *ethanol*
- *lead*
- *arsenic*
- *toluene manganese*
- *fluoride*
- *chlorpyrifos*
- *tetrachloroethylene*
- *polybrominated diphenyl ethers*
- *dichlorodiphenyltrichloroethane*

TOXICS IN THE ENVIRONMENT

Air quality and climate change

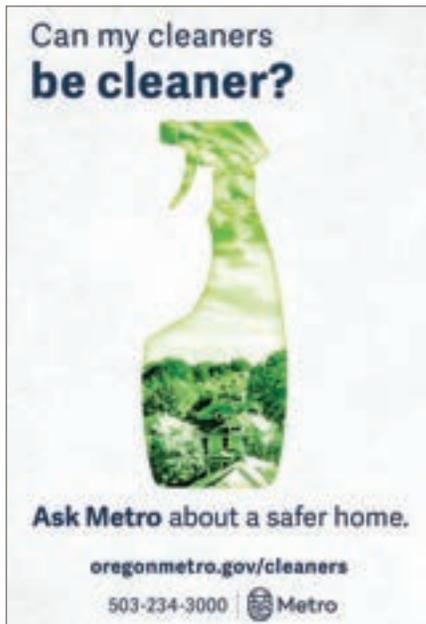
The United States chemical sector produces many negative environmental impacts. It is one of the largest users of natural gas, which is required for energy and as a feedstock. In 2011, the chemical industry emitted more than half a million tons of criteria air pollutants, of which more than 70 percent were carbon monoxide (CO), sulfur dioxide (SO₂), and nitrogen oxides (NO_x). The industry also manages a huge amount of chemicals that are reported to EPA's Toxic Release Inventory. About 5 percent of the more than 10 billion pounds of chemicals managed are disposed of or otherwise released to air and water, while the rest goes to treatment, energy recovery, and recycling.

Like many global industries, the primary environmental impacts of the chemical industry are through the industry's extensive consumption and combustion of fossil fuels used to produce and use chemicals. Most people are aware of the costs of toxics to the environment and public health. Many are less aware that one of the largest negative impacts from the production and use of chemicals is its impact on the earth's climate. Researchers, using life cycle assessment methods, have calculated that energy-related factors account for 40 to 80 percent of this industry's negative environmental impact primarily due to the effects they have on the climate.

Soil and water quality

The production, use, and management of waste chemicals also causes much destruction of natural habitat and decreases soil and water quality. Once in the food chain, many of these substances are accumulated to ever-higher concentrations in the tissue of the animals that consume them. These impacts include the following:

- As global population increases so too does the demand for food and industrialized farming. Industrial farmers often use chemical fertilizers and pesticides to kill and suppress insects, fungi and bacteria. This reliance on chemicals comes with an environmental cost to both soil and water quality.
- During the extraction phase of chemical fuels and metals, drilling and mining activities destroy whole landscapes and pollute water systems.
- Household cleaning and disinfecting products are flushed into sewage systems and out through treatment plant discharge, or are washed from property and septic tanks into groundwater and streams.
- In industrialized nations, each household produces tons of garbage each year. Much of that garbage is made from products containing chemicals. Although some of this waste is recycled the majority of it remains in landfills or litters urban and natural landscapes.



WHERE TOXICS ARE FOUND

Consumable and durable products

Consumable goods, also known as nondurable goods or consumables, are those goods that are capable of being consumed, wasted, dissipated, used up or spent. Consumables are products that consumers use recurrently, that is, items which get used up or discarded. These kinds of chemical goods include solvents, personal care products, pesticides, glues and adhesives, pharmaceuticals, fuels and ink cartridges.

Durable goods are a category of consumer goods that do not have to be purchased frequently. As the name suggests, such goods have an extended product life (three years or more) and are not typically worn out or consumed quickly when you use them. Almost all durable goods contain or are manufactured using chemicals. Durable goods include: consumer electronics, carpets, furniture, clothing, toys, building materials and many other products.

Personal care products



The text in this section comes from the report by the Oregon Environmental Council and Metro, *What's in my Makeup Bag?!* The full text is available online.

Personal care products include any product that is put on the body to cleanse, enhance, or cover up one's natural features. They include shampoos, conditioners, soaps, lotions, perfumes and colognes, as well as makeup and hair color.

Nanomaterials

By some estimates, women who use personal care products every day are exposed to dozens of toxic chemicals in these products. Women of reproductive age use twice as many personal care products in more combinations than men, resulting in daily exposures to higher levels of toxics through their use.

While the chemicals in these products exist in small amounts, exposure occurs every day and in multiple combinations through the use of a variety of personal care products. These exposures add up. The scientific community is just beginning to uncover what these multiple and cumulative exposures mean for our health.

Independent scientific researchers have found many unregulated and untested chemicals among the 10,000 ingredients widely used in personal care products. Some chemicals known to have toxic properties, including formaldehyde, phenoxyethanol, and parabens, are used as preservatives in personal care products. Some of these chemicals are known carcinogens, endocrine disruptors and neurotoxins. Studies indicate that these chemicals end up in our bodies.

The market for personal care products is strong, but regulation of the industry is weak. In the U.S., personal care product companies generate billions of dollars of revenue a year. Four personal care product companies are on the 2010 Fortune 500 list with company revenue ranging from \$7.3 to \$79.7 billion. Personal care products, however, are among the least-regulated products under the United States Food and Drug Administration's authority. The FDA requires personal care products to carry labels identifying ingredients by order of prominence. But fragrances and trade secret ingredients are exceptions to this requirement. If a manufacturer tells the FDA that their ingredients are secrets important to the product and its profitability, the manufacturer does not have to list those ingredients.

Nanotechnology, the manipulation of matter on an atomic, molecular, and supramolecular scale, is a relatively new science that is being applied in a variety of fields, including: chemistry, physics, biology and engineering. Research and development in these fields is leading to new products and nanomaterials with applications in pharmaceuticals, electronics, coatings and chemical remediation.

Nanomaterials are extremely small (a nanometer is one millionth of a millimeter, approximately 100,000 times smaller than the diameter of human hair) and can exhibit unique characteristics that are leading scientists to question what implications they may have on our health. Nanoscale materials can, in theory, be engineered from minerals and nearly any chemical substance, and they can differ with respect to composition, primary particle size, shape, surface coatings and strength of particle bonds.

Much of what is known about their health effects comes after decades of understanding the effects from natural or incidentally formed nano-sized materials such as ultrafine particles from dust or incomplete combustion. Unfortunately, much is still unknown and research is needed to determine whether exposure to manufactured nanomaterials can lead to adverse effects on the heart, lungs, skin; alter reproductive performance; or contribute to cancer.

Given what we know, caution is warranted. Nanomaterials may enter the body by routes not typical for other chemicals because of their small size. If nanomaterials of certain sizes are able to enter the body, they may pass through cell membranes or cross the blood-brain barrier because of their small size. When used for drug delivery and disease treatments this can be beneficial. But, this could also result in unintended impacts for manufactured nanomaterials not designed for disease therapies. Nanomaterials may also interact with environmental media and pollutants to produce by-products that may have the potential to negatively affect the health of humans and wildlife.

With the global nanotechnology market expected to reach \$27 billion by the end of 2015, it is increasingly essential that we more fully understand the potential human health risk of manufactured nanomaterials.

PERSONAL CHOICES CAN MAKE A DIFFERENCE

Everyone can make thoughtful and more informed choices about the products that they buy and use. Whether we are choosing paint for the baby's room, sunscreen for the toddler, carpeting for the master bedroom, wallboard for the new renovation project, fertilizers for the yard or furniture for the living room. Taking time with these choices can help us steer clear of products with unwanted chemicals in them. Master Recyclers can play an important role in understanding these choices and empowering the community to make healthy and safe choices.



Toys with phthalates



Cathy Bloom was 36 when she volunteered to participate in Oregon Environmental Council's Pollution in People Project (2007). The study selected a small diverse group of Oregonians to test for a select group of six chemicals. The report explains: "Cathy's main motivation to participate in this study was to help educate the general public about toxic chemicals, especially around choices that can be made during pregnancy and while nursing. When she was pregnant with her first child, she wasn't aware of the potential health hazards in some consumer products. With her second child, Cathy knew of the dangers of phthalates and bisphenol A and made the choice to avoid them when possible." Cathy had the fewest number of chemicals detected in her body in this report. She was one of two participants with no detectable bisphenol A and her total phthalates level was less than half of the second lowest participant.

DEEP DIVE

You can find the Oregon Environmental Council's **Pollution in People** report online.



RESOURCE

Learn the LD50 of any pesticide chemical on the National Pesticide Information Center's website or by calling 1-800-858-7378.

Identifying hazards

Read the label! Look for these signal words: danger, warning or caution. These federally mandated words indicate the degree of immediate hazard posed by a product. Generally, danger indicates that a product is extremely hazardous because it is poisonous, extremely flammable, or corrosive. Warning or caution on labels indicates products that are somewhat less hazardous, but which still require precautions in their use and waste disposal. Products not listing these signal words are usually the least hazardous.

The chemical industry evaluates toxicity by determining what the lethal dose is for 50 percent of laboratory test animals (LD50) exposed to the product to die.

Product labels can provide clues to the hazard of the product. A product is hazardous when it contains one or more of the following properties:

- **Flammable/combustible** – can easily be set on fire or ignited.
- **Explosive/reactive** – can detonate or explode through exposure to heat, sudden shock or pressure.
- **Corrosive/caustic** – can burn and destroy living tissue.
- **Toxic/poisonous** – capable of causing injury or death.
- **Radioactive** – can damage or destroy cells and chromosomal material.

All products with these characteristics should be handled with care and attention given to the directions on the label.

Safely using hazardous products

Sometimes there are no satisfactory alternatives to household hazardous products. When this is the case, it is important to select the products carefully and use them safely. Here are some tips for selection and use:

Buy only what you need. How much do you actually need? If it's a small amount, see first if you can borrow it from a neighbor. Don't purchase the economy size to save a few cents per unit if that will create a future storage or disposal problem. Instead, buy the quantity that best fits your immediate need and share what's left with a neighbor or friend. Do not, however, give away old pesticides because they can contain chemicals that are now banned (for example, DDT, Kelthane). **Always follow label directions and use only the amounts indicated.**

Wear protective clothing when directions call for it. Gloves, goggles and long sleeved shirts can prevent direct contact with chemicals and absorption through the skin. Respirators and dust masks prevent inhalation of particulates, mists, vapors and fumes.

Use products in well ventilated areas. Avoid breathing fumes and keep containers tightly closed to prevent evaporation. Use products outdoors when possible. When indoors, open as many windows and doors as possible to provide maximum air circulation. Position a fan between your work area and an open door or window with the fan pointed outward to pull the fumes or vapors away from the work area and circulate fresh air into the room. A kitchen or bathroom exhaust fan or one open window will not provide adequate ventilation.

The small size of aerosol particles makes it easy for them to be inhaled deeply into the lungs and quickly absorbed into the bloodstream. Aerosol cans are also explosive when exposed to heat or pressure.

Never mix chemical products. Mixing hazardous products can start a chemical reaction that could create highly toxic fumes or even cause an explosion.

Store hazardous products safely. Store unused portions of products in their original container, tightly sealed. Identify the area where you keep toxic products by permanent marker. Keep items high so that if there is flooding the materials do not contaminate water, and far away from hot water heaters and furnaces to avoid potential explosions if there is a fire.

Store toxic products out of reach of children and pets. If a poisoning occurs, immediately call a doctor or the Poison Control Center at 800-222-1222. First aid advice and antidotes on the product labels are sometimes incorrect.

Disposing of hazardous products

People dispose of hazardous household products in many different ways. They flush them down drains and toilets; toss them into the garbage; pour them down storm drains, on driveways or streets; and they dump them illegally. None of these are safe ways to dispose of hazardous products. To understand why, it is helpful to understand what happens to the waste when it goes away.

Risk to the environment

In the Metro region, most garbage is transported to the state-of-the-art Columbia Ridge Landfill in Arlington, Oregon. The hazardous waste goes to a separate facility next to the general landfill.

Some hazardous products will eventually degrade into harmless elements, but others will not. In a landfill, they will be more concentrated than if used uniformly in the environment. Although the hazardous waste landfill is also state-of-the-art, specially regulated and engineered, there is always the potential for hazardous chemicals to end up where they can cause harm.

Hazardous wastes should never be diluted and flushed down an inside household drain or street drain. At sewage treatment plants, bacteria are utilized to break down organic solids in the water. Most toxic wastes cannot be processed in this way. Many can damage the sewage system and kill the helpful bacteria needed to treat sanitary waste. After the bacteria breaks down organic solids at the treatment plant, water is returned to the natural waterways, along with any toxic chemicals that people put down the drain.

Do not flush any product if you are on a septic system. Toxic substances in the septic system can kill the helpful bacteria in the tank and percolate through the drain field into the soil where they can contaminate groundwater and local wells.

Responsible disposal

Although collection opportunities are many in the Portland metro area, household hazardous waste is still found in the trash. Fortunately, the prevalence of this is declining as access to hazardous collection opportunities has improved. Research in 2015 shows that the percentage of hazardous waste in the household garbage amounts to .21 percent. This is a small but not insignificant amount, adding up to about four million pounds derived from total regional tonnage.



Two transfer stations presently accept most of the region’s hazardous waste: You can take your toxic trash to Metro’s permanent hazardous waste facilities year-round. Closed on major holidays

Metro Central	Metro South
6161 NW 61st Avenue, Portland (between Front Ave. and St. Helens Rd.) Open 9 a.m. – 4 p.m., Mon-Sat, closed Sun	2001 Washington Street, Oregon City Open 9 a.m. – 4 p.m., Daily

Call 503-224-3000 for more information.





Metro recycles as many wastes as possible, including latex paints, antifreeze, motor oil, lead acid batteries, some household batteries and metal containers.

Metro schedules community collection events across the tri-county area. These events are smaller, scheduled frequently and community-friendly.

Free household hazardous waste collection events take place from 9 a.m. to 2 p.m. every week (except Memorial Day, Fourth of July and Labor Day weekends) between early March and mid-November in many communities across the Portland metropolitan area. Call Metro, 503-234-300 for details.

Back to basics

Keeping things simple is our best defense, because it lets you know more fully what you are exposing yourself and your surroundings to. To start getting back to basics you can take an inventory of all the chemicals you have in your home. These are those consumable products that are under your kitchen sink, in your garage, and on the shelf in the bathroom. Familiarize yourself with what you have. Read the labels. Consider getting rid of the most hazardous products first. Do you have any products that you don't really need? Do you really need three types of cleaners for the bathroom? Consider how many fewer chemicals will be in your bathroom airshed if you use one product instead of three.

Some of the most hazardous chemicals used in our homes are pesticides. Many are designed to kill anything that moves rather than specific targets. Tackle a pest or problem (i.e. ants, spiders, mice) one at a time. Identify first and know thy enemy. Take the time to figure out where the pest is coming



RESOURCE

For pesticide free gardening advice visit Metro's **Yard and Garden** web resources.

RESOURCE

Search more than 70,000 personal products at EWG's (Environmental Working Group) **Skin Deep cosmetics database**, available online.

in and seal that area off. It may take some sleuthing, but eventually you will keep that pest out. Remember, pesticides kill living things and they are probably not the chemical you want to spray on your kitchen counter.



A clean house doesn't need to smell like a packaged fragrance. Reconsider all the products you use that have fragrances as part of their chemical makeup. Also, choose products that are water-based and not solvent-based. This will help the air quality in your home. Durable goods also off-gas adhesives and other volatile organic chemicals. When you are thinking about bringing new carpets and furniture into your home consider what the product is made of. Natural fiber products may be a better air quality choice. And look for stuffed furniture that doesn't contain flame retardants. Often you can pay for a couch spill warranty and not have to spray scotch guard on your couch.

A home garden should be a place of beauty, play and rest. There are many resources in our community and on the web that can help you garden without pesticides.

Your skin is the largest organ of your body; take care of it by keeping chemicals away from it. Be selective about your personal care products. Minimizing how many products you use will help you steer clear of chemicals that may not be good for you. Take time to do the research required to understand your choices.



RESOURCE

For safe cleaning tips visit **Metro's Green Cleaning** web resources. You can also Google **Body Care Recipes** for all sorts of ideas for homemade shampoos, lotions and creams.

Greener cleaners

Often people want names of alternative, greener cleaning products. Unfortunately, it is not that easy. No regulations exist that define what can be labeled as non-toxic, safe or green. Products that state that they are natural or non-toxic may still have chemicals in them that simply have not yet been proven to be unsafe. Product labels are also allowed to hide ingredients that are claimed to be trade secrets.

For this reason, a back to basics list of seven ingredients that you can use to clean your house is the best. However, if you are seeking a more specialized product, it is easy and incredibly cheap to make your own.

Use these seven ingredients to keep your house clean:

Baking soda (sodium bicarbonate). Absorbs odors and is a mild abrasive. Found in the baking section of the grocery store.

Essential oils deodorize or add scent. Mint, eucalyptus, lavender, lemon, tea tree and other oils can be found in the natural food section of many grocery stores or herbal supply shops.

Glycerin. An antiseptic and moisturizes the skin. Found in pharmacies or in some grocery natural food sections. Use vegetable oil-based glycerin.

Hydrogen peroxide is a disinfectant. Use the 3 percent household concentration, found in pharmacies.

Vegetable oil-based liquid soap or detergent. Sometimes referred to as castile soap. Found in many grocery natural food sections.

Vinegar. Removes soap scum, grease and mineral deposits and acts as a deodorizer. Use white distilled vinegar for most of these recipes. Found in the condiments aisle of the grocery store.

Washing soda (sodium carbonate). Removes grease and is slightly caustic. Found in the laundry section.

KNOW YOUR FOOD PLASTICS

Unfortunately, plastics labeling only identifies the main resin used. There may be any number of additional unnamed chemicals. Furthermore, there is a lot that is not known or fully tested about each plastics resin. However, there are some that are known to be worse, and there are ways to minimize potential risk.

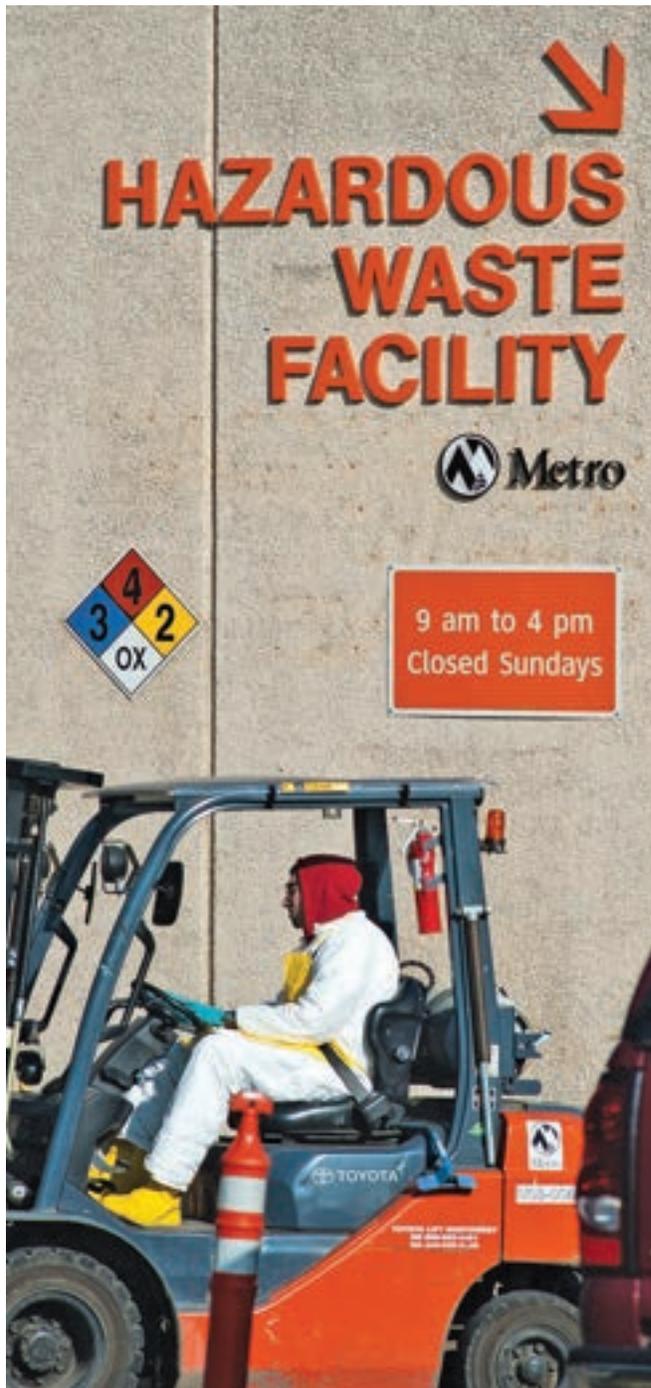


Three steps to safer use of food plastics

1. Avoid the known problem plastics.

- **Polycarbonates contain Biphenol A (BPA)** which is a known hormone disrupter that can cause cancers and developmental problems. These plastics are labeled #7 (however #7 is used for other resins as well). BPA was used in baby bottles and water bottles, but public awareness has led companies to seek alternatives. In some states it is illegal to use BPA in baby products.
- **Polystyrene (#6)** is toxic to the brain and nervous system to workers exposed to it over a prolonged period. This resin is mostly found in take away containers and Styrofoam™.
- **Polyvinyl chloride, also known as vinyl or PVC (#3)**, poses risks to the environment and human health. Its manufacture is highly toxic, and its use requires additional toxic stabilizers. This plastic is mostly found in cling wraps.
- **Phthalates** are hormone disruptors. They are additives in products and packaging such as baby toys, flooring and cling wrap that makes plastic pliable. Because they are additives rather than a resin, they do not have a plastic number. Almost all very flexible plastics have phthalates in them.

2. **Minimize leaching or off-gassing.** Plastic numbers 1, 2, 4 and 5 appear to be fairly stable when at room temperature. However, heating plastics may cause chemicals to seep into the food or release chemicals into the air. Take foods out of plastic packaging and place on ceramic or pyrex glass before microwaving. Avoid extreme temperatures in the dishwasher. If you plan to reuse the plastic, wash it by hand in tepid water. Avoid storing fatty foods in plastic as fats can also absorb plastic chemicals more easily.
3. **Use alternatives to plastics.** Drink tap water from a reusable (BPA-free) water bottle or a glass, and bring food to work in your own glass or metal container.



CONCLUSION: REFORMING A FAILED SYSTEM

In this chapter we have offered an overview of toxics, a complicated and potentially overwhelming topic. We hope you now have a basic understanding of current regulations and of the health impacts of toxic chemicals. You are now also hopefully familiar with the environmental impacts of chemical production and where you are likely to encounter toxics in your daily life. The final section of this chapter presented some strategies that Master Recyclers and others can use to lessen their exposure to toxics. You can: inventory toxic products already in your home; consider safe disposal of unneeded toxic products; always follow safety guidelines when using hazardous products; use simpler products (whether store bought or homemade) with known ingredients; and minimize your use of plastics for food packaging and handling.

While personal action can make a real difference, our current regulatory system is broken. Given this, you can demand new laws that protect our environment, workers and personal health. The country's main chemical safety law -- the Toxic Substances Control Act (TSCA) -- makes it nearly impossible for the Environmental Protection Agency (EPA) to take regulatory action against chemicals, even those that are known to cause cancer or other serious health effects.

When TSCA became law in 1976, the goal was to ensure the safety of chemicals from manufacture to use and disposal. But weaknesses in the law have left the EPA largely unable to act on known health dangers or require testing on specific chemicals that may be unsafe.



As Oregonians, we should also support reform that allows states to maintain laws which exceed federal protections to safeguard their residents. You can familiarize yourself with the federal law and learn the positions of the groups that are working on reform. You can support TSCA reform through personal action (for example, writing to your Senator) or join an organization. Here are some organizations working on chemical reform:

- **The Safer Chemicals, Healthy Families coalition** represents more than 11 million individuals and includes parents, health professionals, advocates for people with learning and developmental disabilities, reproductive health advocates, environmentalists and businesses from across the nation.
- **The American Chemistry Council's mission** is to deliver business value through exceptional advocacy using best-in-class member performance, political engagement, communications and scientific research.
- **Safer States** (based in Portland) is a network of diverse environmental health coalitions and organizations in states around the country that share a bold and urgent vision. "We believe families, communities, and the environment should be protected from the devastating impacts of our society's heavy use of chemicals. We believe that new state and national chemical policies will contribute to the formation of a cleaner, greener economy."

All of the above organizations have websites where you can find more information.

Local and regional action can also influence the changing landscape of chemicals policy. Closer to home, the Oregon Environmental Council, Neighbors for Clean Air, Beyond Toxics, and Physicians for Social Responsibility (Oregon Chapter) all work in the realm of toxics reduction. You can search online to find out more about any of these organizations and discover ways to add your voice to the conversation.

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CHAPTER 14 FOOD

INTRODUCTION

From the grocery store to the White House, America is in the midst of a food revolution. People are eagerly seeking out new foods and demanding to know both how and where their food is grown. They are asking tough question about the modern food industry's adverse impacts on our personal health, on workers and on the planet as a whole. Former First Lady Michelle Obama even made it her personal mission "to change the way a generation of kids thinks about food and nutrition."



As interest in food grows, so too do concerns about food waste. The United Nations estimates that 30 to 40 percent of food in the United States is wasted and they established a World Food Day to address food waste and other pressing food issues. The United Kingdom, Environmental Protection Agency, Natural Resources Defense Council and other organizations are making headway in identifying the underlying causes of food waste and creating programs and policies to address these causes.

What they are finding is it's not just farmers, grocery stores, or other pre-consumer steps in the food-supply chain that are causing food waste. In fact, it's estimated that twice as much food is wasted at the consumer stage than at the retail stage. According to the U.S. Department of Agriculture, an American family of four throws out close to \$1,882 worth of food every year.

This chapter was written collaboratively by Steve Cohen and Master Recyclers Sara Harding Mihm (Class 59) and Alex Mihm (Class 62). Steve manages food policy and programs for the City of Portland's Bureau of Planning and Sustainability. He focuses on all aspects of a sustainable food system including land use planning, food security, economic development, purchasing, composting and energy. Sara is the Sustainability Coordinator at Multnomah County's Office of Sustainability and Alex is a Senior Sustainability Analyst at Clackamas County Sustainability and Solid Waste.

People who lived through a major war or the Great Depression waste less than half as much food as younger generations. Families in Southeast Asia waste about one-tenth of what an American family does.

Our modern food industry, so focused on efficiency and output, has radically changed how we relate to what we put on our plate (and how much of it we ultimately scrape back off, uneaten). That the modern food industry has made food so affordable and convenient has made it easier than ever for people in advanced nations to fill their stomachs. However, this cheapening of food stresses calories over nutrition, quantity over quality, and makes it easier for us to waste food.

Meanwhile, most of us are greatly disconnected from the production of our food. From 1950 to 2008, the percentage of people in the U.S. living on farms fell from 25 percent to just 2 percent, and those living in urban areas grew from 29 percent to 82 percent.

Solving the problem of food waste will require systemic change involving people, businesses and governments. But the good news is that there are easy steps we can take on a personal level that benefit our wallets, our families, our communities and the planet. The biggest environmental impacts we make as consumers have to do with our food choices and how much food waste we generate.

This chapter will focus on specific tools, resources and techniques that will help reduce food waste at home. These strategies have three goals:

- 1. Buy the right amount.**
- 2. Keep what is bought at its best.**
- 3. Use what is bought.**

Even those with the best habits sometimes forget about the leftovers at the back of the fridge. But by focusing on simple, practical ways to reduce food waste, we can take note of how easy it is to make a big difference!



THE FOOD WASTE PROBLEM

The amount of food we waste is alarming. A recent study by the ReFED, a national nonprofit dedicated to ending food loss and waste, estimates that in the U.S. approximately 80 million tons of food, about 40 percent of all food produced, is wasted every year. In 2021, wasted food cost the country \$310 billion. This also represents roughly a quarter of the average food budget, which is like purchasing four bags full of groceries and then leaving one at the store every time!

Of course, when food goes uneaten, the resources used to produce it go to waste as well. Four percent of all processed petroleum goes toward food that is ultimately wasted, as does a whopping 25 percent of the fresh water we use. Wasted food also leads to negative environmental impacts. When food decomposes in a landfill, it releases methane, a greenhouse gas 28 times more damaging to the atmosphere than carbon dioxide. Landfills are the U.S.'s largest single source of methane emissions, with 25 percent of our total methane emissions coming from food rotting in landfills. These methane emissions represent 56 percent of our non-CO₂ emissions. If our uneaten food were considered a country, it would rank third in greenhouse gas emissions, behind the U.S. and China.

Meanwhile, Americans waste 1,250 calories per person per day. With one in six people in our country unsure where their next meal will come from, our current level of food waste is both a tragedy and an opportunity.



Happily there are many simple actions that you can take to prevent food waste and people are showing a keen interest in taking the following no-nonsense actions.

Grocery lists can, of course, simply be written on the back of an envelope. You can also go online to find several premade grocery lists. Or try mobile APPs like Out of Milk or Grocery IQ for your meal planning and shopping lists.



BUY THE RIGHT AMOUNT

Plan ahead

With a little planning, you can purchase exactly what you need for the week. In preparation for your shopping trip:

- **Look over your calendar for the week.** About how many meals do you plan to eat at home? How many meals will you be preparing for work or the kids' school lunches? Do you have plans to eat out?
- **Go shopping in your own cupboards and fridge first.** Is there anything that needs to be used soon, before it goes bad? Did you accidentally buy too much the last time you went shopping? Take note of what you already have in stock to ensure that you buy only what you need.
- **Make a list.** Identify the meals that you will be eating in the coming days. Incorporate items that you already have at home and need to use. Which ingredients do you need to pick up that you do not already have?
- **Have a snack before you go shopping.** We've all heard the saying, "Your eyes are bigger than your stomach," and there is some truth to this. We're hardwired to worry about having enough food, and everything looks good when we're hungry! Minimize temptation by shopping on a full stomach — or at least not on a growling one.
- **Plan to get your food home promptly.** Food will stay fresh longer when it is stored immediately after getting home.

As you shop:

- **Stick to the list!** Remind yourself that this list was made for a reason (ahem, many reasons!) and resist spontaneous purchases. After all, you can't waste what you don't buy in the first place.
- **Consider these in-store strategies.** If you are in a grocery store, there are a few easy ways to help keep your shopping trip focused and save you money:
 - **Shop the perimeter.** There, you'll find the freshest items with the highest nutrient-density.
 - **Shop for produce last.** This action will prevent the food from being crushed in your shopping cart.
 - **Consider purchasing ugly produce.** Cosmetically-challenged produce is often discounted and can help shift the way our society views food waste. Purchasing ugly produce can help save money and prevent an enormous amount of food waste. If your grocery store does not yet have an official area for ugly produce, speak to the produce manager about the benefits and ask them to consider creating one.

Shopping in season

Eating seasonally is an often overlooked strategy to reduce food waste. Seasonal foods have a longer shelf life in your home, because they do not suffer the temperature fluctuations inherent in transport from a different climate. Some foods are stored in warehouses so that they can be distributed year round, which also reduces the time they stay fresh once they get to your home. The personal benefit is that eating locally, seasonal food provides more flavor and nutrients. You can find perfect examples of seasonal produce at your local farmer's market or produce section of your grocery store.

Bulk shopping

It is easy to get exactly the number of apples you need for the week in the produce department. But why do hotdogs come in a six-pack while their buns come in an eight-pack? It is worth a second look in your grocery store to see if you have options to purchase products that are not prepackaged.

Ask your grocer if you can purchase just one stalk of celery for the soup you are making. You can also go to the bakery and butcher to order exactly the amount of bread and meats that you need. Most of the time these options cost about the same or a little bit more per item. But if you end up throwing away a quarter of what you purchase because the package was larger than you needed, the cost savings becomes clear.

At many stores, you can enjoy the benefits of the bulk bins for pastas, beans, nuts and seeds, nut butters, flour, sweeteners, chocolate, spices, teas, and more. The cost of items in this section is up to 89 percent less than if you were to buy them prepackaged. Purchasing from this section also enables you to try out new foods without getting stuck with a large amount if you don't like it.

Start or join a food-buying club

A food-buying club is a way for a group of people to join together and purchase bulk foods directly from vendors. Some benefits of being a part of or starting a food buying club include access to quality, organic products at significantly lower prices; connecting with fellow community members, small businesses, and farmers; and reducing carbon emissions by receiving one order as a group rather than everyone purchasing individually. Another option is to share food with family and friends.

The Oregon Farmers Markets Association lists some of the benefits of buying food at farmers markets, including:

- Food is freshly harvested and at its peak in flavor and nutrition.
- Your purchases support your local farmers and the local economy.
- You get to see a variety of food items that are special to your region and ask the farmers questions about their growing methods, favorite recipes, and more.
- Many farmers markets may offer lesser known fruits and vegetables that are not typically available at grocery stores. You may find a new favorite food that you never knew existed!

Farmers who sell at markets generally operate smaller-scale farms that employ practices that generate less food waste.

RESOURCE

Find out what is in season during any time of year by using Sustainable Table's seasonal food guide (available online).

RESOURCE

*You can learn more about food buying clubs by consulting Small Footprint Family's **Why You Should Start a Food Buying Club This Year** (available online).*

KEEP FOOD AT ITS BEST



Getting the right amount of food home is one big step in stopping food waste. Ensuring that food doesn't go bad before we eat it is another. Perishable food is particularly at risk of being wasted. Proper food storage is essential to ensure that your food stays fresh and lasts as long as possible. Here are some tools to help you better understand your perishables.

Expiration dates

Approximately nine out of ten of Americans throw food away because its label says it is at or past its expiration date, even when the food itself is perfectly fine. Research done in the United Kingdom by the Waste and Resources Action Programme (WRAP) shows that 45 to 49 percent of consumers misunderstand the meaning of date labels, resulting in an enormous amount of prematurely discarded food. In fact, WRAP estimates that up to 20 percent of household food waste is directly linked to expiration date confusion.

The Food and Drug Administration (FDA) does not regulate expiration dates, with the exception of baby formula. The dates we see on food packaging are set by the companies that produce our food, and many manufacturers display short time periods that denote when their products are at their peak. Many foods will stay good for days, or even weeks, after the date on the package.

Common date definitions (USDA)

- **Sell-By date.** This date tells the retailer how long to display the product for sale.
- **Best if Used By date.** This date is recommended to enjoy the best flavor or quality of the food. This date does not indicate safety of the food's consumption.
- **Use-By date.** Determined by the manufacturer, this is the last recommended date for the use of the product while at its peak quality.

The particular phrase used on the container ("use by," "best before," "sell by," or "enjoy by") is up to the manufacturer. Some containers include a date but no phrase, leaving consumers to wonder what it references.

However, there are several foods where it does make sense to heed expiration dates due to a high risk of *Listeria monocytogenes*, a dangerous pathogen that can lead to food poisoning. These foods include deli meats, unpasteurized cheeses, smoked seafood, and any pre-made sandwiches with these ingredients.

Alternatives to expiration dates

Happily, since expiration dates are not the best tool to identify safe food, there are some good sources of information to help you decide if your food can still be eaten. The website **StillTasty** calls itself the *ultimate shelf life guide*. Its easy search navigation allows you to enter the type of food and conditions under which it has been stored to determine if it is safe to eat. The USDA also provides a simple chart for refrigerator home storage of fresh and processed sealed products.

It is helpful to let everyone in the household know about StillTasty or print the USDA Cold Storage Chart and put it on the fridge.

Food storage

Whether you know it or not, the shelves and sections in your refrigerator were designed with certain foods in mind. In this section, we will review the areas of the fridge that are ideal for specific foods, the food that works best on the counter or in a dark and cool cabinet, and when you should rely on your freezer.

General food storage best practices include:

- Take perishable food home and refrigerate it immediately. Freeze the food if you can't use it within the times recommended by the resources mentioned above.
- Check labels for storage information. If the food is best stored in a dark place, store it in a dark container, or place a clear container in a dark cabinet or drawer.
- When storing food, use clear containers that allow you to identify the contents or label them.
- Separate very ripe or moldy fruit, as it emits ethylene gas that will quickly spoil other produce.
- Wash produce just before preparation or eating. This will prevent premature spoilage due to moisture.



Below are best practices for storing food in specific areas of your refrigerator and kitchen.

The refrigerator

- Use an *Eat This First* or *Eat Soon* sign to indicate what needs to be used up.
- Look at your refrigerator's temperature indicator (or purchase a thermometer for placement inside). The best temperature for your refrigerator is 40° F. When the refrigerator is too cold, delicate food like salads can freeze. If the temperature is too warm, food can spoil more quickly or pose a health risk.
- The temperature varies throughout your refrigerator. A refrigerator is generally coldest at the bottom and gets warmer at the top, with the warmest area being the door.
- Arrange your food items so that you can easily see everything and keep like foods together. How many times have you opened a new jar of salsa only to find a half-eaten one hidden at the back of the fridge?

The upper shelves

- This is a good space for leftovers, drinks, yogurt, and healthy snacks that you want to keep in plain view.
- Keep a container or basket to hold small tidbits that may get lost and forgotten.



Bacterial growth and enzyme activity are the two things that cause food to spoil. Foods last longer when dried or placed in the freezer because one or more of the following conditions are removed: moisture, warmth and, for some foods, oxygen.

Most refrigerators have produce drawers with humidity settings. Get to know your settings and improve the lifespan of your fruits and vegetables. Information available at eatsmartwasteless.com.



The bottom shelf

- Foods like meat, poultry and fish have a higher safety risk and do best in the coldest area of the fridge. Storing them on a low shelf also reduces the risk of contamination if they leak

Crisper drawers

- This area creates a separate humidity zone from the rest of the refrigerator.
- Adjust the drawers so that you have one high-humidity drawer and one low-humidity drawer.
- High-humidity is best for vegetables, especially those likely to wilt. Foods that depend on water to keep their structure (for example, greens, cucumbers, and carrots) do best here and will stay perky longer.
- Shelf life is lengthened by cold temperatures that slow food's respiration, or *breathing process*. But don't stop the breathing altogether by sealing fruits and vegetables in an airtight bag, as they will rot faster.
- Low humidity is best for fruits and vegetables that rot easily (berries, grapes, mushrooms, peppers and avocados). Since apples, pears and bananas give off ethylene gas as they ripen, it's best to keep them in an area with better air circulation so that the gas isn't trapped. Trapped ethylene speeds up the ripening process of other foods.

Cheese drawer

- Fatty foods, like cheese, often absorb the odors of other foods in the refrigerator. Isolating cheese prevents waste and odor absorption.

The refrigerator door

- The door is the warmest part of the refrigerator and is exposed to the room's temperature every time it is opened.
- Condiments can store well here.
- Do not store anything perishable in the door, including eggs (even if there is a compartment for them).

The freezer

- Freeze food that you won't be able to eat before its expiration date.
- Perishable products kept frozen continuously are safe indefinitely.

The counter, cabinet or drawer

- Store onions, garlic, potatoes, mangos, papayas and pineapples in a cool, dark place.

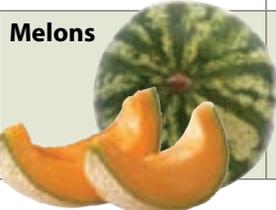
Tips for individual foods

Now that you have a general understanding of how each area in the refrigerator serves a purpose, here is a list of common foods and the locations where they store best. This list will be helpful to have with you when you are tabling and helping people troubleshoot food that goes bad in their house.

RESOURCE

Waste-Free Kitchen Handbook by Dana Gunders lists more foods and their detailed storage instructions.

Food	Refrigerator	At freshest	Storage tips	Freezer
Apple 	Yes, low-humidity drawer.	Up to 6 weeks in refrigerator.	Wash only before using.	Raw or cooked.
Asparagus	Yes.	3-5 days.	Upright in bowl with 1" of water on top refrigerator shelf. Or, wrap ends in moist towel in high-humidity drawer.	Blanch, immerse in ice water, dry, place on baking sheet and freeze. When frozen, move to a container.
Avocado 	Yes, after it's ripe.	Whole, after ripe, 2-5 days in refrigerator.	Counter until ripe, then in refrigerator.	Peel and puree.
Banana 	Optional after ripe.	Less ripe: 5-7 days. Ripe: 1-2 days.	Counter at room temperature.	Peel and store in airtight container.
Beans, Canned or Cooked	Yes, after opened or cooked.	Can in pantry: several years. Cooked in refrigerator: 3-5 days. Freezer: up to 3 months.	Cooked: in their cooking liquid or water in airtight container.	Sealed container with their cooking liquid or water.
Berries 	Yes.	Rasp-, straw- and blackberries: 2-3 days. Blueberries: 10 days.	Wash only before using.	Remove any stems, rinse, and dry.
Bread 	No.	Counter: a few days. Freezer: 6 months.	Room temperature in bread box or paper bag.	Wrap tight in airtight wrapping. Sprinkle stale bread with a little water and place in oven to warm.
Broccoli 	Yes.	5-7 days.	Wash only before using. Breathable bag in high-humidity drawer.	Wash, separate into florets, blanch, immerse in ice water, and drain until dry. Freeze on baking sheet and then transfer to a container.
Butter	Yes.	Opened: 3 weeks. Unopened: 2 months.	Refrigerator in original packaging and in cooler area (near back).	In original carton in zip top freezer bag.
Carrots 	Yes.	2 weeks.	Wash only before using. Breathable bag in high-humidity drawer. Cut carrots in 1" of water.	Wash, blanch, cool, chop, and pack in airtight container.

Food	Refrigerator	At freshest	Storage tips	Freezer
Celery 	Yes.	2 weeks.	Standing in jar of water or in open plastic bag in high-humidity drawer.	Slice, blanch, immerse in ice water, drain until dry, place in container.
Citrus 	Yes.	Counter: 4-5 days. Refrigerator: 3-8 weeks.	Loose in low-humidity drawer.	Some can become bitter when frozen.
Cheese 	Yes.	Hard cheese: 1-10 months. Soft cheese: 1-4 weeks.	Store in refrigerator drawer. Loosely wrap in wax or parchment paper to allow it to breathe.	Hard: grate or cube before freezing. Soft: cube before freezing
Corn on the cob	Yes.	In husk: 2-3 days. Dehusked: 1-2 days.	Eat as soon as possible. Store in husks in middle or upper shelf, wrapped in damp cloth in container.	Remove husks. On the cob, blanch 7 minutes. If freezing kernels, blanch on cob for 4 minutes then cut off kernels. Place in container.
Cucumber	Yes.	1 week.	Wrap in a damp cloth in high-humidity drawer.	Not recommended.
Garlic, Shallots	Unpeeled: no. Peeled: yes.	Unpeeled: several weeks to several months. Peeled: several weeks.	Unpeeled in cool, dark, dry place.	Peel or chop and store in container.
Eggs	Yes.	Unopened: 10 days. Opened: 3 days. Frozen: 1 year. Thawed: 7 days.	Lower shelves in original container. Transfer to airtight container to extend life.	Do not freeze in shells. Lightly beaten eggs can be frozen in airtight containers with 1" headspace.
Grapes	Yes.	2 weeks.	Wash only before using. Keep in breathable bag on refrigerator shelf.	Wash, dry, place on baking sheet and freeze. When frozen, move to a container.
Herbs: Basil, Parsley, and Cilantro 	No, leaves will turn black if refrigerated.	2-7 days.	Trim ends and place in glass of 1" of water. Keep on counter at room temperature.	Fill ice cube trays with herbs and water or olive oil (for cooking later). Transfer frozen cubes to container.
Herbs: Chives, Thyme, and Rosemary	Yes.	10-14 days.	Wash only before using. Wrap loosely in plastic/paper towel and place in refrigerator door.	Fill ice cube trays with herbs and water or olive oil (for cooking later). Transfer frozen cubes to container.
Melons 	Yes, after ripe.	Whole: 5-15 days. Cut: 3-5 days.	Whole: in a cool, dark, dry place. Ripe: on shelf in refrigerator. Cut: in airtight container.	Remove rind, cube, place on baking sheet and freeze. When frozen, move to a container.

Food	Refrigerator	At freshest	Storage tips	Freezer
Milk	Yes.	Pasteurized: 1 week beyond sell-by date. Freezer: 3 months. Open carton: 7-10 days.	Not in the door but in the coldest part of the refrigerator.	It may separate if left frozen for long periods. Store in airtight containers leaving 1" headspace.
Onions 	No.	Whole: several months. Cut: 7 days.	Whole: cool, dark, dry place, hanging sacks ideal. Away from potatoes. If cut, store in refrigerator with peel on.	Remove skins and root. Chop and freeze raw.
Pears 	Yes, after ripe.	After ripe: 5 days in the refrigerator.	Wash only before using. Will ripen at room temperature.	Pears freeze best when cooked in sugar syrup.
Potatoes 	No.	New: 2-3 days. Mature: 2-3 weeks.	Wash only before using. Cool, dark, dry place with ventilation.	Not recommended.
Apricots, Peaches, Nectarines, Cherries, Plums, Pluots 	Yes, after ripe.	After ripe: 3-7 days in the refrigerator.	Wash only before using. Unripe: store at room temperature in dark. Ripe: low-humidity drawer in open paper bag.	Freeze raw (whole or in slices) or cooked.
Pineapple, Papaya, Mango	Yes, after ripe.	Whole: 2-3 days past ripe on counter; 5-7 days in refrigerator.	Unripe: store whole on counter at room temperature. Ripe: loose on refrigerator shelf or in low-humidity drawer.	Peel and cut into chunks, place on baking sheet and freeze. When frozen, move to a container.
Tofu	Yes.	10 days.	Original package until opened, then submerged in water in container. Change water daily.	In original container then thaw in refrigerator and squeeze out moisture.
Tomatoes 	No, unless cut.	Whole/Ripe: up to 3 days at room temperature. Cut: 2-3 days in refrigerator.	Wash only before using. Whole: on counter, away from sun, stem up. Cut: in refrigerator.	Freeze raw or cooked in freezer bags.



If you wind up throwing away food at home because you went out to eat instead, the cost of that restaurant meal just became higher than you originally thought.

EAT WHAT YOU ALREADY HAVE

Efficient food preparation



How many times have you felt too tired or busy to prepare a meal and then resorted to ordering food for delivery or takeout? When this happens, the food you may already have at home can wind up pushed to the back of your refrigerator and be forgotten. Over time, the small amounts of food that are bypassed for a quicker, more convenient option can add up to big waste.

To help save you time in the long run, consider the following:

- **Cook once and eat twice.** Make a larger quantity and portion off some to be eaten for the next day's lunch.
- **Measure food before cooking.** Rice, pasta and beans are among the many dry foods that are hard to judge proper portions, because they expand when they cook. Use portion guides and measure food to avoid cooking more than you need. Once cooked, storage options are dramatically reduced with these foods.
- **Create one-pot meals.** Use only one pot to create a meal. This method results in fewer dirty dishes, and the food created with this method generally freezes and reheats well. Recipes can be easily found online.
- **Prepare ahead of time.** Chop large amounts of produce ahead of time. If you have salads regularly, you can have pre-diced ingredients like onions, carrots, and peppers on hand, ready to toss into a salad at any time. You'll also reduce the time spent cleaning your cutting board and knives since you only need to chop once.
- **Make friends with the peels.** Don't bother peeling all of your produce. Carrots, beets, and potatoes roast great with the skin on and provide nutrients that would otherwise be lost if removed.

Stretching your food out

You're already on your way to thinking more mindfully about what you bring into your kitchen, but what about dealing with food that is on its way out? Instead of letting your vegetables further wilt, try out some of the following suggestions to keep your food from going into the compost bin:

- **Unused vegetables** can be steamed, blended, and then frozen in an ice cube tray to use in sauces and soups at a later date. Fruits can be made into pies and smoothies.
- **Freeze bits of meals.** Saving small amounts of excess gravy, a rub, marinade, herb blend, stuffing, or vegetables can provide a savory mix to purée for a sauce, a little flavor jolt, or even a starter to your next meal. Experiment with mixing flavors, or recreate a dish from flavors that you already love.
- **Create your own vegetable stock.** If you cook with a lot of fresh produce, save your carrot tops, chard spines, and celery stubs in a designated container for a weekly soup stock pot.

Having the following staples on hand will assist you in using up other foods so they don't go to waste. Customize this list to your own taste, and you can transform your use-it-up meals into masterpieces!

- Grains like rice, pasta, quinoa, couscous
- Oils like olive, sesame, canola, safflower
- Vinegars like cider, balsamic, rice
- Soy sauce, mayonnaise, mustard
- Eggs
- Beans
- Onions, garlic, canned diced tomatoes
- Hero condiments that can improve flavor in a pinch: soup bouillon, dried onions, sundried tomatoes, hot sauce, BBQ sauce, lemon juice, Parmesan cheese, maple syrup, raisins, almonds and pickles.



RESOURCE

*Finding creative recipes online or in cookbooks that utilize foods that are past their prime is easy. You can take a look at The Huffington Post's **Over 30 Recipes to Reduce Kitchen Waste** (available online) and Dana Gunders' book, **Waste Free Kitchen Handbook**.*

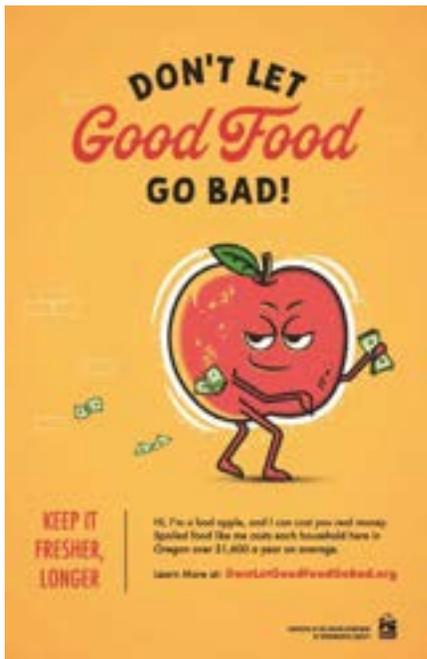
DEEP DIVE

See fellow Master Recyclers using Eat Smart, Waste Less talking points on the Master Recycler YouTube Channel.



Liz Start at
Tigard Farmers' Market

Learn more about the Eat Smart, Waste Less Challenge [online](#).



Visit dontletgoodfoodgobad.org

THE EAT SMART, WASTE LESS CHALLENGE

Master Recyclers can share food waste prevention tips with neighbors, friends and members of the community through the Eat Smart, Waste Less Challenge, an online website compiled by local governments with tools and resources to support wasting less food. The goal is to encourage people to take one small step, like storing fruits and vegetables in ways to keep them fresh longer.

As a Master Recycler, you can help people prevent food waste at home by assisting with a presentation or staffing an information booth for the Eat Smart, Waste Less Challenge. Share your personal connection to food waste, give out tools, co-present or just observe and learn how to give the presentation yourself.

Master Recyclers have the option of checking out the kit from your local jurisdiction to offer a presentation or staff an event in your own community.

DON'T LET GOOD FOOD GO BAD

In 2018, the Oregon Department of Environmental Quality (DEQ) Materials Management Section set out to create a research-driven campaign with messaging and materials to inspire Oregonians to waste less food. As part of this project, DEQ sponsored qualitative and quantitative research focused on consumer attitudes and practices related to food waste, and an in-depth analysis to assess how much and what types of food Oregonians waste and why.

The study found that 50 percent of Oregonians believe taking steps to reduce food waste is important, but are not currently taking steps themselves. The study also found Oregonians are complacent about wasting food, but motivated by saving money. Thus, talking about ways people can save money by wasting less food is more likely to inspire change than talking about how food waste is a problem.

To support this education, DEQ launched the Don't Let Good Food Go Bad campaign, which uses the study's findings to inspire Oregonians to save money by saving food. The campaign includes videos and resources you can share on social media and at events.



MORE WAYS TO MAKE FOOD LAST

Considering the growing interest in reducing food waste and saving money, it's no wonder that sales of home canning supplies increased by 35 percent between 2008 and 2011. The COVID-19 Pandemic saw books on canning increase by 175 percent. People are becoming more aware of the health and cost benefits to stocking their pantries with nutritious foods, that were purchased and preserved at their peak.

Home preservation techniques may seem like a thing of the past to some, but they are a popular topic for classes and workshops at continuing-education organizations and stores. Some of the most common food preservation techniques today include canning and pickling, dehydrating, and root cellars.

Canning and pickling. Involves sterilizing a jar and lid, cooking something, putting it in the jar, and then boiling the jar. Foods can be canned in water, juice, syrup, or their own liquids, depending on the food. Some foods do not need to be cooked at all and can simply be added to a sugar syrup, juice, or vinegar brine. Refer to the Existing Resources list (below) to learn about some local organizations offering food preservation classes.

Dehydrating. Also called drying, this method includes an electrical appliance with heat, a fan, and vents for air circulation. Moisture is removed from the food in order to make it last longer. While some foods can be eaten in their water-less state (such as fruit and vegetable leathers and dried fruits), others should be rehydrated before use (such as mushrooms).

Root cellars. Many gardeners take advantage of this method when they are looking to store relatively large quantities of food to last throughout the winter. Some fruits and veggies store best at 50° F, above the temperature of your refrigerator, but colder than room temperature. Foods that do well in root cellars include root vegetables like potatoes, carrots, and onions, as well as squash, apples and pears.

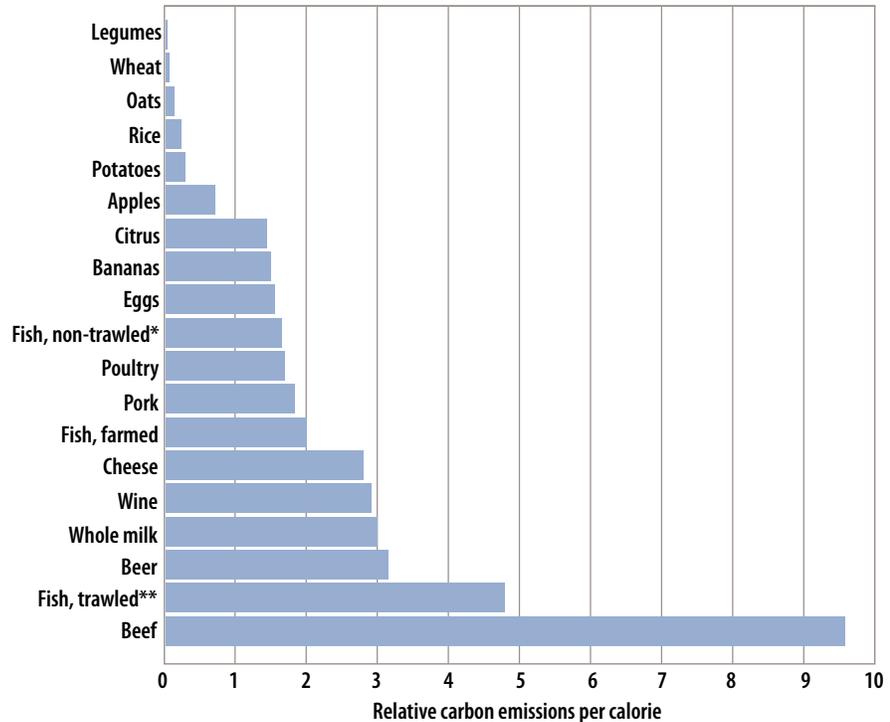
DEEP DIVE

Want to know how your diet adds up? Visit *Bon Appétit's Eat Low Carbon website*.

FOOD CHOICE

When it comes to carbon emissions, what we eat is more important than where it is grown. Buying locally can reduce the environmental impacts of transportation, but they are generally small when compared to the energy and resources that went into raising or growing our food. In the case of meat, buying locally reduces the related energy costs of that food by 1 to 2 percent; for produce, it's about 11 percent.

FOOD CHOICE IS A KEY FACTOR IN CARBON EMISSIONS



Carbon emissions from food choice, by calorie. Prepared by: Accuardi, Zachary (2016, forthcoming).
 *e.g., wild salmon **e.g., red snapper

Moving toward a diet rich in fruits, vegetables and grains is one of the most environmentally impactful things we can do because of all the resources and carbon emissions that are associated with raising animals. Yes, talk of dietary choices can be sensitive, but as mentioned before, the biggest environmental impacts we make as consumers have to do with our food choices and how much food waste we generate. Substituting some meat-based meals with plant-based meals every week has major environmental benefits. When combined with our efforts to use up everything we have and to make our food last longer, we can drastically reduce our personal carbon footprint.

EXISTING RESOURCES

All of the resources listed below have websites that you can consult for more information about particular food topics.

Grocery Shopping and Meal Planning

- **Seasonal Food Guide** – through The Sustainable Table.
- **Food.com** – Find recipes. Plan Meals. Score Deals. Features: Free web-based tool, sales/discounts by store location, recipes, meal planner and shopping lists.
- **Cozi** – Great for family meal planning. Features: Free web-based tool, shopping list, meal planner and recipe storage.
- **Love Food, Hate Waste** – Great for meal planning and making the most of leftovers. Features: portion planner, a recipe ‘blender’ hints and tips, meal planner and shopping list.
- **Out of Milk** – Create shopping lists and share with others in real-time. Features: Free web-based tool, shopping list, to-do list, pantry list and barcode scanner.
- **Shopping List** – Simply google shopping list and find a wide range of options.

Farmer's Market Locators

- **Oregon Farmer’s Market Association**

Food Storage

- **Still Tasty** – Your Ultimate Shelf Life Guide.

Food Preservation Classes

- **OSU Extension**

Food donation

- **Oregon Food Bank**
- **Portland Food Pantries**
- **Urban Gleaners**

Online Tools

- **Meatless Monday**
- **Wasted Food** – A blog by Jonathan Bloom.
- **Environmental Working Group Food Scores** – Find food scores for nutritional value, ingredients of concern, and degree of processing. Features a searchable database with more than 80,000 products, 5,000 ingredients and 1,500 brands.
- **SavetheFood.com**

Movies, Videos, and Documentaries

- **Just Eat It: A Food Waste Story**
- **Wasted! The Story of Food Waste**
- **The Extraordinary Life and Times of Strawberry**



CONCLUSION

Household food waste is not inevitable. Much of it happens because of habits we have learned. So by learning better habits — specifically, how to store food smarter at home and how to prioritize quality, healthy food when we shop — we can make positive impacts without sacrificing convenience.

Despite changes in how most of our food is grown or raised, the food we eat remains one of our most immediate, direct connections to the Earth. Food also connects us to other people: we gather around the dinner table with our family and friends, and we prepare special meals for celebrations and holidays. On a larger level, we cannot understand a culture without knowing the food that the people eat. It is as defining a cultural characteristic as language, art and history, and it undoubtedly plays a part in our personal identities. Indeed, what we eat says a lot about who we are and how we live. And so does how we take care of the food we bring home.

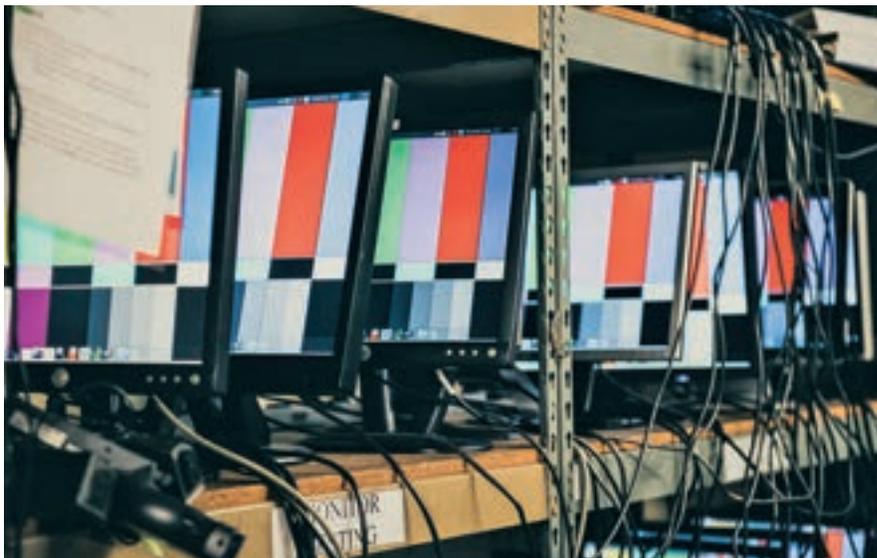
The ideas here for reducing food waste are plainly positive, building off the new food movement. We do not need to give up anything when we become proactive about food waste. We want to eat great food, celebrate it, grow some of it ourselves, bring back the family dinner table, provide great school lunches, recognize the labor of farmers and farmworkers, and create a system where food is treasured, not wasted. Being mindful about our food allows us to rediscover its link to our environmental and personal health and its capacity to strengthen our connections to one another and to our world.

CHAPTER 15

ELECTRONICS MATERIALS MANAGEMENT

INTRODUCTION

From giving rhythm to the pulse of a person's heart to connecting remote communities around the world, **electronics** are increasingly an essential aspect of everyday life.



TERM

Electronics are defined as any device (television, radio, computer, appliance etc.) that operates with an electrical current and often has small working parts such as microchips.

Special attention should be paid to electronics when talking about materials management, in part, simply because they are so prevalent. Electronics are also important because their environmental and social impacts are uniquely troubling all along the materials life cycle.

This chapter will demonstrate the social and environmental impacts related to electronics as well as explore choices that we can make at home and at work to reduce these negative impacts. The chapter will also explore various policies and programs (proposed and existing) focused on reducing the negative impacts of electronics.

LIFE CYCLE OF ELECTRONICS

Electronics require a wide range of raw materials that must be extracted from the earth. Barium, beryllium, cadmium, copper, gold, lead, mercury, nickel, and oil and natural gas are all commonly used in producing electronics. These materials carry with them a wide range of problems at each stage of the life cycle.

Environmental and health impacts of mining and manufacturing electronics

The mining of raw materials for electronic products contributes to increased respiratory problems for workers, such as silicosis, tuberculosis, bronchitis and lung cancer. Mining pollutes the water of surrounding communities through cyanide-contaminated waste ore and other mine wastes including toxic metals and acids, which often get released into lakes, streams and oceans, killing fish and contaminating drinking water. This water pollution is especially concentrated in communities rich in these minerals and/or without the power to control how they are managed.

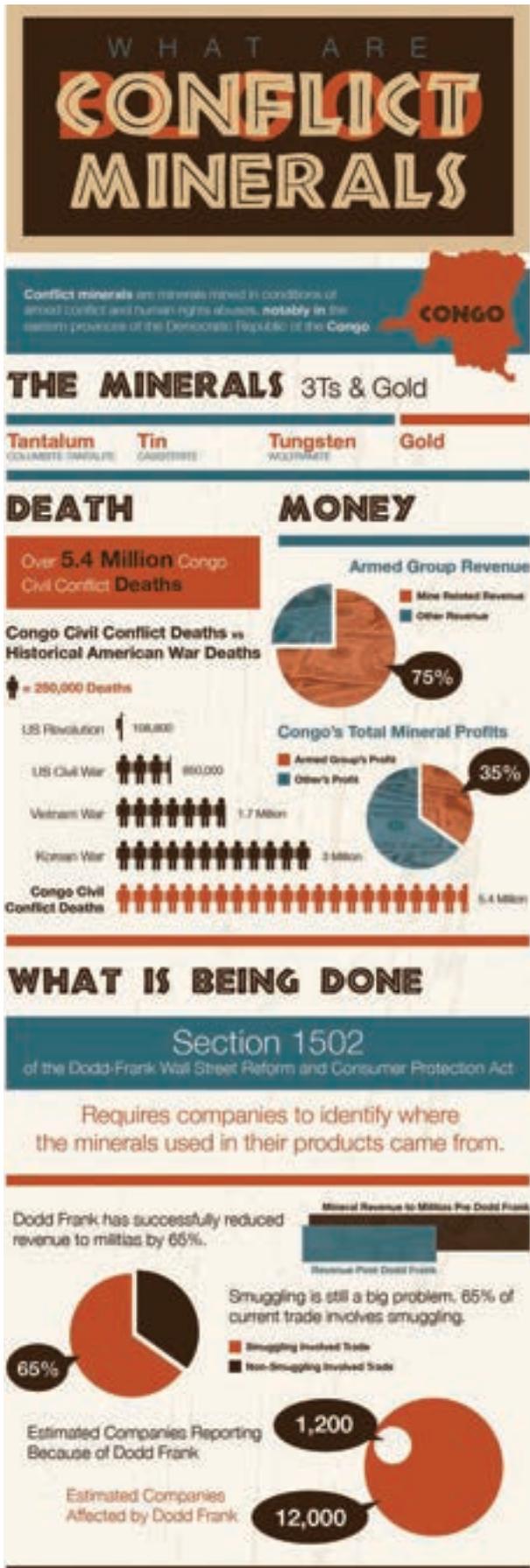
The United Nations estimated, for instance, that by 2008, ninety percent of El Salvador's surface water was contaminated by gold mining pollution (UNICEF 2010). The Acelhuate River is so contaminated with heavy metals and industrial waste that it is considered a biohazard.

Many of these toxic materials are delivered in a raw state to manufacturing facilities in the United States and abroad. Workers in these settings experience the same types of illnesses as those who are exposed in the mines. Even workers in the United States will, for instance, use cadmium, a known carcinogen as a solder for circuit boards and other metal parts. The EPA regulates U.S. business and has established an allowable level of the cadmium to be released in the drinking water, soil and air. The same cannot be said for factories around the world.

Conflict and minerals

The intense need for inexpensive raw materials for electronics creates social conflict in communities affected by polluting mines. Communities can become displaced when their waterways are poisoned and also when mining companies need to expand or build infrastructure to move the extracted materials. When people try to protest in the countries that have repressive governments, they experience imprisonment, murder and physical removal.

What's perhaps even more troubling than social problems caused directly by mining is how the income from mining is often used to buy weapons that then support repressive governments, fuel wars and arm violent militia groups. This phenomenon has been coined *conflict minerals*.



Source: www.sourceintelligence.com/what-are-conflict-minerals/

In the past 15 years the mining of metals for electronic products has been fueling a civil war in the Democratic Republic of Congo (DRC) that has resulted in the loss of more than five million lives and involved human rights violations including mass murder and rape. The government and rebel armies both finance their operations through mining tin, tantalum and tungsten (known as the 3 Ts), as well as gold, for use in our cell phones, laptops, MP3 players and game devices.

Use phase

The impacts of the use phase are often overlooked as we tend to focus more on extraction and production as well as downstream activities such as landfilling and recovery. Electronics require energy for operation, so the use phase has significant ongoing impacts.

Planned obsolescence

The use phase is, however, often unnaturally shortened due to what is known as planned obsolescence. You have encountered planned obsolescence if you have ever updated your phone or computer, only to find that afterward the hardware no longer works well with the new software. Companies frequently make it so that the latest version of software is not compatible with earlier versions. While electronics is a rapidly innovating field, companies often have a vested interest in shortening the useful lifespan of a device and forcing consumers to buy a new one before it has actually worn out.

TERM

Planned obsolescence: An intentional policy by manufacturers to plan or design a product so that it loses its value, becomes outdated or out of fashion, and/or ceases to work after an expected period of time or use in order to increase profits.

RESOURCE

For more on the Electronics Disposal Ban visit the Oregon E-Cycles webpage.

E-waste

E-waste is discarded electronics, and it includes materials destined for reuse, resale, salvage, recycling or disposal. Due to the high number of toxic chemicals involved, as well as the high value of materials embodied in these discards, disposal and recovery of e-waste takes on more significance than most other waste streams.

Toxics and e-waste

Since certain components of electronic devices may be considered hazardous due to heavy metal or other potentially dangerous elements, the end-of-life handling of some electronics discards is regulated by either federal (Resource Conservation and Recovery Act--RCRA) or state (Department of Environmental Quality) hazardous waste laws, or both. Managing these special materials is costly with the burden falling mostly on the consumer and local governments.

Oregon regulations regarding the proper management of Cathode Ray Tubes (CRT), found in older technologies for computer monitors and televisions, took effect in 2010. Oregon law now prohibits computers, laptops, monitors, and TV sets regardless of display style or technology (CRT or flat screen display) from being landfilled. Violators of this ban could face stiff fines of up to \$500 for each prohibited item disposed of improperly.

Problems with overseas recovery

Recovery of materials that go into electronics is an important way to interrupt the need for extraction of minerals to make new electronics. Recycling and reuse save energy in the manufacturing process. Extracting precious metals can also offer great economic benefits.

Unfortunately, because of the extra burden of managing the hazardous materials in e-waste, much of the recovery has taken place in countries where wages are extremely low and working conditions dangerous. The EPA estimates that in 2010 as much as 50-80 percent of e-waste recycling and reuse was exported.

The Basel Action Network (BAN) is a non-profit organization that exposes what they term, the “devastating impacts” of this toxic international trade. BAN offers education programs like their films “Exporting Harm” and “Digital Dump” to expose the impacts of e-waste that arrives every year in China and Africa. In these films, we follow the brokers to small towns where families are dismantling electronics with bare hands and rudimentary tools, melting heavy metals in their front yards and burning piles of e-waste plastics.



The Digital Dump, Illegal Electronics Waste Trade in Nigeria, a documentary

Along with education, BAN organizes the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Convention gathered signatory nations for a treaty that was adopted in Basel, Switzerland on 22 March 1989. The Convention was initiated in response to numerous international scandals regarding hazardous waste trafficking that began in the late 1980s. To date, the Federal government of the United States is not a signatory to this treaty.

Digital safety

One area that sometimes gets overlooked when discussing e-waste is digital safety. From your phone to your personal computer, most households, businesses, non-profits and public agencies rely on their electronics to store sensitive data such as names, addresses, social security numbers, correspondence, medical or mental health records. Just because an electronic device is deemed replaceable does not mean that the data on it is not still easily accessible. Information security breaches can have major legal and financial ramifications.

According to TechSoup.org, there are two best choices to eradicate data. Before donation, recycling or disposal, one can either physically destroy the hard drive or wipe the data with software designed to completely wipe the data clean. The first option is the best when the hard drive is no longer reusable. Some might be tempted to simply reformat a hard drive or delete files. Techsoup.org recommends avoiding these options as they do not thoroughly destroy the data.

Better yet, there are many software programs online that will help destroy the data before the machine is out of your hands. Disk-wiping software works by overwriting the *ones and zeros*, that make up your data with random information (new *ones and zeros*).

Consumers should ask about the policies of depots for recycling and reuse to understand how they might destroy the data.

DEEP DIVE

Learn more about the Basel Network on their website.

Exporting Harm and Digital Dump are both videos you can check out in the Master Recycler Library or watch on YouTube.

TAKING CONTROL OF THE ELECTRONICS PROBLEM

The ubiquitous nature of electronics, the constant need for the most up-to-date technology and their devastating social and environmental impacts can create a feeling of helplessness for the concerned consumer. There are, however, choices that we can make at home and at work to strike a better balance. There are also important policies we need to understand, support and strengthen if we want to address the problem at the global level.



Consumer choice

There are a number of efforts to empower the consumer to better understand the problems related to electronics as well as weigh the impacts of differing products.

EPEAT

EPEAT (Electronic Product Environmental Assessment Tool) is a comprehensive global environmental rating system that helps purchasers identify greener computers and other electronics.

The EPEAT system was developed and is managed through an open process involving representatives from all stakeholder groups. Manufacturing, environmental advocacy, academic, trade association, government and recycling entities all actively participate.

Products are measured against both required and optional criteria. A product must meet all of the required criteria in its category to be added to the registry. It is then rated Bronze, Silver or Gold depending on how many of the optional criteria it meets. Bronze-rated products meet all required criteria, Silver-rated products meet all required criteria and at least 50 percent of the optional criteria, and Gold-rated products meet all required criteria and at least 75 percent of the optional criteria.

EPEAT product criteria include several categories of environmental attributes and cover the full life cycle of electronic products. *The PC and Displays, Imaging Equipment, and Televisions standards address:*

- Reduction/elimination of environmentally sensitive materials
- Material selection
- Design for end of life
- Product longevity/life extension
- Energy conservation
- End-of-life management
- Corporate performance
- Packaging
- Consumables (unique to Imaging Equipment standard)
- Indoor Air Quality (unique to Imaging Equipment standard)

Conflict Minerals

The Enough Project works to raise awareness of conflict minerals and offer resources to help colleges, cities and individual consumers minimize the chances that electronics that they purchase are made with conflict minerals.

ENERGY STAR

As previously mentioned, one of the most important impact stages in the life cycle of electronics is the use phase. In short, it takes energy to run electronics. So it is important that consumers think about the energy efficiency of products when making purchases. Happily, there is a well-established tool to help consumers in this area.

ENERGY STAR is a U.S. Environmental Protection Agency voluntary program that helps businesses and individuals save money and protect our climate through superior energy efficiency. Now in its 20th year, the ENERGY STAR program has boosted the adoption of energy efficient products, practices and services through partnerships, objective measurement tools and consumer education.

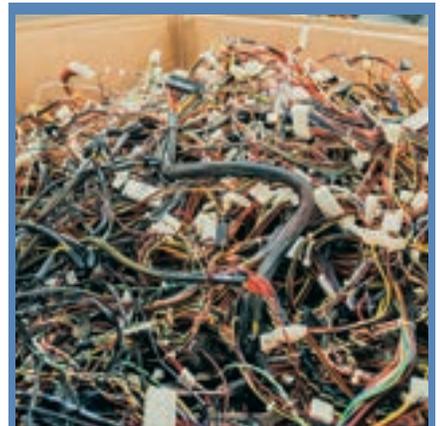
When consumers are done using high energy use products, they should also put careful consideration into whether it is better to recycle the product rather than offer it for donation and reuse where it will continue to use high levels of energy.

E-waste certification programs

While EPEAT helps consumers think about better purchasing options, and Energy Star ensures that the use phase is efficient, there are also programs designed to inform consumers about choices for the ultimate disposal of unwanted electronics.

According to the EPA, consumers can effectively reduce environmental and human health impacts from improper recycling by choosing electronics recyclers who demonstrate to an accredited, independent third-party auditor that they meet specific standards to safely recycle and manage electronics. Currently two accredited certification standards exist on a national level: the Responsible Recycling (“R2”) Standard for Electronics Recyclers and e-Stewards®.

Both certification programs share common elements that ensure responsible recycling or reuse of electronics. These programs advance best management practices and offer a way to assess the environmental, worker health, and security practices of entities managing used electronics. Specifically, these certification programs are based on strong environmental standards which maximize reuse and recycling, minimize impacts on human health or the environment, promote safe management of materials by downstream handlers, and audit the destruction of all data on used electronics.



DEEP DIVE

You can learn more about **e-Stewards** on their website and you can learn more about the **R2 Standard** on the website of Sustainable Electronics Recycling International.



Certified electronics recyclers have demonstrated through periodic audits and other means that they continually meet specific high environmental standards and safely manage used electronics. Once certified, the recycler is held to the particular standard by continual oversight by the independent accredited certifying body.



As a consumer, it is not necessarily important to understand the difference between R2 and eStewards certification. eStewards certification costs more and covers more, but R2 certainly shows commitment to sustainability. Some processing companies find value in having both certifications.

Oregon E-Cycles

Oregon E-Cycles is a program managed by the Oregon DEQ that enforces both the management of e-waste and also producer responsibility.

The program is a producer responsibility program in that it ensures that anyone who sells a new computer in Oregon participates in the costs of the resulting e-waste. DEQ also created specific environmental criteria for each of the participants in the Oregon E-Cycles program including the collectors, the transporters, the processors and the manufacturers. When the public brings electronics into an authorized collector, they can know that strict environmental handling procedures are followed at all levels.

Anyone in Oregon can take seven or fewer computers (desktops, laptops and tablets), monitors, TV's and printers at a time to participating Oregon E-Cycles collection sites for free recycling. Computer peripherals (keyboards and mice) are also accepted free of charge. Other types of electronics are currently not included in this program. However, many of the collection sites also accept other electronics.



DEQ's Monster in your Closet campaign encourages people to properly dispose of e-waste lurking in their homes.

U-waste

There are many products that have similar, if not the exact same, end-of-life problems as e-waste. Objects like fluorescent bulbs, batteries and ballasts may not be electronic, but they have toxics and are expensive to landfill or recover. A growing number of e-waste processors are finding innovative and safe ways to also manage these discards. They have begun to use the term u-waste (or Universal Waste) to describe them. Households should take these products to one of the Metro hazardous collection sites, and businesses can contact Metro's Recycling Information Center (503-234-3000) to identify a local company that can accept u-Waste for recovery or proper disposal.

Three ways to tackle planned obsolescence in electronics

Fortunately, consumers are not entirely at the whim of planned obsolescence. There are a few strategies that can ensure the longest possible lifespan for your electronic devices.

1. Use Open Source Software

Mainstream software companies such as Apple and Microsoft keep proprietary rights to their software. The exclusive copyright owners license out the use of their software usually with only limited conditions of use.



Often when these companies release a new version of software it triggers a domino effect that renders hardware and accessories obsolete. With a closed software system the only people consumers have to go back to get repairs, tech support and updates are the same people that have a vested interest in your giving up and buying a newer product.

Open source software is a way out of this march to the great digital dump. Open source software is designed by a community of developers who agree to openly share the source code (or internal workings) of the software. To be called open source, software must allow for free redistribution, allow others to modify the software, must work on any platform and needs to not restrict other software from working. The definition of open source is maintained by a non-profit organization called Open Source Initiative. They have a compliance/certification process. However, the main power behind open source is peer review. The open source community is constantly tinkering, creating new add-ons, solving problems and then sharing the results. Program developers set up feedback loops so that new ideas can improve the existing programs.

Free Geek in Portland is a great place to learn more about open source. They offer community classes on the operating system called Linux Mint that they install on all of their computers.

TERM

Open Source Software

is computer software that is released under a license in which the copyright holder grants users the rights to use, study, change, and distribute the software and its source code to anyone and for any purpose.

2. Prolong the life of your products

Read up on the best ways to extend the life of your electronics and their batteries. Here is an example of how the EPA suggests making your smart phone work better and last longer. When you make a purchase, ask questions and look up information to learn similar tips for other products.

- Choose your service provider carefully. Many companies sell their own phones which are not always transferable between companies.
- Select a phone with features you need and a style you like so you'll keep it longer.
- Take care of your phone. Use a case, keep out of extreme temperatures and avoid water.
- To extend your phone's battery life, limit location services, reduce brightness, switch to airplane mode when out of range, close unnecessary apps and turn auto updating off.
- Don't worry about overcharging. New smartphones with lithium-ion batteries don't have a problem with partial discharges. In fact, charging a little at a time, instead of draining the battery all the way down, will help preserve your overall battery life.



DEEP DIVE

Learn more in *Shady World of Repair Manuals: Copyrighting for Planned Obsolescence* published in *Wired Magazine* (available online).

3. Fix your electronics

Large electronics manufacturers don't want you to know that it is actually pretty easy to fix a lot of the gadgets we have around us. If you knew that, it would slow you down from buying more of their products. Companies have gone so far as to make it nearly impossible for a consumer to get their hands on an owner's manual which would help them understand how things work and can be fixed. Blocking access to information about products can negatively affect the repair shop economy. One Australian tried to create a website for fellow repair companies that posted the manuals of electronic products. Toshiba sued and won for infringement of copyright.

Despite these roadblocks, many electronics are worth attempting to fix. Here are some resources that may be worth investigating before giving up on a broken electronic device:

iFixit is a global community of people helping each other repair things. Their website includes manuals (either found online or created by iFixit volunteers who take things apart and write manuals about how things work), a forum to ask questions, and a store for tools and parts.

Not up for taking on the task yourself? **RepairPDX.org** organizes free events that bring volunteers who like to fix things together with people who have broken items that need fixing. Experts are on hand to fix items as well as teach participants how to fix their own items. Most events will have people who know how to use a sewing machine and soldering iron. There may also be cobblers.



There are dozens of small businesses in the metro area that repair many types of electronics. It is a common myth that taking electronics to these places costs more than simply buying a new product. While this can sometimes be the case, it is often cheaper. If you weigh the full environmental and social costs of making and discarding electronics, a quick repair is often worth it.



➤ **RESOURCE** ◀

You can learn more on
iFixit's website.

➤ **RESOURCE** ◀

You can learn more on
Free Geek's website.



When asked why businesses should choose to recycle e-waste properly even if it isn't required Jason Kragarud, e-waste processor at Universal Recycling Technologies, says, "Two reasons, well, probably three: 1) peer pressure, i.e., if NIKE leads the charge, other shoe companies will feel they have to follow along, 2) media pressure, i.e., if you get caught sending e-waste to Third World Countries, the media will be all over you, and lastly, 3) it's the right thing to do."



DEEP DIVE

To learn more about proposed legislation and how you can support it in Oregon, visit the Association of Oregon Recyclers online.

Electronics legislation

Product stewardship and e-waste laws

Product stewardship laws set up mechanisms and requirements where manufacturers participate in the management (or at least the cost of the management) of the whole life cycle of a product. These laws are often also called Producer Responsibility laws. Currently 25 states in the U.S. have some kind of electronics product stewardship law.

Each state has tackled the problem slightly differently. The largest number of them (including Oregon) have introduced *consumer take back* programs where electronic product manufacturers finance and provide a statewide program to take back unwanted electronic equipment from consumers. There is no fee charged when the product is taken in for recycling; rather that fee is included in the price of the product or is charged when the product is purchased. These programs usually include the support of a collection system so that consumers throughout the state can identify nearby locations to safely discard their electronics.

As these types of laws increase, manufacturers will share the burdens associated with energy use, recycling and disposal of their products. This could encourage the companies to design products to last longer, use less energy and be easier to open and replace parts for repairs.

Some states (like Washington) have only passed producer responsibility laws. These laws make it easier for people to recycle because they remove the cost barrier. Some state electronics discards laws (like Oregon's) combine producer responsibility and regulation of discards along with a ban on electronics landfilling.

The Oregon E-cycles program collected 26,225,761 pounds of electronic devices in 2016. That's around 6.41 pounds per capita. When the law first went into effect in 2010 there was a flood of old electronics that people had stored in their basements waiting for a free and reliable way to recycle them. Oregon is probably approaching the peak in terms of pounds of electronics collected per year for two reasons:

1. Most of the old electronics people were storing have now been collected, and what's now being collected is primarily end-of-life material.
2. Electronics are changing to be much lighter but also harder to take apart.

Electronics and the right to repair

A second intriguing front of electronics legislation focuses on preserving consumers' rights to repair the electronic products they have purchased. Kyle Wiens, founder of iFixit.org and the author of the Repair Manifesto, feels that the individual's right to repair is under assault. He points out that manufacturers are shifting their practices in a way that takes repair out of the equation. They have increasingly stopped making replacement parts, they frequently design products that break if you try to open them, and they often make specialized parts that cannot be replaced with universal ones. Wiens also points out that manufacturers have begun to claim proprietary rights to manuals and electronic chips that make these products run. Wiens states in Wired Magazine:

"Over the last two decades, manufacturers have used the DMCA (Digital Millennium Copyright Act) to argue that consumers do not own the software underpinning the products they buy — things like smartphones, computers, coffeemakers, cars, and, yes, even tractors. So, Old MacDonald has a tractor, but he owns a massive barn ornament, because the manufacturer holds the rights to the programming that makes it run."

If companies are able to successfully make this claim, then customers would be left unable to repair and maintain their electronics. This will increase purchases of new electronics and increase the negative environmental impacts associated with electronics manufacture and use. Lack of access to product manuals and parts also makes it so that local repair service shops would not have the tools they need to do their work. Kyle Wiens argues that the gradual shift from a repair service model to a throw away and purchase new model is also a shift from local businesses to international businesses in which workers may be subject to slavery and dangerous conditions.

Consumers and local businesses are beginning to tackle this problem. For example, in 2012 88 percent of voters in Massachusetts overrode the car companies and passed the automobile owners' Right to Repair law which requires motor vehicle manufacturers to allow vehicle owners and independent repair facilities in Massachusetts to have access to the vehicle diagnostic and repair information.

In 2015, the Digital Right to Repair Coalition worked with allies on the ground to introduce pro-repair legislation at the state level in New York and Minnesota. *Fair Repair* would do just what the name implies: it would make repair fair again. Fair for owners of digital equipment. And fair for independent repair facilities. If made law, Fair Repair would require manufacturers to provide owners and independent repair businesses with fair access to service information, security updates, and replacement parts.



DEEP DIVE

Learn more in ***We Can't Let John Deere Destroy the Very Idea of Ownership*** published in **Wired Magazine** (available online).

RESOURCE

You can learn more about *Fair Repair and the Right to Repair* movement on *iFixit's* and *The Repair Association's* websites.



CONCLUSION

While electronics have transformed our everyday lives they are also substantially transforming our earth. From extraction to end of life, electronics have many negative environmental and public health impacts. The minerals and metals required for electronics manufacture are hazardous to extract from the earth. Moreover, the profits generated from these activities are sometimes used to fund wars or support dictatorial or corrupt governments. Once the manufacturing stage is complete, it takes a great deal of energy to power our proliferating electronic devices. These devices tend to have relatively short lifespans, in part because of rapid technical innovation, but also due to planned obsolescence. As devices are replaced, old devices containing toxic materials can end up in the landfill or be disassembled overseas where there are few measures to ensure worker safety and public health.

Despite this daunting array of problems, promising solutions and strategies are emerging. Certification and rating programs can now help consumers avoid conflict minerals and purchase electronics that are less environmentally impactful. Electronics recycling is more widespread and many states now require manufacturers to fund free electronics collection programs. Individuals are discovering ways to prolong the life of their electronic devices and vibrant open source communities are creating free software that can avoid situations in which a new version of commercial software will not function on older hardware.

While these developments are promising and encouraging, the U.S. still lacks cohesive federal policies and legislation regarding electronics manufacturing, engineering and disposal. Only half of the states have passed electronics product stewardship laws. The right to repair may also be under siege, as some companies are claiming that the underlying software that makes a device or appliance run is proprietary. If such claims stand up to legal challenges then consumers and repair shops would be left unable to fix or maintain electronic devices.

CHAPTER 16 SUSTAINABLE BUILDING

INTRODUCTION

Buildings are the settings for most of our lives. We live in houses and apartments. We work in offices, retail centers, hospitals, schools and factories. And we worship, play and work out in still other buildings. Because we spend so much time in buildings we often forget that they are actually made up of materials just like the packaging around the food we buy. Throughout their life cycle buildings require natural resources just like less durable goods such as electronics and clothing. In fact, the decisions we make about the buildings around us can have much greater impacts on the environment than the vast majority of the day-to-day decisions that we make about other products because buildings are so big and so long-lasting.

We tend to think that building decisions are solely made by architects, contractors and construction workers and Master Recyclers often wonder what impacts they could possibly have or why they should consider spending some of their volunteer hours talking to the public about it. Certainly it will be helpful for residents to understand better how to hire a contractor for building and remodeling so that our values are built into the places we live. But it is also important that we understand the policies that influence the make-up and design of our buildings. It is also crucial to maintain already existing buildings that have so many natural resources invested in them so as to maximize their lifespan and their efficiency.



Whether we own or we rent our homes, are decision-makers or observers in the design and maintenance of our public places, we can all play a part in influencing the policies, planning, building, purchasing, remodeling, redecorating, fixing and maintaining of our buildings.



WHAT IS SUSTAINABLE BUILDING?

Habitat for Humanity defines sustainable, *green*, building as designing and constructing houses that are efficient and durable, that use less resources, are healthy to live in, and are affordable. This definition can be expanded to include our schools, office buildings, apartments, recreational centers and factories.

Sustainable building can:

- Manage stormwater that runs off the building.
- Save energy.
- Utilize alternative energy.
- Include green space and food production.
- Be located near services such as retail shops, medical care, schools, jobs, and transit.
- Locate housing and service buildings away from buildings with high health impacts such as manufacturing facilities.
- Invite community gathering and expression.
- Use non-toxic materials.
- Provide safe places for children to play.



Experts in the area of sustainable building will specialize in many of the subjects above, but this chapter will focus on an area that gets less discussion. We will specifically explore the full life cycle of the materials in buildings and the environmental and social impacts of the decisions we make about those materials.

We will learn that the reduction of materials that make up our buildings can be one of the most important ways in which buildings can be sustainable. Energy efficiency decisions are currently the most important environmental decisions we can make about buildings when it comes to climate. DEQ reports that 86 percent of the total carbon emissions associated with homes are due to energy use (space and water heating, electricity consumption). However, materials production contributes the remaining 14 percent, which is still significant. As we begin to build more and more energy efficient buildings, the percentage of the energy used to make the building materials will become proportionally greater. So along with energy efficiency, the materials we choose will be important in meeting the aggressive carbon emissions reductions necessary to curb climate change.

EMBODIED ENERGY IN BUILDINGS

More natural resources are contained in our buildings than in the products that we use day-to-day. These natural resources include building materials themselves and the energy required to process and transport those materials. Building materials include wood, iron and steel, non-ferrous metals, chemicals, natural gas and petroleum products, minerals such as cement and lime, and glass. Processing these materials requires water, oil and coal. Minimizing the need to extract these natural resources is reason enough to rethink our standard approach to building.

We don't often think about the amount of energy that is embodied in the materials that make up our buildings and the impact that embodied energy has on our climate. **Embodied energy** is the energy consumed by all of the processes associated with the production of a building, from the mining and processing of natural resources to manufacturing, transport and product delivery. Embodied energy does not include the operation and disposal of the building material, which would be considered in a life cycle approach. Embodied energy is the upstream or front-end component of the life cycle impact of a building.

Embodied energy in buildings is important because natural gas, oil and coal are widely used for energy to manufacture building materials and these fossil fuels, when burned, create carbon dioxide (CO₂) emissions, a primary cause of climate change.



Coal factory

The amount of energy embodied in regular household materials is high. The amount of embodied energy contained in an average, 2,000-square-foot home, is 892 million BTUs, the equivalent of 7,826 gallons of gasoline, enough embodied energy to drive an SUV 5.5 times around the earth.

TERM

Embodied energy : *The energy consumed by all of the processes associated with the production of a product, from the mining and processing of natural resources to manufacturing, transport and product delivery.*

RESOURCE

You can find more information on home remodeling and green remodeling options at the website of the National Association of Remodelers (NARI).

LESS IS BEST

The material that doesn't have to be extracted and manufactured is always the least environmentally costly. Below is an exploration of creative ways to think differently about how we work and live so that we can lessen the environmental impact of our buildings. These changes are big, but an increasing number of people are ready to embrace such changes not only to safeguard our environment but also to improve their quality of life. Our local governments are also including zoning and incentives programs that help remove some of the barriers to making these lifestyle changes.

Shared space

Condominiums, town houses and apartments are all types of housing that minimize building materials by sharing common walls, courtyard space, and parking and laundry facilities. Depending on their design, multifamily homes are capable of providing a 10 to 15 percent reduction in carbon emission in comparison to equally sized single family homes. Commercial, non-profit, government and private space can also be combined to minimize materials. Getting a roommate or renting out that extra room are also effective ways to utilize existing space.

Freelancers are also embracing the shared space concept. While working from home can save money, for the sake of creativity, productivity, and sanity, many freelancers choose to rent a desk in an office or co-working space.



Space can also be shared by different types of users. Churches and restaurants will often loan or rent out their large kitchens part-time to food cart cooks. Swap n' plays where families can share toys, bring their children to play, and swap clothing can be housed in buildings with extra or seldom used space.

Such approaches can have the added benefits of creating community gathering spaces, minimizing the need for transportation, and providing easy access to services. While people generally like privacy, there is a growing sense that privacy may come at the expense of feeling more

isolated and having to spend more time earning money to pay for a private home. More and more communities are forming where people choose to live, work and play together intentionally because they see the value of protecting our planet and like the safety and satisfaction that comes from knowing the people that live around them.

Size matters

Along with sharing space, we can reduce materials by living in smaller spaces. DEQ estimates that downsizing from Oregon's average house of 2262 sq. ft. to a still reasonable 1149 sq. ft. could reduce the carbon footprint of that household by between 20 percent and 40 percent. They argue that even making a moderate change in the size of your home can be one of the most environmentally beneficial decisions that you can make.

Tiny houses are a popular new movement where people choose to live even smaller. Tiny houses are typically 100 to 400 sq. ft. While tiny houses may not be for everyone, there are lessons to be learned and applied to how we all use space. Rather than expecting their individual home to meet all of their needs, people who live in tiny houses look to shared spaces nearby for play, entertaining and gathering.

People who choose to live in smaller spaces enjoy the added benefit of freeing up their income for other priorities. As a general rule housing should not exceed 30 percent of your income. In the Portland metro area, however, in 2014 the median gross rent was 33 percent of the gross income of renters and the median for home owners was 30 percent. We are living beyond our financial means, just as we are also overdrawing natural resources from our planet. Neither of these is sustainable. People who choose to live in smaller spaces frequently mention that they enjoy the ability to meet other basic needs with the savings in rent or taxes. Some also report enjoying reducing the amount of hours they have to work to make these payments.



ACCESSORY DWELLING UNIT

2010



2020



2040



■ Live ■ Rent

Evolving housing over time.

Space that evolves with time

We often plan our personal and public buildings for the times when they will be used at their maximum capacity. Often these peak use times, however, are short and some space is then unused most of the time. We can think of our buildings as less fixed and use the space more creatively to maximize efficiency and flexibility. Accessory dwelling units and modular buildings are two examples of how we can make our buildings more flexible so that their use can evolve over time.

An accessory dwelling unit is a really simple and old idea: having a second small dwelling right on the same property or attached to your single-family house. Planners call them ADUs (Accessory Dwelling Units), but they're also known as granny flats, in-law units, laneway houses, secondary dwelling units, and many other names. Such units are making a comeback. ADU's can include:

- An apartment over the garage.
- A tiny house in the backyard.
- A basement apartment.

Flexibility in housing makes sense for environmental, lifestyle, and financial reasons. Many people buy houses to live in for decades. But they often purchase a house to fit their family at its largest. This can leave unused space as family size changes. It is still relatively unusual to consider how the use of space can change over time.

RESOURCE

To learn about incentives and regulations in your city, and how to get started on building an ADU you can visit the website for Accessory Dwelling, a nonprofit group based in Portland.

If you have a reasonably sized house, and an even more reasonably sized ADU, you've likely got a pretty green combination with flexibility as well. You could have your best friend, your mother, or your grown kid, live in the extra building. When you want to stop climbing stairs in a two-story house you can rent it out and live in your ADU. This kind of flexibility and informal support could really help as the nation's population ages. Most people want to stay in their homes as they age, but finances and design can be problematic. An ADU could help aging people meet their needs and enjoy the benefits of aging in a familiar home and community.

RESOURCE

To learn more about commercial options for flexible buildings consult the Bureau of Planning and Sustainability's Tenant Improvement Guide.

Commercial buildings can also be constructed in ways that allow for change of use over time by moving from standardized permanent internal structures to modular fixtures. Retail centers and office spaces can have separators, and electrical and furniture systems that easily come apart and can be moved around to adapt to rotating tenants. Even schools are beginning to utilize this building method. Modular schools can be created to allow for additional classrooms, a library, gymnasium, or additional stories and can be modified and expanded at later dates. When enrollments shift, so can the shape and function of the school's buildings.

REMODELING AND BUILDING CHOICES

Many green building strategies may be considered for remodeling or building a home, and many of these pertain to how materials are used. Making sustainable choices early in the process can reduce the use of resources, reduce waste generation during construction, and also eliminate future waste issues.

Recycled-content building products are made using materials recovered from the waste stream. The feedstock for recycled building materials can come from industrial castoffs, take-back programs, and curbside recyclables. Metro's recycled paint, UltraTouch™ insulation (made from waste denim cotton), and Shaw carpet that incorporates reclaimed plastic bottles are three examples of recycled-content building materials.

Using recycled-content materials closes the loop by turning waste into usable products, thus saving energy and natural resources, and often reducing pollution, including greenhouse gasses. However, these products are not without their challenges, such as their questionable future recyclability. For example, decking made from scrap wood and plastic waste will last longer than wood, but it's very difficult to recycle this composite material when the time comes to replace the deck. Often an even better choice is to use salvaged material. **Salvaged** material does not require the energy to process materials like recycling does and is often reuseable once again, unlike composite materials made from recycled resources.



Salvage Works lumberyard in Portland

TERM

Salvage: *The act of rescuing materials for reuse in the original form or the resulting material.*



Action Tips:

- When possible prioritize using salvaged materials.
- Select recycled content materials as a second best option.
- Choose durable, long-lasting products.
- Consider the future recyclability of recycled materials used.
- Ask about purchasing remnants of materials





Designing for disassembly facilitates the future reuse or recycling of select materials, even an entire building. For example, future harvesters will be better able to salvage lumber from today's dormer addition if headers and beams are fastened together with screws or nails, rather than the glue commonly used in modern construction.

Action Tips:

- Reduce the variety of materials.
- Prioritize materials for ceilings, walls, floors and cabinets that have smaller components that can easily be removed, repaired or swapped out.
- Use screws instead of adhesives.
- Select materials that are durable and long lasting. Some products may look new and slick, but are made cheaply with moving parts that break easily.
- Build so that common hand tools (hammer, crow bar, etc.) can be used in disassembly.
- Leave fasteners exposed.



Dematerialization simply means using fewer materials. This concept applies to all stages of production, including: resource extraction, design, manufacturing, and installation. Fewer materials use fewer natural resources, consume less energy, save money, and create less future waste.

Action Tips:

- Consider skipping the drywall for ceilings and walls that share other interior space and leave the main structure exposed.
- Use framing techniques that require fewer boards per wall.
- Limit the use of finishes.
- Landscape with native and hardy plants that require less maintenance, water and chemicals.
- Site, orient, and design buildings to use daylight as the primary lighting source.
- Do without ... a garage, a second bathroom, or an expanded kitchen.
- Think small; create multi-use spaces by adding creative storage and lounging options (e.g., Murphy beds, under-stair cabinets).
- Caution: Do not choose to use less material if the material can make the building more energy efficient. Insulation and finished walls are important ways to keep heated space warm.



In short, reduce, reuse, recycle is as vital a motto for building and remodeling as it is for everyday consumption.

TAKING CARE OF WHAT WE HAVE

Practicing a little maintenance and fixing problems before they get out of control can save a lot of time and money and maximize the embodied energy in building materials by ensuring that they last as long as possible. If you rent, you can still help conserve the materials in the buildings and keep your family healthy by doing a few small maintenance tasks yourself and by informing the property owner of bigger problems early. In Oregon, you can also arrange with the owner or property manager to fix essential items yourself and dock the costs off of your rent.

Got mold?

Moisture in or around the house can contribute to allergies or asthma and also cause structural damage in a home's walls, attic, foundation and exterior. In an average year, 22,000 gallons of rainfall will hit a 1,000 square foot roof in our region. With that amount of moisture, proper water management is essential to protect building materials. Here are a few easy ways to reduce moisture problems that everyone can do:

- **Foundations.** Ensure that landscaping drains water away from foundations. Regularly caulk areas where cement slabs sit next to the foundation. Clear debris from gutters and downspouts in the spring and fall, and replace parts that have rusted or fallen off. Make sure that downspouts drain water at least 6 feet away from a basement and 2 feet away from a slab or crawl space. Place a plastic vapor cover over dirt in a crawl space.
- **Moisture from interior sources.** Always use fans while taking a shower or in the kitchen while cooking. Ensure that the dryer vent sends moisture outside. Open windows and doors when the weather is warm and dry. Allow space between walls and furniture for ventilation. Have HVAC systems regularly serviced and repaired for proper air circulation.
- **Leaks.** Regularly check pipes to refrigerator, hot water heater, faucets and drains under sinks and laundry spigots. Look for leaks on roof, attic, behind gutters, and around windows and doors.
- **When mold appears.** Utilize fans or dehumidifiers and immediately remove carpets, drapes or furniture that has mold before the mold escalates. Professionals can also be called to clean mold.

Tool libraries and hardware tool rentals

You don't have to have a fully equipped toolshed to maintain your house or apartment. There are currently four Tool Libraries in Portland that loan a wide variety of tools to community members free of charge. Tool libraries benefit residents by reducing the costs of maintaining and improving the places in which we live, work, and play.

RESOURCE

For more on renters' rights visit Oregon's Community Alliance of Tenants (online).



The North Portland Tool Library, Southeast Portland Tool Library, Northeast Portland Tool Library, and Green Lents Community Library all have websites where you can find more information.

Many hardware stores also rent tools. From large companies such as Home Depot to smaller stores, it is worth contacting your local stores and seeing what tools they rent.

CONSTRUCTION AND DEMOLITION

TERM

Deconstruction: *the systematic disassembly of a structure in the opposite order it was constructed to maximize salvage of material for reuse.*

Buildings in the Portland metro area traditionally get built, demolished, disposed of, and built again with little consideration of waste reduction. Waste sort studies at local construction sites reveal that, while about 90 percent of the materials used in buildings are recoverable, only 50 percent are recovered. Construction generates the third largest waste stream in Oregon.

Construction and demolition waste in the metro region

The sources of construction and demolition (C&D) generated waste vary greatly in the Metro region. And the proportion of waste from residential, commercial, mixed use and industrial construction activity varies between rural and urban areas. However, several clear themes emerge from studies of building permit data:

- The majority of money in the region is spent on new commercial construction and commercial remodeling.
- Residential remodeling in the region is underreported due to unpermitted, bootleg activity, which is probably several times more prevalent than permitted projects.
- Little solid waste is created in civic projects like bridges and roads.

Deconstruction

Deconstruction is the systematic disassembly of a structure in the opposite order it was constructed to maximize salvage of material for reuse. Deconstruction is most often done by hand with machinery only being used to lower walls or load materials. The method of mechanically demolishing buildings, and then attempting to pull out materials for recycling, often results in damaged and mixed up materials, to the point where materials must be used for very low environmental benefits like burning for fuel. Deconstruction, on the other hand, results in whole pieces of building materials that are predominantly intact and can be reused in other sites.



Credit: Lovett Deconstruction

There are many benefits to deconstruction:

- The deconstruction of a 2,000 sq. ft. home can yield 6,000 board feet of lumber, enough for the construction of 660 sq. ft. of affordable housing. This amount of salvaged lumber is equivalent to 33 mature trees, or the yearly output of 10 acres (that's 7 football fields) of planted pine.
- Deconstruction supports six to eight jobs for every one job associated with traditional mechanized demolition.
- Salvaging reusable material supports the local economy, creates viable local enterprises, and offers an affordable option for residents and businesses to acquire quality used building materials such as old-growth lumber.
- Deconstruction offers greater carbon benefits by preserving the embodied energy of existing building materials and avoiding the creation of greenhouse gases associated with landfilling waste.
- When salvaged building materials are donated to a non-profit such as the Rebuilding Center, there is a tax deduction for the materials if they are donated.
- Deconstruction companies and non-profits often have competitive bids against companies that use conventional demolition methods because they pay less landfilling fees and receive money from the sale of salvaged materials.



Credit: Lovett Deconstruction



First deconstruction law in the country

Antique glass doorknobs, wood framing from long-gone old growth forests, basket weave bathroom tiles, and inlaid hardwood floors are all beloved touches in old homes. Instead of stripping our forests and land for natural resources to decorate and build our new homes, we can harvest materials at local reuse centers like the ReReBuilding Center and Habitat for Humanity ReStore.

Recognizing the value and benefits of salvaging building materials for reuse, Portland City Council approved in July 2016 the first ordinance of its kind in the country that required development to fully deconstruct homes built in or before 1916 instead of demolishing them. In 2020, the ordinance was expanded to 1940 or earlier, resulting in approximately over 100 deconstructions or about two-thirds of house demolition permits. These houses are taken apart by hand, allowing materials to be separated for reuse and recycling while creating pathways to deconstruction careers. The Bureau of Planning and Sustainability also created incentives to use deconstruction and developed training for workers and contractors who want to learn this trade.

“Our goal is to preserve neighborhood character and affordability by discouraging demolitions, but when buildings do come down, that work should still serve the public good. Taking apart buildings in a way that allows for salvaging valuable materials for reuse benefits our community, economy, and environment.”

— Charlie Hales, Mayor
City of Portland, 2013-16

RESOURCE

To find contractors, learn about trainings, and find incentives you can visit the City of Portland, Bureau of Planning and Sustainability's webpages, **Explore Deconstruction.**

Present C&D waste practices

Successful waste reduction planning for construction and demolition requires a good understanding of present practices. This section looks at what kinds of C&D activity takes place in the metro region, what materials are generated, and how the materials are usually disposed of.

Building materials in the waste stream

Over 250,000 tons of C&D materials are generated each year in the region. These are primarily wood, metal, corrugated cardboard, concrete, drywall and roofing. Some new materials and composites are difficult to recycle, but they're a small part of the dry waste stream. Pure loads of concrete, asphalt, and dirt are not counted as part of the solid waste system tonnage, as they would eclipse the quantity of solid waste in the system many times over.

Typically, the generation of individual materials follows a predictable schedule (for example, all drywall scrap is generated in the two days after the drywall is installed).

The quantities of the six C&D material types are also very consistent and predictable. Such predictability in types, timing, and amounts of materials could facilitate source separation for recycling.

The demolition phase of any construction project is usually where more than 60 percent of C&D debris is generated. This makes demolition activity a huge opportunity for recycling and reuse. Renovation and remodeling comprise the next largest debris-generating activity, making this yet another area with great potential for waste prevention and reduction.

Hauling

The building industry presently relies on three primary methods for hauling C&D debris: drop boxes, self-haul, and a cleanup contractor. Many builders use a combination of these options, depending on the materials being used and the phase of the project.

To encourage C&D waste reduction, a successful education program must include source separation strategies for use with all three hauling methods. Contractors' hauling choices will determine whether separating recyclables on site is possible, or whether separation will have to happen at a Materials Recovery Facility that serves C&D customers.

- **Drop box.** About half of the region's C&D tonnage is hauled in drop boxes, which are hard to move, bulky, and incur daily rental fees. Drop box hauling tends to be used during the demolition phase, which produces the bulk of material and can be done fairly quickly. Contractors usually mix all debris in one drop box.

One way to source separate with this hauling method is to use a box for each material. However, there are many challenges that make this

option unfavorable to contractors. Larger projects may still have limited space for multiple boxes. Small projects often only generate enough debris to fill one box. Multiple containers for source separating in these conditions usually cost more than one large container where debris is mixed.

- **Self haul.** The second most utilized method is self hauling. Contractors use everything from a pickup or trailer load to a 20-yard dump truck. Source separation is usually much easier with this hauling technique as materials can each be hauled directly to the proper recycler.
- **Clean-up contractor.** This specialized service provider comes to the job site several times over the life of the project to collect, sort and haul off debris. Contractors usually pay more for this service, but it takes waste management off of their list of things to do and makes a sub-contractor responsible for the entire task. Clean-up contractors work best on new single-family residential developments of five houses or more.



Disposal

Mixed dry waste (also known as limited-use) facilities accept loads of mixed paper, wood, metal, and glass for processing. They do not accept food or other organic waste. Some accept both source-separated recyclables and mixed dry waste. Mixed C&D trash is sorted for recycling by these facilities. On average, 25 to 30 percent of mixed dry waste loads are recovered for recycling at dry waste facilities.

In the metro region, the Enhanced Dry Waste Recovery Program (EDWRP) requires that all mixed dry waste be delivered to a Metro-authorized dirty MRF that will separate the waste into marketable components and that dirty MRFs must ensure that their processing residual contains no more than 15 percent of wood, metal and cardboard. Portland has additional requirements. For all building projects within the city where the total job cost (including both demolition and construction phases) exceeds \$50,000, the general contractor shall ensure that 75 percent of the construction waste produced on the job site is recycled.



Metro placed a suspension on the EDWRP requirements for wood recycling because of the closure of the WestRock paper mill in Newberg that used to burn 85% of the region's urban wood as boiler fuel. WestRock's closure means that painted and treated wood generated in the Metro region is now being disposed of. Two other, smaller paper mills in Washington continue to accept clean and unpainted/untreated wood from the Metro region as boiler fuel to produce steam and electricity.

As part of an effort to move wood waste up the waste hierarchy, Metro began a multi-phase project in 2014 to identify and develop Metro area alternative end-markets for wood waste. Likely first steps will include an increased focus on recovery of reusable wood pieces at Metro Transfer Stations.

To ensure the safety of customers and the public, Metro requires paperwork for all loads of construction, remodeling or demolition waste for materials that may contain asbestos. Loads of construction, remodeling and demolition debris brought to Metro transfer stations is thoroughly screened for materials that may contain asbestos. Find information about how to identify asbestos and protect yourself, your family and neighbors from it on the Department of Environmental Quality's website.

Construction projects will find that most facilities that traditionally take wood waste or construction and demolition materials will either refuse the material or require proof that it does not contain asbestos. Visit Metro's Find a Recycler (online) to get the latest information about what is accepted in your area.



Metro's programs, tools, and resources for the construction and demolition (C&D) sector build on 30 years of research, demonstration projects, infrastructure grants, education programs, and partnership work with the building industry and workforce development organizations. Current programs include:

Metro Construction Industry Partnership Project

Metro partners with the region's construction industry associations and green building associations to encourage source separated recycling and building material salvage practices. This ongoing outreach effort has media, retail, and public project components all designed to support C&D waste reduction. (Surveys have shown that builders now look to Metro as a trusted source of information about recycling and that they are consistently using Metro's Toolkit and other resources to make decisions about waste and recycling.)

Metro Find a Recycler

The on line Metro Find a Recycler includes providers of reused building materials, deconstruction services and construction debris recycling options. This resource is updated daily and lists over 100 recycling and reuse facilities that accept C&D materials.



CONCLUSION

Most Master Recyclers will be talking to residents who are not contractors or architects, but who may be considering a remodel or other house project. You can still help get the word out about these important ways to minimize the need for new resource intensive materials, to maximize the use of salvaged materials, and to implement other sustainable building practices.

Here's a quick list of questions you can encourage people to ask their contractor or consider if they are doing the job themselves:

- Can you salvage any materials on this job to reuse or donate/sell?
- Are you separating or mixing recyclables?
- Where are you taking materials for recycling/reuse?
- What can you do to reduce waste?
- Question whether replacement/upgrades are the best options.

If you are interested in more formalized opportunities for outreach and education there are certainly many possibilities. Information about remodeling or construction is generally most welcome and effective when people are actively considering a remodel or buying a home. The Rebuilding Center regularly requests help from Master Recyclers to staff information booths at home and garden and remodel shows because people are actively seeking ideas at

these events. Look in the Master Recycler newsletter for the next opportunity. Home buying fairs are other community events where people are just learning to take care of the biggest purchase of their lives. Consider looking up these events and contacting the organization to see if they would let you set up a booth. You can check out the Remodel-it Green kit to act as your display.

Master Recyclers have also worked on personal projects focusing on green buildings. Two of the tool lending libraries had Master Recyclers in their founding teams. One Master Recycler was the administrative assistant at REACH. She worked with the Green Building team there and the City of Portland Sustainability at Work program to develop and pass a Green Building Policy so that all future affordable housing will use green building practices. A team of Master Recyclers in Hillsboro worked together to make changes to their old church and followed steps to get their building certified as a Green Sanctuary through the Unitarian Universalist Association.

Master Recyclers have and will continue to play important roles in our collective transformation to more sustainable building (and dwelling) practices. Given the sheer volume of natural resources, pollution and energy required to make these structures and their importance in our daily lives, these it will be volunteer hours well spent.



SECTION 4: MASTER RECYCLER VOLUNTEERS

- 1. The Master Recycler Commitment**
- 2. Effective Tabling and Presentations**
- 3. Cultural Competence**
- 4. Materials Management at Events**
- 5. Displays and Literature**
- 6. Places to Volunteer**

Glossary

Connect in the community, make a difference, find your niche. Find tools, tips and resources to hone your skills so that you can be an effective Master Recycler.

CHAPTER 17 THE MASTER RECYCLER COMMITMENT

- Ongoing support
- Certification
- What counts as Master Recycler volunteer hours

CHAPTER 18 EFFECTIVE TABLING AND PRESENTATIONS

- Communication for change
- Feel prepared with tools and resources
- Making it interactive

CHAPTER 19 CULTURAL COMPETENCE

- Gaining awareness of cultural differences
- Understanding how inequities affect communication
- Building knowledge and skills in cross-cultural communication

CHAPTER 20 MATERIALS MANAGEMENT AT EVENTS

- Making our community gatherings sustainable
- Best practices for recycling, compost and waste prevention
- Planning and evaluating event sustainability plan

CHAPTER 21 DISPLAYS AND LITERATURE

- Find displays, literature and other resources you can borrow
- Organized by location and topic

CHAPTER 22 PLACES TO VOLUNTEER

- Find a local community that would welcome a Master Recycler who wants to settle down and do some deeper volunteer work
- 30 partners listed with contacts and volunteer project ideas
- Indexed by location and topic

GLOSSARY

CHAPTER 17

THE MASTER RECYCLER COMMITMENT

INTRODUCTION

Did you know that volunteering can make you happier faster and easier than material wealth? According to a Harvard Health publication, the more people volunteer the happier they are.

Compared with people who never volunteered, the odds of being *very happy* are 7 percent higher among those who volunteer monthly and 12 percent higher for people who volunteer every two to four weeks. Among weekly volunteers, 16 percent felt very happy — a hike in happiness comparable to having an income of \$75,000 to \$100,000 versus \$20,000, say the researchers.

Of course you already knew the value of volunteerism. You have joined a volunteer corps of Master Recyclers who have already volunteered more than 83,000 hours.

Congratulations! You're about to complete the Master Recycler course. Once you do, you will receive a badge that lets everyone know that you are officially a Master Recycler. But this formal training is just the beginning of your experience as a Master Recycler. The Master Recycler Program is much more than just a training course. We are a community education and action volunteer corps. It is our goal as Master Recyclers to inspire our co-workers, friends, family and neighbors to bridge the gap between what they know and what they do.



Volunteer corps

“If you go out and make some good things happen, you will fill the world with hope, you will fill yourself with hope.”

Barack Obama



*For more information on the relationship between volunteering and happiness you can consult Harvard Health's **Simple Changes, Big Rewards** (available online).*

You and your fellow classmates are going to take the information and techniques you have learned and apply them from Canby to Forest Grove, North Portland to Welches. You will be sharing what was most meaningful for you and translating it into the language, culture and actions that make sense in the diverse communities you represent.

Your next step, completing 30 hours of volunteer activities, will take you from the classroom and into the community as an ambassador of sustainability. Some of you may be feeling a little nervous, while some of you are raring to go. This last section of the Master Recycler Handbook is designed to serve you no matter where you fall on that spectrum.

ONGOING SUPPORT

When you volunteered to become a Master Recycler, you made an active commitment to decrease waste in the region. But you are not making this commitment alone. You're joining 1,800 other Master Recyclers including a corps of Master Recycler Mentors, who are available to support and encourage you.

You have support staff to help, as well. They will continue to help by providing and/or maintaining the following resources:

- **The Master Recycler Handbook.** This handbook was designed to be a resource when you are volunteering. New editions will be available on the Master Recycler website.
- **The Master Recycler website** includes a volunteer opportunity calendar, a news blog and postings of related jobs.
- **A Master Recycler Mentor** will send an email greeting shortly after the course. This person will answer questions, connect you with the Master Recycler community, and help you troubleshoot. Many of these Mentors have hundreds of hours of experience and all of them have demonstrated their desire to help the next generation of Master Recyclers.
- **Quarterly open houses and tours** to keep you abreast of the latest trends and help you continue to build your outreach skills.
- **A monthly newsletter** with pertinent articles and volunteer opportunities.
- **An easy way to report** your hours and a database that tracks your progress.
- **Brochures, flyers and demonstration kits**
- **Program and local government staff** who you met through the course are excited to provide assistance to Master Recyclers.
- **The Metro Recycling Information Center** at 503-234-3000 and online is a great resource for recycling, waste prevention, and toxics information.
- **Master Recycler facebook page and Official Portland Area Master Recyclers group:** Keep up on the relevant events and articles. See when your fellow Master Recyclers achieve milestones and network on the facebook group.
- **Master Recycler YouTube Channel**
- **Master Recyclers of Color (MRoC)** monthly meetings, facebook group, google group is for anyone who identifies as BIPOC.

MASTER RECYCLER CERTIFICATION

As mentioned, upon completion of the Master Recycler course, you will be an official Master Recycler and will receive a badge. The next step is to complete 30 hours of community outreach to receive the Master Recycler Certificate. This Certification is helpful to include in your résumé. The Program Manager will issue an official Certificate, but if you would like a letter of recommendation or verification letter for applications, please contact the manager at masterrecycler@oregonmetro.gov



But you don't have to stop there! People from the very first class continue to volunteer. There is a recognition program for those who volunteer more. The Centurion Club is made up of Master Recyclers who have reported more than 100 hours. Quincenturions have reported 500 hours or more and Millennials have reported 1000 hours or more. The first two groups receive an additional button to wear next to the badge. Millennials will receive a license frame that says "Volunteer Master Recycler."

WHAT COUNTS AS MASTER RECYCLER VOLUNTEER HOURS?

Program Mission Statement

The mission of the Master Recycler Program is to bridge the gap between awareness and action by providing the information and personal contact needed to activate people to reduce solid waste in their homes and workplaces.

Guideline for Volunteer Hours:

To help us fulfill our mission, volunteer hours must meet the following criteria:



- Implement a system or program that diverts materials from the waste stream.
- Provide direct community contact to educate and inspire people to practice resource conservation



- Provide a meaningful educational and/or skill enhancing experience for the volunteer.

Hours for the Metro Master Recycler program count only when they take place in Clackamas, Multnomah or Washington County.

GETTING STARTED

We have a great success rate of Master Recyclers completing their 30-hour commitment. About two-thirds of people who have taken the course have completed their 30 hours. Most of the remaining third have reported some hours and are still working toward their certification.

It is recommended to start your volunteer time by signing up for volunteer opportunities that you will find in the Master Recycler newsletter and calendar. This will help you become familiar with existing programs. You will find that some of the opportunities will have you working alongside local jurisdiction or non-profit staff or mentors. They will usually bring the needed equipment with them and you just need to show up and be ready to talk about the topic. These are the best types of opportunities for anyone who is feeling a bit nervous or who would like to be more familiar with topics before going it alone. Other opportunities found in the calendar may require that you check out needed materials and set everything up. You can do these on your own or invite a fellow classmate to join you. There are over 40 community partners that will be delighted to put you to work in their projects. In fact they are counting on you!

More than half of Master Recycler hours are individual projects. This is where much of the magic of the program lies. Research shows that people are most likely to make a change in their lives when inspired by someone they know. So focusing projects where you work, live, play and worship will maximize your potential in making real change. These next few chapters will help you create and design your own projects.

REPORTING YOUR HOURS

Your direct contact with others in the community is a powerful tool for change. To keep the Master Recycler program vital, it is important to track its effectiveness. Reporting your hours not only helps us track your individual hours, it also allows us to tally the combined efforts of Master Recyclers in order to demonstrate our collective impact on waste reduction in the region. Please remember to report your hours regularly.

To report your volunteer hours, you can:

- Use the electronic report form on the Master Recycler website.
Password: recycler.
- Contact the Master Recycler Program Manager at 971-352-2895 or by email: masterrecycler@oregonmetro.gov

When you report, please provide the following information:

- Your name and phone number/email.
- Date of event.
- Name/description of event.
- Number of outreach hours (rounded to the nearest quarter hour).
- Number of preparation hours (include studying, set up, break down and travel).
- Number of people that you directly contacted. Count how many people attended your event or presentation. For tabling, keep a tally of conversations as you go. Kits often include a count clicker. Or you can use a smart phone tally counter. You can even tally on a piece of paper.
- Number of people you think attended the event (or if this is a work project how many people work there, or school project how many attend, or multifamily community how many live there).
- The topic of the activity (e.g., residential recycling, plastics, e-waste, compost).
- The type of activity (e.g., table, presentation, event participation).
- The display/demonstration kit(s) you used.
- Any comments you have about the event.

Logging long-term projects

The forms discussed above are easiest for one-time projects. If you are working on a longer-term project that takes several months, or even years, to complete you have a couple of options for reporting your hours. You can report them as you go along or you can keep a tally sheet or excel spreadsheet and report every few months. Waiting until the end of your project to track the data is not recommended. You will not remember how many people attended meetings or how long you spent on a task.

Here is an example: You are coordinating an earth day celebration at your work. All of the work you do on this project counts towards your hours from talking with leadership to pitch the idea, forming a committee, regular meetings, setting up the space, ensuring recycling at the event, contacting potential speakers and information booths, promoting the event, organizing volunteers, and writing up an evaluation.

Some Master Recyclers will go to the website and fill out the form every time they write an email or have a meeting. Most prefer to periodically send in an excel spread sheet that includes the data listed above.



CONCLUSION

The Master Recycler sponsors (Metro, City of Portland, Clackamas and Washington Counties, DEQ and Waste-Free Advocates) and over 40 partners thank you for your commitment! We look forward to seeing you out in the community and hearing back about how things are going.

These next chapters will provide resources, tips and information on:

- Presentations and tabling
- Event recovery planning
- Resources
- Places to volunteer



INDIVIDUAL PROJECT PLANNING FORM

NAME			
ADDRESS	CITY	STATE	ZIPCODE
EMAIL	PHONE (DAY)	PHONE (EVENING)	

Goal Statement (what you plan to accomplish):

Project Summary:

Specific groups of people you want to work with (example: people who live in your apartments, property managers, principals and students):	Means of contacting them:
--	---------------------------

Resources needed (time, additional volunteers, materials):	How will you determine (count) the number of personal contacts?
--	---

How will you know if your project is a success? What criteria will you use to measure your project's effectiveness?

Any other information you would like to share about your project?

CHAPTER 18

EFFECTIVE TABLING AND PRESENTATIONS

INTRODUCTION

We learned in the Behavior Change chapter that it usually takes a personal interaction or connection for people to commit to new actions. A person can read and see in books, magazines, brochures, movies and social media that their actions can make a difference, but it typically takes hearing from a trusted source for them to really make change happen. Person to person contact also helps address specific concerns and questions. While media materials and messages can be tailored to fit the majority of the people in a community, they can't match the responsiveness and engagement of conversation and interaction. A person can listen, answer questions and identify tools that respond to another person's situation and needs. A person can share stories about how they also struggled, and how they were able to succeed in making changes.



Elizabeth Erickson tells her story

If we ensure that the messenger is armed with knowledge and access to effective resources then we have a truly powerful formula for change. This is why it is so important for you to share what you know as a Master Recycler.

Master Recyclers use a number of tools and techniques to connect with the community about resource conservation on a personal level. Common strategies include staffing informational tables (Yes, “tabling” is a real verb!) and offering presentations. This chapter provides information to help you effectively utilize these two strategies. It will explore effective communication techniques for behavior change in the context of resource and materials management. In both group and individual projects, understanding the nuts and bolts of effective communication will increase your success at motivating others to make positive changes.

COMMUNICATION FOR CHANGE

When preparing to staff an information booth or offer a presentation, it is important to be thoughtful about what you want to focus on saying and what materials or resources you can bring with you to help support your message. You have a limited amount of time to reach people and make a meaningful connection. Depending on the setting, you may be competing with music, food, and other exhibitors. At one County Fair, Master Recyclers reported that their booth was next to the Humane Society. “It was hard to compete with a kennel full of cute puppies!” said a Master Recycler who was there.

Despite the potential distractions, Master Recyclers report feeling most satisfied when they prepared ahead of time and genuinely connected with the people they talked with.

To think through how you can be brief and still connect with people, let’s revisit the checklist of positive and effective ways to communicate how people can take action that was in the behavior change chapter.

Behavior Change Checklist

- Identify one or two go-to positive actions you want people to do.
- Identify the barriers to the action.
- Identify who you are asking to do the action and what they value (for example, personal well-being, family, health, saving money, protecting nature, feeling connected to the community).
- Create messages and tools that help overcome barriers and reinforce benefits based on their values.
- Encourage people to try it.
- Set goals and give feedback

Remember that it is helpful to be as specific as possible with the action you choose to focus on. Rather than just encouraging people to recycle, compost or reduce waste, consider talking about keeping glass on the side, collecting food scraps while you are preparing meals, and sharing power tools. Try also to find out specifically who you might be talking with. If you are presenting to a group, ask questions about their interests, concerns and demographics.

Being specific will help you focus on the exact barriers and benefits that might be associated with the action and population you will be meeting. It will give you clues as to what tools and resources will be helpful in solving problems and help you think through how making these changes will be beneficial to the people you will be meeting. Remember, in our region, there are many reasons besides the environment that people might choose

to take some of these actions. People have said that recycling, sharing, composting, and using non-toxic alternatives also improves their sense of well-being, gives them more time with family, keeps their family and themselves healthier, connects them with the community, helps them feel like they are doing their part, shows how smart and resourceful they are, and saves money and time.



Cindy Correll shares the Include the Food message

Most of the campaigns by Master Recycler program partners utilized these techniques in their design. If you look at the City of Portland's Be Cart Smart campaign or the Eat Smart, Waste Less campaign in Beaverton, Gresham and Washington County you will see that they provide you the actions, benefits and tools needed to overcome barriers.

Your experience at an information booth or providing a presentation for these campaigns will be more effective (and fun) if you take some time ahead of time and use the behavior change checklist on the previous page to understand what this campaign specifically wants people to do, why they would want to do it, and how to use the tools that are provided. Your top messages will come from a combination of describing the actions and the benefits in taking the action.

Behavior science aside, the conclusion in the behavior change chapter was quite simple: if you listen, connect, tell your story and listen to others' stories, you will likely make the human connection that is so vital.

INFORMATIONAL TABLES

Tabling, the act of staffing an informational booth, is one of the most popular and effective ways that Master Recyclers reach and motivate people to reduce their waste. Some Master Recyclers sign up for tabling assignments that the Master Recycler Coordinator sets up. Others discover or arrange for tabling opportunities in their own communities. Some work with ready-made, topic-specific kits, while others like to create their own displays.



Yvonne Garcia explains backyard composting

When signing up for a prearranged information table:

- Instructions will be sent to you including directions, top messages and information on using the kit.
- You may be asked to pick up and/or drop off the kit.
- You may table with staff from Metro, Clackamas or Washington County, Mentors or other organizations. This is a great way to start out and learn, and it's also a chance to network with people working in the field. If you like working with them, you can give them your contact information and ask them to contact you directly when volunteer opportunities arise on their projects.
- You'll often work shifts with fellow Master Recyclers.

When arranging a table yourself, check with the event coordinator ahead of time to ask:

- Does it cost money?
- Do they provide a table and chair or canopy for rain and sun protection?
- Where exactly is your space, and how large is the table?
- Will you be expected to share a space?
- How many people attend this event?
- What languages are generally spoken at this event?

Basic tips will make your tabling outreach more successful:

- Before you arrive, identify key messages to include in every conversation. Stay on message when you're not answering questions.
- Review commonly asked questions on your topic before you start.
- Arrive on time. Bring water (hopefully you'll be talking a lot!).
- Always wear your name badge for Master Recycler projects.
- Don't just sit there; do something, even if the event is slow. Make eye contact as people pass by. Displays and literature are meant to assist you to communicate; not to do it for you.

- Think of some catchy phrases or introductory sentences that might attract people to the table. For example: “Would you like to guess which materials go in which container?” or “You look like you have a burning recycling question!”
- Stand up while talking to people. It’s easier on your neck and helps you make eye contact.
- Keep your table neat, with the most important pieces in the front. Bring paper weights for outdoor events, even on non-windy days. It takes only one gust to scatter your literature all over the place.
- If you’re working with a partner, take turns answering questions so that both of you get to interact with the public. Don’t jump in when it’s not your turn, unless your partner asks you to.
- Keep your messages positive. Talk about a wide range of benefits to taking action.
- Keep a tally of conversations as you go. Kits often include a count clicker. Or you can use a smart phone tally counter. You can even tally on a piece of paper.

Here are some pointers to make your own table a success:

Some Master Recyclers set up a table at their favorite community event, their kids’ harvest festival or science fair or farmers market. You can even do it once a month for the summer and rotate topics!

- Check with the Master Recycler Program Manager to ensure there isn’t already a Master Recycler working at the event you have in mind. The Program Manager may also have contact information for the organizers of the event.
- Consider announcing that you would like a partner in the Master Recycler newsletter and/or website by contacting the Master Recycler Program Manager.
- Consider sharing a table with a Master Gardener, if they already participate in this event.
- Review the next chapter for pictures and descriptions of displays and literature that are available to Master Recyclers throughout the region.
- Make sure that your display, information and literature are correct for the jurisdiction in which the event takes place.
- Keep it simple. Too many topics and too much literature can confuse your message.



Colleen Johnston and Melissa Baker made their own Can I recycle it booth

PRESENTATIONS AND DEMONSTRATIONS

Often, Master Recyclers who want to make changes in their workplaces, multifamily housing, religious organizations, or other community organizations find that presenting to groups is persuasive. As with tabling, some presentation opportunities are prearranged for Master Recyclers. Some Master Recyclers enjoy sharing their knowledge and passion for waste reduction in presentations and demonstrations, while others find the idea intimidating; we encourage you to try it and discover whether it's a good fit for you.

You're welcome to call the Program Manager, your local jurisdiction liaison, or your Master Recycler Mentor for advice, to rehearse your speech, or just for a confidence booster. Most people who take on the challenge find it very rewarding. Below are some tips to make your presentation more successful.



Betty Benson presenting with props

Questions to ask in advance if you are presenting to a group you don't know

- What is the exact location and time of the presentation? (If needed, ask for directions.)
- How long do I have to present?
- How many people are expected to attend?
- Should I bring brochures in languages other than English? Will interpreters be provided? (If they do not have the resources for an interpreter, contact the Master Recycler Program Manager to see if you can partner with a Master Recycler who speaks that language.)
- How much does this group already know about this topic? Is there anything in particular that you or the organizers hope to accomplish with this presentation?

Presentation preparation

- Keep it simple. Use PowerPoint presentations only if you have a table, projection surface, reliable equipment and access to electricity.
- Review the resources listed in the next chapter to select literature (handouts) to supplement your presentation.
- Consider checking out a kit to use as a visual aid or provide a game.
- Practice using your visual aids with someone you know and time yourself to make sure you are within the allotted time. Be sure to leave time for questions.
- Arrive early to have plenty of time to set up and familiarize yourself with the setting.



Kris LaMar brings her worm bin wherever she presents

PowerPoint

- Most of the time, PowerPoint presentations are not the best way to connect with people as they tend to reduce your chance for dialogue. But in some settings like a lunch presentation at a workplace, you might decide to use this tool.
- Use PowerPoint presentations only if you have a table, projection surface, reliable equipment and access to electricity.
- Keep in mind that your PowerPoint slides should supplement your presentation and should not function as notes for you, the speaker. Do not simply read slide after slide.

Presentation content

- Carefully plan the beginning of your presentation. The first few minutes are important to capture your audience's attention. Tell a brief story or ask people to share their stories about success or challenges in taking action. If you are funny, make the story funny. Include why you made the changes you will be talking about.
- Use real experiences that people can identify with, rather than loads of statistics. Tell your own story whenever possible. Talk about when you struggled to get it right and how you made a change.
- Keep it positive. Studies show gloom and doom messages discourage people rather than motivate them to take action.
- Use an outline and key messages rather than trying to memorize a speech word for word.
- Think about what will encourage this particular audience. Parents at a PTA meeting will have different interests (for example, packing school lunches) than people attending a discussion at a senior center (for example, effective food storage).
- Use the worksheet on the next page to plan the content and outline of your presentation.



Cecelia Warner presents to Adelante Mujeres

RESOURCE

For more information on PowerPoint and other visual aids you can consult **7 Tips to Create Visual Presentations** (available online).



Christy Morales plays a recycling game with kids

PRESENTATION PREPARATION WORKSHEET

What action do you want people to take? _____

Who is your audience? _____

List three key messages you want them to hear:

1. _____

2. _____

3. _____

What kind of kit and/or literature would help reinforce the message? _____

Outline the main points for your presentation: _____

Interactive communication

Whatever the type of outreach, open dialogue is often more compelling and more likely to drive social change than facts and figures. Hence, the most important part of your presentation may be the question and answer period after your short talk.



Leah Schrod interacting with kids

You probably can't cover all of the concerns or burning issues that your audience may have. But opening your presentation to dialogue will help you to better understand and address some specific concerns that may be preventing your audience from making important changes.

Pointers for a successful question and answer session

- When you practice your presentation with someone you know ahead of time, ask your "pretend audience" to ask some questions so that you are not just practicing your presentation, but also preparing to have a productive question and answer period.
- Listening is the most important part of communication. Try to determine what exactly the person is asking? If someone asks "Why can't we put plastics on the curb that have the same number as bottles and tubs?" don't respond with "You can recycle those plastics at these locations..." They'll still wonder, "Why not at the curb?" Answer the concern before you offer solutions!
- Review any sections of the handbook that pertain to your topics.
- Contact a Mentor, your local government liaison, or the Program Manager to find out the latest FAQs being asked on your topic.



Josy Wright adds some street theater to her message

- Don't be afraid to say, "I don't know." As a Master Recycler, you know a lot more than the general public, but we don't expect you to know everything! What you can do is direct people to good information sources. This is a key function of Master Recyclers. The Metro Recycling Information Center is usually your best resource. You can even hand out magnets (available from Metro) imprinted with the RIC phone number: 503-234-3000.

Audience participation is another, more advanced tool you may want to integrate into your presentations. Interaction often helps individuals test new ideas, clarify their thinking, and develop skills for solving problems and resolving issues. However, you, as the presenter, must provide the direction and keep discussion focused on the topic.

Strategies you might use to generate audience participation



Natassja Pace demonstrated the problem of plastics at the beach with a sandbox display

- Introductory name games.
- Quizzes.
- Small group discussions.
- Role playing.
- Sharing favorite resources.
- Show and tell (personal stories)
- Problem-solving: Explain a problem (for example: vegetables and fruit are going bad before they get eaten) and ask the audience to contribute some strategies that might help solve this common problem. Fill in missing strategies after they have shared their ideas.
- Finish the presentation with an invitation for people to make a commitment: you can start with one. For example, you might commit to checking your cupboards before you go shopping so that you will buy only what you need.
- Use real objects or even art! People learn with different senses and through different sorts of activities. Bring props to talk about how to sort waste. If you are artistic, consider using a white board to draw the words or images you are describing. Use costumes or cut out images from magazines to demonstrate your points.

FEEDBACK

Consider using the form on the next page to ask for feedback. You can photocopy this 2-up form and cut in half. Ask people to fill it out after you offer a presentation or staff an information booth to help you get feedback and improve.



MASTER
RECYCLER
PROGRAM

FEEDBACK REQUEST

Please tell me the top three most beneficial aspects of this presentation / event.

1. _____

2. _____

3. _____

Can you recommend any improvements? _____

Thank you for providing me with feedback on today's presentation / event!



MASTER
RECYCLER
PROGRAM

FEEDBACK REQUEST

Please tell me the top three most beneficial aspects of this presentation / event.

1. _____

2. _____

3. _____

Can you recommend any improvements? _____

Thank you for providing me with feedback on today's presentation / event!



Amalia Allende at a greener cleaner table

CONCLUSION

Some of you will be ready to jump at the chance to get out and share your ideas and interact with the community, but if you are like most people, this feels intimidating. If this is the case, there are a number of small steps you can take to feel more comfortable.

- Start with a topic you feel passionate about.
- Talk with people you know first.
- Sign up for an opportunity where you will be working with staff or other volunteers.
- Talk over your concerns, ideas and even practice with your assigned Master Recycler Mentor.
- Staffing an information booth is usually a good first step before offering a presentation.
- Spend time with the ideas on preparation mentioned throughout this chapter.

Think about how you can share your story and experiences rather than simply telling people what to do. As Mahatma Gandhi suggests, “Be the change you want to see in the world.”

CHAPTER 19

CULTURAL COMPETENCY

INTRODUCTION

Walk a mile in someone else's shoes

As a Master Recycler, you will encounter people whose backgrounds, values and assumptions are quite different than your own. It is easy, often without even realizing that you're doing so, to assume that your own experiences and beliefs are widely shared. Doing so, however, can lead to misinterpretations, misunderstandings and lost opportunities.

Cultural identity influences and shapes human beliefs and behaviors. This extends to behaviors and choices about the consumption of goods and the use of materials – central concerns for Master Recyclers.

Misinterpretations occur primarily when we lack awareness of our own values and behavioral norms and when we project those onto others. In the absence of better knowledge, we tend to assume, instead of finding out, what a behavior means to the person involved. And our assumptions are usually based on our own experiences.

Your success in inspiring behavior change will depend first on your awareness that there are many different and equally valuable experiences and practices. Second, your success will hinge on your ability to bridge those differences and connect with people who may be culturally different from yourself.

Making these connections will enable you to have meaningful conversations with diverse individuals about everyday choices and possible behavior changes that can make our metro region more sustainable. The skills and awareness described above are integral components of cultural competence.



Boys visit the greener cleaner booth.

TERM

Culture: “The language, traditions, history, and ancestry people have in common. All people have culture; it is fluid and dynamic.”

Caprice Hollins and Ilsa Govan
Diversity, Equity and Inclusion (2015)

Culture: “A fuzzy set of basic assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member’s behaviour and his/her interpretations of the ‘meaning’ of other people’s behaviour.”

Helen Spencer-Oatey
Culturally Speaking.
Culture, Communication and Politeness
Theory (2008).

What is culture competence?

Culture is a broad and expansive concept and it is worth pausing to define how it is being used in this chapter. Culture is often used to indicate various intellectual and aesthetic pursuits (literature, art, and performance for example) or the process of self-betterment through those pursuits. In this chapter, however, culture is used in its anthropological or sociological sense to indicate the values, traditions, beliefs, practices and history of a group of people.

Culture is shared, but not perfectly. That is, even if you are part of a culture, that does not mean that everyone who identifies as part of that culture will have the exact same values or beliefs. Individuals also typically have multiple cultural identities. For instance, you could be a Christian who has deep roots in a certain neighborhood, but who also has ancestors from Mexico and who volunteers in schools. Or you could be a Native American who is involved in community organizing and public health, who also has African-American heritage. Each of these identities are distinct cultures.

Cultures are also dynamic and continually changing. This means that each context that you work in will be somewhat different.

Working across cultures may seem so complicated and evoke such strong emotions that you feel like giving up before you’ve even started. But please, don’t! Connecting and working with diverse communities is absolutely essential to the mission of the Master Recycler Program.



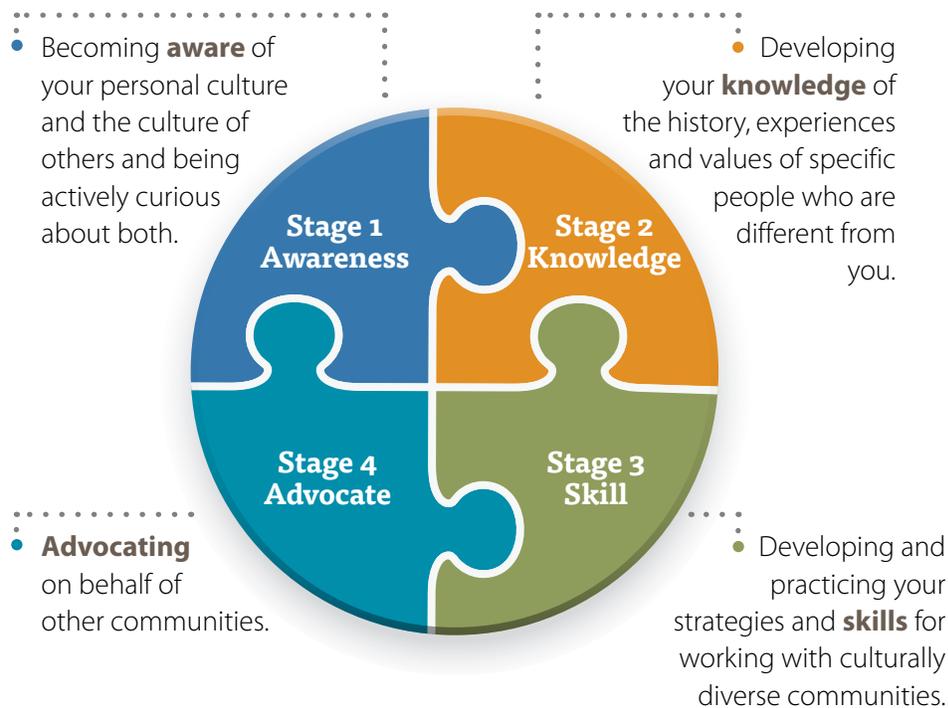
This chapter offers an introduction to cultural competence as an ongoing process with four stages. This four-stage model is from Caprice Hollins and Ilsa Govan’s workshop and their book *Diversity, Equity, and Inclusion: Strategies for Facilitating Conversations on Race*. Hollins and Govan’s framework presents cultural competence as an ongoing process of active learning rather than an end point. In this model, to be culturally competent is to embrace your curiosity. It is about exploring your own assumptions about human behavior, values, biases, preconceived notions and personal limitations and it is also about being equally curious about others’ behavior, values, biases and preconceived notions.

DEEP DIVE

Caprice Hollins and Ilsa Govan are co-founders of Cultures Connecting a Seattle based group that assists organizations in entering into conversations about race, culture and social justice.

The cultural competence process

Hollis and Govan offer a framework for cultural competence that has four stages, described below. They adapted their framework from *Counseling the Culturally Diverse: Theory and Practice* by Derald Wing Sue and David Sue.



The stages are not linear and can overlap.



This chapter moves through the first three stages of cultural competence: awareness, knowledge and skill. It concludes with a consideration of how the environmental movement must and is becoming more inclusive and diverse. To the greatest extent possible, specific examples and best practices relevant to Master Recyclers are included. We all have something, indeed many things, to learn about cultural competence. Often this involves unlearning assumptions and habits so that we can more fully see, hear and connect with the people around us. Power structures deeply ingrained in our culture make it so that some of us have had the privilege of learning about cultural competence at our own pace, while others have had to learn cultural competence more quickly, sometimes merely to survive.

At the outset, it is important to acknowledge that Master Recyclers, like the community we serve, are diverse and that this is a tremendous strength of the program. Master Recyclers are already effectively working across cultures and having positive impacts. There is a pervasive assumption that Master Recyclers are largely white, wealthy, English-speaking, homeowners, but survey data lets us know that this is not the case. The program has surveyed each class since 2012. Clearly the program has more work to do to meet objectives of reflecting the demographics of the metro area, but already, 12 percent of respondents identified as people of color and 13 percent claimed a household income below the poverty level. About 37 percent are renters and 25 percent live in multifamily communities. And the following languages are spoken at the homes of your fellow Master Recyclers: Afrikaans, American Sign Language, Arabic, Bulgarian, Cambodian, Chinese (Cantonese and Mandarin), Czech, Djoula, Dutch, French, German, Hindi, Indonesian, Italian, Japanese, Nepali, Portuguese, Romanian, Russian, Spanish, Swahili, Taiwanese, Tamil, Telugu, Vietnamese and West African Krio.

CULTURAL AWARENESS

Exploring ourselves as the cultural beings we all are

The first stage in cultural competence is becoming aware that we all have cultural heritage and that our cultural heritage affects the choices we make.

Cultural competence begins with looking at yourself: Who are you and what do you bring to relationships and situations? Without going through this stage, you may be unaware of cultural differences and believe that you have no reason not to trust your instincts. It may not occur to you that you might be making cultural mistakes, causing confusion or pain for others or simply misinterpreting much of the behavior going on around you.



Humans are cultural beings. We learn to communicate and understand our world through culture: languages, traditions, behaviors, beliefs and values. Our cultural experiences and values shape the way we see ourselves and what we think is important.

We all believe that we observe reality as it is, but what actually happens is that the mind interprets what the eyes see and gives it meaning; it is only at this point, when meaning is assigned, that we can truly say we have seen something. In other words, what we see is very much a product of our minds and their culturally specific ways of interpreting and understanding.

If you realize that the mind of a person from one culture is going to be different in many ways from the mind of a person from another culture, then you have an explanation for that most fundamental of all cross-cultural problems: the fact that two people can look upon the same reality – the same behavior – and see two entirely different things.

An important next step and way out of this impasse is to recognize that your own interpretations are not universal, but rather a product of your culture and lived experience. Individuals from differing cultures often have different interpretations of the same thing. Culturally competent individuals are curious about cultural differences and exploring them to arrive at greater understanding.

Don't be afraid to explore yourself as a cultural being with varying social identities and influences. This is an exercise in pure observation and curiosity.

Valuing cultural differences

Along with reflecting on one's own cultural identity, the awareness stage is about acknowledging that cultural differences as well as similarities exist, and doing so without assigning values (for example, better or worse, right or wrong) to those cultural differences. This can be challenging when values are vastly different from your own.

Consider this example: Rosario is a Master Recycler from the city of Xela in Guatemala. When she lived in Guatemala she had a Quiche Indian neighbor whose yard was full of empty containers. Rosario assumed that her neighbor's yard was full of garbage. But when she talked with her, she learned that her neighbor did not consider it garbage at all. The bottles had at one time contained shampoo and Rosario was stunned to learn that her neighbor saw those bottles as a status symbol. The bottles were evidence that she had enough money to purchase a luxury item such as shampoo.

One can then imagine how ineffective Rosario's initial communication was when she was talking about the "garbage" in the yard. Her neighbor literally didn't know what she was talking about. It was outside of Rosario's experience of relative wealth to think of used shampoo containers as anything other than garbage. Those containers, however, still had value to her neighbor.

Until Rosario could see that the containers were important to her neighbor, they could not have a meaningful dialogue about how they could comfortably live next to each other. Much work still remained for Rosario and her neighbor, but understanding the very different viewpoints from which they were starting was an essential first step. It was crucial that Rosario not discount her neighbor's experience by applying her own assumptions and values to the situation.

How dominant culture limits cultural awareness

The equity chapter explored how institutional racism and poverty result in the inequitable distribution of the benefits and burdens of materials production and consumption. These institutional structures of power also create cultural hierarchies. These cultural hierarchies result in a pervasive dominant culture that is interpreted as the norm. Our cultural institutions tend to reinforce these cultural hierarchies as natural and inevitable.

People of dominant social identity groups have been taught all their lives that what they know and believe are true and that anything different, if it exists at all, is inferior. This creates a significant blind spot that makes it difficult for dominant social groups to fully perceive cultural difference. When a person is part of a dominant social identity, self-reflection and the challenge of truly seeing others is great.

As mentioned in the introduction, people can have multiple cultural identities and some people may have both dominant and marginalized identities. So, people may have blind spots in some areas and not in others.

People from marginalized social identities have had to learn from an early age that what they know to be true is not perceived as true by mainstream society. As soon as these individuals begin to leave the family unit and interact with society at large they start receiving social cues that they need to change their actions to fit in, even if it is contrary to their core beliefs and identity. Not only are their actions in question, but they also often describe a painful process of understanding that their identity as a person is not a normal part of the social community.

One example of a cultural hierarchy that has been naturalized is the hierarchy of male over female. The dominant culture typically portrays "male" as the norm and the standard of humanity, while "female" is considered secondary. "Mankind" is interpreted as all people. Images of mankind are usually images of men, but supposed to be interpreted as all people. Even the portrayal of the evolution of mankind usually starts with a male Neanderthal.

The English language also perpetuates “male” as standard. Until recently, it was grammatically necessary to use the pronoun “he” when referring to a person of unknown gender. While it is now customary to say “he or she” our language and symbols continue to insinuate that there are only two genders, marginalizing communities that do not identify as either “male” or “female.” Similar hierarchies exist for race (white over black or non-white), wealth (rich over poor), religion (Christian over non-Christian) and country of origin (European descent over Native or immigrant) – to name just a few.

It is important to be aware that people are made up of a blend of cultural identities some of which are dominant cultures and some of which are marginalized. This overlapping of identity is referred to as **intersectionality**. Intersectionality raises awareness that a person may experience more than one marginalized identity and that these can compound one another. It is also important to be aware that an individual also may enjoy some of the privileges of a dominant identity, but at the same time feel the oppression of a marginalized identity.

While images and language may seem to be purely symbolic, these assumptions can play out in situations of consequence. For example, in scientific research it is often assumed that studies of the human body would be conducted on men and have meaningful results for everyone.

Part of cultural competency is developing an awareness of how cultural hierarchies work. Marginalized groups often internalize (sometimes unconsciously) the power structures and values of dominant social identity groups. Dominant social identity groups, on the other hand, often assume that there is a naturalness and inevitability to the current structures and culture. They may not even know that they exist, even though they benefit from them.

Without understanding the power dynamics of racism, poverty and other social hierarchies, it is difficult if not impossible to practice the self-reflection that is such an important part of the first stage of cultural competence. We cannot understand ourselves or other people, or create greater equity without considering the larger socio-political and historical context of which we are part. We need to have a grasp of different forms of privilege and oppression and how these affect people’s experiences, opportunities and access to social power. It is critical to appreciate the interlocking nature of different types of inequality and how these intersect in people’s lives.

These inequitable outcomes can make it seem as if the dominant culture is universal, superior, and inevitable. Part of increasing your awareness is to work to realize that:

- The outcomes are not always inevitable or fair.
- There are multiple cultures and these cultures all have valid and valuable views and beliefs.
- That individuals are the experts when it comes to their own lives and situations.

TERM

Intersectionality: the idea that multiple identities intersect to create a whole that is different from the component identities. The theory that individuals think of each element or trait of a person as inextricably linked with all of the other elements in order to fully understand one’s identity. Civil rights advocate and legal scholar Kimberlé Williams Crenshaw coined the phrase in 1989.

What's in your garbage? A lesson in awareness

Master Recycler, Janis Woodrow (Class 33), shared a story of her own experience conducting outreach that helps illuminate the importance of cultural awareness.

Janis was helping residents in Portland adjust to curbside collection changes that included composting food scraps and a shift from weekly to every-other-week garbage pickup. She was going door-to-door in neighborhoods that had been identified as having high populations of households with large families since that was a group the City identified through surveys as having more trouble adjusting to the changes.

Janis reported: "It was a real eye-opener to connect with these large working-class households. With both parents working long hours, I witnessed a lot of challenges. When I was canvassing, several residents complained that they had too much garbage to switch to less frequent pickups.

"Looking back, I now realize that my first reactions to this were to judge them as not sufficiently motivated or caring and I then attempted to solve their problem based on my own experience. I tried to explain to them that if they just recycled more they would not have a problem since the recycle cart gets picked up every week. The residents insisted that they were recycling everything. One older woman told me, "I have been recycling longer than you have been alive."

"Finally, I suggested to one man that we go and look at what he had in his can. As we were walking over to his cart, I was imagining I would find recyclables in the garbage. But I was wrong. There was nothing in the garbage that could be recycled. I also noticed his recycling and compost were full of the materials that belonged in there, but there wasn't much in there.

"There is one other thing I noticed: all of the containers had a completely different mix of materials than what I tend to discard. My discards are made up of food scraps, yard debris, junk mail, some glass and cans. Almost all my discards can be recycled or composted. When I looked in his containers there were lots of freezer boxes, and Burgerville and McDonald's containers – all of which are non-recyclable. So really, he was right. He was doing the most recycling he could. He let me know that his teenagers need to make their own dinners since he and his wife are both working when they get home and these are the foods they like.

"After this experience, I started looking in the containers and just observing before giving advice. With residents that had a lot of non-recyclable materials I talked to them less about the importance of recycling and more about their options in garbage size. Many didn't know that they could order a larger container and were happy that they had choices."

Janis' initial strategy was based on two assumptions, both of which turned out to be false. First, that residents who generate more garbage than she does do not care much about recycling. Second, that people all consume the same materials as she does and therefore have the same discards.

It turned out that the East Portland residents she spoke with, like most metro area residents, want to recycle. Janis' misperception was based on a misunderstanding of the community and an eagerness to apply her own experience to a different context. She found that she was more successful when she stopped assuming what she would find in the various containers, listened to one man's experience and gave him tools that addressed those concerns specifically.



Practicing cultural awareness.

Here are some ideas to get you started in practicing cultural awareness. Cultural awareness is a lifelong process and while this list is not exhaustive, it can stimulate your curiosity and get you started on your journey.

- When talking with people about recycling, compost, waste prevention or toxics reduction, listen for moments when you might be experiencing cultural differences. Perhaps they will say something unexpected or that doesn't fit with your experience. Perhaps they don't say something, but get quiet or react strongly to something you might have said. Try and go to a reflective mode rather than a reactive one. Notice if you have a reaction that tries to place their experience in the 'good' or 'bad' category and try to turn that reaction off.
- Ask respectful questions to learn more about the perspective of people. Use follow-up questions if there are still aspects of that perspective that doesn't make sense to you.
- Check your own experience and biases that might affect how you feel about these topics and how it might affect your reaction to people who have different experiences.
- Avoid holding preconceived limitations and notions about communities different from your own.
- Reflect on whether your own values, beliefs and experiences come from a dominant or marginalized cultural perspective and how that perspective might affect oppressed groups.
- Understand that mistakes are inevitable. Don't beat yourself up, if you discover that you have said something that has offended someone as this is not very useful to either of you. If appropriate you can apologize. It is best not to try and explain your mistake as it can come across as making excuses and discounting their experience. A simple, "I am sorry," and then taking the time to reflect internally or asking others is usually a good strategy.
- Identify a person from your own culture to join you in the journey so that you can reflect on experiences together and exchange notes and ideas in a safe environment.



CULTURAL KNOWLEDGE

With cultural awareness typically comes the desire to learn more about other cultures and, indeed, the next stage is cultivating cultural knowledge. You don't have to complete the awareness stage to go to this stage and the awareness stage is, in truth, never ending.

The next stage is to seek out information about the cultural groups you might be working with so that your volunteer work can be as effective as possible. You might learn that a group is already practicing some of the actions you are promoting, if they have practices of their own that are equally beneficial and if that community has specific taboos or values that are related to the topic you are working on or related to communication styles.

It's best to do your homework before you enter a community and consider asking for something from that community. This stage also gives you an opportunity to appreciate what communities are already doing in the terms that they care about and understand. Finally, doing your homework helps you avoid making cultural mistakes or at least helps you understand what happened when you do misstep.

The green values of people of color

As an illustration of how the knowledge stage works, we will explore information that can help us know more about people of color and how they relate to the environment.

Because white and wealthy culture is dominant in America, the environmental movement, like other U.S. institutions, is dominated by white beliefs and perceptions about the environment. The dominant environmental movement has traditionally assumed that communities of color need to be coerced into supporting the environment. Even people of color have sometimes internalized this assumption.

This assumption is simply not true and it is a dangerous misconception. A great deal of public opinion research shows that people of color care deeply about the environment.

Here are some findings that help us learn more about the green values people of color:

- 95 percent of metro area consider themselves recyclers. In other words, almost everyone in our metro area sees her or himself as a recycler. (Metro internal studies 2009 and 2015).
- Latino voters in the US have a strong commitment to conservation, the environment and a genuine interest in how climate change impacts their families and communities.
- Most Asian Americans hold particularly strong green values. Seventy percent of Asian-Americans consider themselves environmentalist, compared to 41 percent of Americans overall, and 60 percent of Asian-American prioritize environmental protection over economic growth, compared to 41 percent overall.
- African-Americans in many cases are equally supportive, and often more supportive of national climate and energy policies, than white Americans. In particular, 89 percent of blacks supported the regulation of carbon dioxide as a pollutant, compared to 78 percent of whites.)



DEEP DIVE

For more information, you can consult the following resources online: Latino Decisions Polls and Research, National Asian American Survey, Yale project on Climate Change and George Mason University Center for Climate Change Communication.

DEEP DIVE

Do you identify as a BIPOC Master Recycler? Join MRoC (Master Recyclers of Color)! They have monthly meetups and network on their Facebook group and Google group MRoC_pdx.



DEEP DIVE

Visit the African American Outdoor Association Facebook page to learn more.

Diverse experiences with the environment

A historical perspective on how communities experience the environment can help build cultural knowledge. The two case studies that follow offer culturally diverse experiences on wilderness and environmental activism.

CASE STUDY: African American Outdoor Association

Evelyn White wrote in *Black Women and the Wilderness*, “For me, the fear is like a heartbeat, always present, while at the same time, intangible, elusive, and difficult to define,” White says as she explains why the thought of hiking in Oregon used to fill her with dread. In wilderness, White did not see freedom but a “portal to the past. It was a trigger. The history of suffering was overwhelming.”

“Wilderness says to the minority: Be in this place and someone might seize the opportunity to end you. Nature itself is the least of my concerns. Bear paws have harmed fewer black bodies in the wild than human hands.”

Greg Wolley and Tricia Tillman founded the African American Outdoor Association because they recognized this historical context of fear of the wilderness for African Americans and wanted to do something about it. The Association aims to:

- Conduct active outdoor excursions that encourage African Americans to explore the natural environment.
- Promote healthy living by encouraging families to shift to physically active lifestyles.
- Increase knowledge and appreciation of the beauty and natural resources of the Pacific Northwest.
- Build community around active living.

“They say Black people don’t bike, kayak, etc.,” Wolley says. “Students of color are not seeing images of people in natural resources that look like them – they don’t have role models.”

Wolley says that politics is a big reason why the outdoors is predominantly visited by white people. From the park system’s inception, Jim Crow laws and Native American removal campaigns limited access to recreation by race. From the mountains to the beaches, outdoor leisure was often officially accompanied by the words ‘whites only’. The repercussions for disobedience were grave.

Tillman told Metro in a story about the Association that she hopes that exposing black residents to the outdoors will not only improve their health but also change the way they connect with nature. “In some ways, [the African American Outdoor Association is] about reclaiming the space and breaking through barriers, as well as mental barriers, to create more of a welcoming environment,”

Many participants use the outings organized by Tillman’s group as training for their own, more independent outdoor explorations.

Tillman has witnessed on countless occasions the spiritual connections participants experience. The joy and wonder they feel when they are outdoors are palpable, she said. She’ll frequently hear people say, “God is so good,” and “God is so amazing,” as participants are emotionally moved by the beauty that surrounds them.

The outings have also connected participants with their ancestors, who navigated and survived the outdoors to escape slavery, Tillman said. “People reframe how they think of the woods,” she said. “It goes from scary to safe and liberating.”

CASE STUDY: Honduran immigrant environmentalist

Edgar (whose name is changed for this story) is an Oregon immigrant. He grew up in Honduras with strong ties to the rivers that came from his Lenca indigenous culture that depended on those waterways for spiritual as well as practical purposes.

Edgar became an active environmentalist as a young adult. He had visited El Salvador where people fought to stop the contamination of their rivers by Canadian gold companies and he joined the Council of Indigenous Peoples of Honduras (Copinh) which fought multi-national corporations that aimed to build a dam through his community of Rio Blanco.

By this time, he already knew that being an environmentalist was dangerous. “Unlike people here (in the US) who can decide to make little changes in their homes, back home being an environmentalist was a whole different commitment.” Edgar’s comrades in El Salvador had been murdered for standing against the gold mining.

In 2016, Berta Cáceres, who had brought national attention to the issue of the dams in Honduras was murdered. Edgar knew that the murder of Berta Cáceres was not unique. He said, “environmentalists are regularly murdered in Honduras.” The international NGO “Global Witness” confirms his experience in a published study that declared Honduras “the most dangerous country in the world for environmentalists.” According to research conducted by the organization, some 120 environmentalists have been killed in Honduras since 2010 because they were trying to protect the environment.

Now that Edgar lives in Portland he is not vocal or active about his work as an environmentalist in Honduras. He left Honduras out of fear for his life and is not convinced that the danger is over because he lives in the United States. “It was countries like this one that caused the violence, so why should I believe they won’t come after me here?”

These two examples show two different experiences with the environment and environmentalism. They both demonstrate how the power dynamics of race affect how individuals experience the environment and environmentalism. They also showcase people who deeply value natural spaces and are active as environmental advocates. Both cases, however, are quite different from the mainstream, white environmental movement.

On being humble: Humility has traditionally thought of as meekness, but it can also be a willingness to accurately assess oneself and one’s limitations, the ability to acknowledge gaps in one’s knowledge, and an openness to new ideas, contradictory information, and advice. First and foremost, cultural humility means not pigeon-holing people. Knowledge of different cultures and their assumptions and practices is indeed important, but it can only go so far. It is important to not assume that all members of a culture conform to a certain stereotype. Approaching each encounter with the knowledge that one’s own perspective is full of assumptions and prejudices can help one to keep an open mind and remain respectful.

Cultivating cultural knowledge

The following pointers can help you cultivate cultural knowledge before volunteering in a community that you are not familiar with.

- Ask the leader, or contact who invited you to volunteer, what populations might attend the event.
- Ask them if there are appropriate ways to behave, dress, or talk in this community.
- Visit the community as a guest before presenting to them as speaker.
- Think about your own biases with this particular community and how they might affect your conversations.



CULTURAL SKILL

Stage three is about developing and practicing strategies and skills for working with culturally diverse communities. This stage can be about building skills to work with a specific community that is different than your own or about strategies to be inclusive while working in a multicultural setting.

Language cultural competency

Master Recyclers participate in many projects and events where language cultural competency can be a useful skill. It is helpful to speak more than one language, but even if English is your only language, there are some techniques that can help you successfully make connections in communities that predominantly speak a language other than English.

Eva Aguilar of Washington County works with Master Recyclers on recycling and the Eat Smart, Waste Less campaign at multiple Latino cultural events in Hillsboro, Cornelius and Forest Grove. Eva identified skills that Master Recyclers can build that would help inspire people to take action, and avoid some common cultural missteps. Eva is enthusiastic to work with bilingual Master Recyclers. However, even if you speak no Spanish she believes that your presence at these events are an important invitation to the Latino community to join in.



Eva Aguilar (Class 63) posts volunteer opportunities throughout the year on the Master Recycler volunteer calendar. If you are interested in making a difference while also learning some cultural competency skills, look for volunteer opportunities to work with her.

Eva Aguilar was hired in November 2016 to a new position as the Washington County Bilingual Solid Waste and Recycling Program Educator. She focuses on equity and diversity work, residential and business sector outreach. Eva is a Master Recycler who moved to Hillsboro 11 years ago, from Mexico. Her talent and experience working with nonprofits in the U.S. and Mexico helps Washington County better serve their diverse communities.

Volunteering in a diverse community: A barrier or an opportunity? By Eva Aguilar



Even though Latinos represent the largest minority community in Oregon (12 percent), due to the diversity among this group, cultural elements are not always shared. Therefore, when doing outreach, it's important to focus on similarities, rather than differences, and this is applicable with any other minority group, and not only with Latinos. That being said; the question is how to deliver your message to a diverse, multicultural, multilingual audience?

I believe that understanding cultural differences in depth is critical when developing equitable, inclusive and culturally responsive plans and educational materials, but I invite

volunteers to situate their experience at the most basic, human experience level where two persons perform a communication process.

Below is a list of suggestions derived from observations during my tabling and presentations experiences:

- When planning and preparing an outreach event, ask for information about the audience expected and their usual agenda.
- Find out if you will have materials in different languages, or if there is interpretation service available.
- Set up your table in a way that any materials in different languages are visible.
- Enjoy the engagement opportunity and don't be too nervous about interacting with people who do not speak your language. When someone overcomes their own shyness, and asks a question, it denotes genuine interest.
- Avoid stereotyping and don't make assumptions based on visual clues – it is not possible to know anyone's identity based on how they look, and making assumptions frequently may be misleading and inaccurate.
- Start the conversation enthusiastically, naturally and respectfully as you would usually do. This is a brief two-way interaction, and you are not required to know all the specific customs and traditions, just as the other person does not know yours. Therefore, focus on what you have in common, which is an interest in the same topic and go from there!
- Listen and notice any second language learner's typical characteristics, not to judge but to help you determine how to better serve the person. These characteristics include: different accents, linguistic errors, mispronunciation, etc. Keep in mind that English proficiency levels do not necessarily indicate level of education.
- Be patient and acknowledge the other person's effort to communicate. If you understand at least a little, that will enable you to engage.

- People may directly ask if you have materials in their language. If you do, hand them out, briefly explain what they are and remain available for questions.
- If you are with staff or another volunteer that speaks the same language as the person you are trying to communicate with, you can give that person the option to talk with your partner at the table. Notice that you don't need to do that immediately, you will be surprised to see how many times you will be able to successfully communicate.
- Be resourceful. Writing a word on a piece of paper may be helpful for those whose reading and writing skills are more advanced than their speaking skills.
- Show empathy. Think about a relative, a friend, or the friend of a friend who doesn't speak the same language. Remember that time when you were at a restaurant trying to place your order from a menu written in another language? What has been helpful for you?
- Speak clearly and slowly. Adjust the tone and pace of your voice as needed to emphasize what is important.
- Some community members are illiterate in any language and unable to read text-based information. If this is the case, use simple words and combine them with visual, corporal elements as much as possible. Example: "Please sign over this line" (pointing to the form and to the line where they should sign and trace a signature in the air with your hands)
- Be creative - use what you have in the surrounding to "fill in the blanks" and complete your sentences. (Trees, signs, buildings, etc.)
- Ask a person's relative or another community member if they are willing to serve as an interpreter.
- In any case, if you cannot continue the conversation, make a note for the organizers. It is helpful if you or the person writes down contact information to follow up.
- Provide a business card or a written note with the office or staff contact information to personally request more help.
- Remember that the feeling and the interest is mutual, but volunteers hold a resource to share and the potential recipient is there. Community members from different countries of origin and with various cultural backgrounds may possibly be receiving information that is entirely new for them. That fact by itself maximizes the possibilities to turn your efforts into a positive impact.
- Always have fun and be proud of yourself because volunteers help to transform individual bowls full of different veggies into an exquisite, delectable salad.

Language is one of the barriers to effective communication and it is difficult to overcome, but volunteers can help to do it. Master Recyclers may not realize how much of themselves they are giving when doing outreach, but it happens all the time, through words and thorough many non-verbal expressions; that is something other people appreciate, regardless of the language they speak.

Feedback I have received from some Spanish speakers:

- I know is difficult but I really, really appreciate the effort they do to understand me and to respond to my questions.
- It feels personal when people show interest in what you need and do their best to help you, I am thankful because they gave me materials I can read.
- I have trouble speaking English, but I can understand a lot and when they speak slowly, I can follow the conversation.

Building skills in conducting outreach in multicultural settings

Even individuals of the same culture have a wide range of learning styles and motivators. Add multiple cultures and it becomes clear that the best practice for outreach is to vary how you are getting your messages across and to touch on a wide range of reasons to act.

Using varied methods of communication can help you and your audience. The traditional presentation approach of standing in front of a group of people and assuming that you know more than anyone in the room can be intimidating to you, alienating to the community and can cause you to miss opportunities to learn from the other people in the room.

Master Recyclers can practice a variety of interactive communication techniques.

- Consider playing a game where people can share what they know and find out what they don't know in a safe environment.
- Invite people to share stories that offer the opportunity to celebrate their differing perspectives, successes, resources and ideas.
- Utilize visual elements of all sorts. Images, maps, or drawings can all be compelling and engaging.

It is also highly recommended to cultivate your listening skills.

- Listen to people as the experts in their own lives rather than thinking you must be an expert that can help them.
- Be willing to learn from what others share.
- Ask questions, explore problems and understand a person's motivations before offering solutions.
- Try to turn off the voice inside your head that is trying to interpret another person's experiences through your own experiences.
- Be willing to have courageous conversations. If someone is offended by something, try to step back before you react and try to switch to a listening mode not an explaining or justifying mode.

Be prepared to make mistakes. When you make mistakes, try to learn from them. It may not be appropriate to ask the person who was hurt to explain to you what you did to offend them, but you can read online, ask the leader who had invited you. You can also find more resources and ideas in the tabling and presentation chapter of this Handbook.



CONCLUSION: STAGE FOUR MAKING ROOM IN THE ENVIRONMENTAL MOVEMENT

Master Recyclers promote sustainability in a number of different areas including recycling, composting, waste prevention, toxics reduction and food waste. Some of you may decide that you want to pursue the goal of diversifying who participates in the sustainability movement.

Given the strong levels of support for green values that exist amongst people of color, one area of interest for some Master Recyclers is to increase the number of people of color who join the program. A small group called MRoC (Master Recyclers of Color) was formed in the spring of 2017 to socialize, support each other and to make room for more diversity in the environmental movement.

For those who identify with the environmental movement, a core tenet of cultural competency is to understand that if you make room for people who are culturally different than you, you may need to be flexible about shifting your priorities so that everyone is legitimately involved in defining the goals and purpose of the movement.

Many of the richest examples of sustainability movements have grown out of shifts in worldview that include social justice, environmental justice, and new ways of understanding economics. Environmental justice focuses on toxics and the impacts of consumption on low-income residents and workers. Climate justice focuses on the disproportionate impacts that a hotter climate and climate disasters have on low-income communities and developing nations. The regenerative economy movement offers an alternative model of extracting resources and compensating workers so that value is given to natural assets such as the earth. Regenerative economics offers a new model where the environment provides resources in a regenerative way and workers are cooperative contributors to developing goods for the well-being of everyone.

Some Master Recyclers included social justice and advocacy as part of their volunteer hours. If this is of interest to you, you can discuss with the Master Recycler Program Manager ways you can integrate this work in your own community. Or if you are looking for ways to plug into existing projects you might contact some of the partners where Master Recyclers are already engaged in this topic.

Contacts can be found for these projects in the Places to Volunteer chapter of the Handbook

- **Center for Diversity and the Environment Mission statement:** We harness the power of racial and ethnic diversity to transform the environmental movement by developing leaders, catalyzing change within institutions and building alliances.
- **Master Recyclers of Color (MRoC)** is a community group for any individual who identifies as Black, Indigenous or a Person of Color, who is interested in waste and recycling. They have a monthly meetup the second Wednesday of the month and a Google group (groups.google.com/g/MROC_PDX).
- **Trash for peace** works on youth empowerment, business outreach, and creative bin designs all focused on achieving their vision: Empowered, healthy communities living in a world without waste.
- **Washington County Bilingual Outreach Coordinator, Eva Aguilar** works with Master Recyclers on recycling and the Eat Smart, Waste Less campaign at multiple Latino cultural events in Hillsboro, Cornelius and Forest Grove. Eva_Aguilar@co.washington.or.us

CHAPTER 20

MATERIALS MANAGEMENT AT EVENTS

INTRODUCTION

Portland metropolitan area residents love events. Tens of thousands attend massive week-long events like the County Fairs, the Bite of Oregon and the Rose Festival. Sporting events and conventions take place daily. There are home-buyers fairs, jobs fairs, and Fix-It Fairs. Farmer's Markets sprout up all over the region on a weekly basis. Businesses, neighborhoods, apartment complexes, churches, and families throw annual picnics, ice cream socials, weddings, and coming-of-age celebrations.

Big or small, these gatherings can generate a good deal of waste and consume natural resources. Community events are, however, a wonderful way to showcase shared values and demonstrate our commitment to recycling, composting and waste prevention. Fortunately, there are great reasons to create sustainability plans for these events.

Master Recyclers can play crucial roles in recovery and waste prevention efforts. Whether you are organizing a party, wedding, or family picnic or have signed up to help a community event with their recovery goals, this chapter will provide you with tools, resources, and best practices to successfully plan or participate in less waste-intensive events. This chapter begins by presenting best practices for recycling and composting at events and then explores other materials management strategies including selection of take-away containers and waste prevention strategies. It also offers an overview of how to create an event sustainability plan. The appendix contains additional resources, including sample vendor letters.



Wedding done with Something Borrowed rental equipment



Cecelia Warner and Betty Benson at the Forest Grove farmers' market



Teaching kits at the sustainability station at the world indoor sports championships

MASTER RECYCLER HOURS AT EVENTS

Please keep in mind that Master Recyclers can play many important roles in event recovery, but not all event activities related to materials may be appropriate for volunteer hours. The central mission of the Master Recycler Program is to educate. Therefore, the best use of Master Recyclers at events is to offer expertise in waste reduction best practices.

Here are roles that count as hours for Master Recyclers at events:

Volunteer Trainer : On the day of the event, learn what the event’s waste management plan is and then offer an initial training. Use the best practices in this chapter to supervise volunteers who monitor containers throughout the day and troubleshoot problems as they arise.

Vendor Outreach: Large events with multiple food carts may have a plan in place and need Master Recyclers to start the day off explaining to the food handlers how to use this system. Subsequent periodic visits to answer questions, troubleshoot unexpected problems and provide feedback are helpful.

Recovery or Sustainability Coordinator: Join the event committee as the recovery or sustainability coordinator, or work individually to strategize, organize, implement and evaluate a waste prevention and/or recovery plan at an event. It is best to first take on smaller, one-day events focusing on recycling. Larger events with more involved sustainability practices should be done when you (and the event) have had more experience.

Look in the newsletter or on the volunteer calendar in the website for announcements. Pick a project that is the right size for you. Start by joining as a trainer for volunteers and vendors. Organize and plan a small church, company or neighborhood picnic. Work your way up to implementing a plan for an existing event of 300 to 8,000 attendees.

RESOURCE

*You can tell the event coordinators they can post announcements for volunteers to do these tasks at these free web programs:
Hands on Greater Portland, CNRG-Portland and Volunteer Match.*

Some work that is necessary for a successful event recovery plan does not fit the educational requirement for Master Recycler hours. The following activities will **not** count toward Master Recycler Certification if they are the only activities you are doing:

- Standing next to recycling/composting stations to monitor containers.
- Hauling, sorting or auditing waste.
- Recruiting volunteers. (This should fall on the responsibility of the community organization.)

If you act as a lead in a project and end up doing some of these activities the time does count as hours. It just needs to be a small subset of the overall role that you play. If you are concerned or have questions about volunteer guidelines you are always welcome to check in with the Master Recycler Program Manager.

THE EVENTS RECOVERY CHALLENGE

TERM

Contamination: *Unintended materials mixing with desired materials for recycling or compost (glass is a contaminant in a paper stream); materials that are too soiled, such as with food or dirt, to be recyclable.*

The ultimate goal for any recovery plan is twofold:

1. To capture materials that are resource-rich like plastic, paper, metal, glass or food, for a market that will use them in place of virgin material.
2. To minimize the **contamination** of the materials you are trying to capture so that the end market is getting a clean load of the materials they seek.

Events are temporary by nature. An event may take place in a park, street, backyard or campus. There are special challenges to meeting these recovery goals in a temporary setting:

- **Containers.** There may be no existing garbage cans, much less recycling and compost containers. Events may be sprawling with a need for multiple locations for containers. If containers are present, they are set up for the normal use of that space. There will be a need for a larger container for pickup and a plan for someone to haul it away.
- **Event organizers.** These are busy people with multiple pressing demands on their time. They also usually don't know the best practices and resources for recycling and composting.
- **Event goers.** The attention participants will give to making decisions about which container to place waste will be less than at home or work. Containers, signage and accepted materials are also not always the same as the systems they are used to. Participants may not be local and thus unfamiliar with recycling and composting.
- **Waste.** It is challenging to predict what kinds of waste will be generated at an event. Vendors, event organizers, the set up crew, event participants, and passersby are all potential sources of material that might end up in waste containers.

These challenges don't need to be overwhelming. Successful event recovery planners will tell you that the biggest key to success is to use best practices to design a good plan and then EXPECT SURPRISES. Flexibility, the ability to think on your feet and remembering to have fun are some of the most important tools to prepare for the bumps that arise in event recovery.



RECYCLING BEST PRACTICES

Understanding best practices will equip you for any setting, even if you just show up the day of an event to train folks and troubleshoot. These best practices will also lay the groundwork for understanding how to design and implement any recovery plan, big or small.

Always use the buddy system

Provide a recycling and/or compost container everywhere where there is a garbage can. Even in the most motivated communities, it needs to be as easy to recycle or compost as it is to throw things away. Wherever you only have a garbage can in place, you can expect to find recyclables or compost tossed in the garbage. Similarly, if you only have a recycling container in place, garbage will end up in your recycling or compost container.



Simplicity

Unless there is enough volunteer power to staff every station and guide event-goers about what to do with their waste, you are going to need to rely on non-verbal communication.

- Make garbage and recycling stations highly visible, (e.g. a flag on a tall pole, balloons, signs, etc.) and in convenient locations, like areas where people buy and eat food.
- Label recycling and garbage receptacles with clear, large and simple wording and place signage at eye level.
- Images of desired materials are best.

Plan for human nature rather than trying to change it

Good, clear simple signage will increase the chance that people will look at it and follow it, but *the main clue that people use to decide what to put into a container is the objects that are already in the container.*

You can get upset that people didn't read your sign, or you can plan for human behavior. In fact, the knowing that people toss material into a container that matches what is already there arms you with important information about how to influence those choices. Here are some ways to capitalize on that knowledge:

- Monitor recycling and compost containers frequently to remove contaminants and replace full bags. Contaminants will multiply quickly if people see them in a container. If a bag is overflowing people will start using other containers.

- Limit the number of recycling/waste stations to allow for ease of monitoring. Place larger stations in areas where high volumes of waste will be generated.
- If feasible, attach a physical sample of the acceptable material to its sign.
- Plant a few samples of the acceptable material into its proper container.
- Use clear bags for recycling so that people can see the desired material even as they are walking up to the container.
- Use black garbage bags so that people won't see recycling in there and follow suit.

Tailor the entire system around the desired materials

To be absolutely clear what you want people to put in a container it is best to use signage and containers that are designed to invite people to put that exact material in the right place. Container lids with holes the shape of a bottle or can, for instance, are ideal if that is all you are collecting in that container.

It is tempting to use a general recycling sign, but people will go with their general knowledge of what they think is recycling. At events this is a kiss of death because most of the materials vendors hand out need to go in the garbage. Most programs in the region know what is often generated at events and have made special signs. Use them. Or if you are capturing something special make a simple sign for that material.

If you are the recovery planner at an event following the best practice of tailoring the system around desired materials will mean that you will need to make a choice early on in the planning process:

1. Find out what kind of waste is generated at this event, pick desired materials to capture and design around it. OR
2. Influence what materials are generated and make a plan for that material. The planning section of this chapter will explore these two approaches in more depth.

Even if you are just a volunteer-trainer or vendor-trainer for the day, it is still very helpful to know this best practice so that you can troubleshoot. You may arrive on the scene and see that they have used general recycling signs. You can use the seed method mentioned above and work to clarify signage.



Dish collection from vendors in Forest Grove Farmers' Market

WASTE PREVENTION BEST PRACTICES

It is much easier to manage waste if it is never generated in the first place! There are plenty of easy best practices that involve reduce and reuse concepts for events. Consider these options for your events, big or small:

Centralize everything

A lot of times the reason we end up with individual packets of waste is because we are only thinking about distribution from one individual food vendor to one individual event participant.

What if the event was considered a shared venture?

Consider setting up a condiments island between the vendors. Large containers can be used to squirt ketchup and mustard directly onto the food (no more little ketchup packets!). Use urns, pitchers or punch bowls rather than canned or bottled products. Serving buffet-style avoids boxed lunches and packaging. It also reduces food waste because people can select the food they like to eat.

Use durables instead of disposables

There are many strategies for introducing durable goods at events. Linens, dishes, silverware and glasses add a sense of class to a dinner gathering of 300 people. You can borrow or rent these items for one-time events from community swap organizations or rental companies, such as That Party Store. You can incentivize behavior change by giving a raffle ticket to anyone who brings his or her own container. Vendors might be excited to hand out beer mugs or other reusable items with their company logo printed on them. You can use live plants for a table centerpiece that can be auctioned off after the event. Farmer's Markets are increasingly purchasing durable equipment for their food vendors and working with nearby businesses, schools or churches to wash and store them between market days.

BEST PRACTICES FOR FOOD

Plan to donate leftover food

More than 720,000 Oregonians use the services of food banks each year. And each year, nearly 190,000 tons of food in the Metro region, much of which is edible, are thrown away. Fresh and prepared foods are in demand by food rescue agencies. Metro's Fork-It Over program connects event organizers with food rescue agencies to reduce hunger and waste. Many farmers' markets give food scraps from the market food court to farmers' with animals.



Know when to and when not to compost

It is increasingly popular for community groups to want to start off their first sustainability plan with composting. Organics often are the largest waste material at events, and composting food scraps and coffee grounds is certainly an effective way to increase your recovery rate.

But composting is complicated and should be considered an advanced level in the world of event recovery. The compost facilities in our region will accept food only.

These conditions need to be met before it is recommended to attempt composting:

- The goal is to capture food. If it is not expected that a lot of food scraps will be generated at this event, composting should not be practiced. Beer festivals are examples of events that do not generate much food scraps, but the event organizers want to compost because they think that the cups are compostable. These cups do not provide nutrients to compost and they are not accepted in the food scrap collection in our region.
- A hauler and receiver of the food scraps is available. Some local jurisdictions support food scrap collection at events. In other areas you will need to identify a farmer who will use the food scraps for pig feed or self haul food scraps to transfer stations.
- There will be plenty of volunteers to staff waste stations and remind people to separate their food scraps from their plates and flatware.



Including composting in the plan

Consider composting food scraps (organics) from vendors only

Often the most effective food scrap collection plan is to work with the vendors only. Providing collection options during their food preparation stage will often capture more waste than the public will generate anyway.

DESIGNING AN EVENT SUSTAINABILITY PLAN

With the previously discussed best practices in your back pocket, you are now ready to explore how to approach a project from beginning to end.

Pre-planning

There is a lot to do before an event. Make sure you have enough time.

Gather information to determine what to propose

Work with the community organization to understand the reason that they want to have a sustainability plan. Are they required to have recycling in order to use the facility? Do they want to collect materials as a fundraiser? Is sustainability a core value for their community? Do they want to recover material or are they also interested in waste prevention?

You can also ask the coordinators questions to understand existing conditions. Is this the first time they have attempted to do something? Have there been failed attempts before and if so what went wrong? If they have had the event before, ask what types of waste were generated. Plastic bottles, cups and food are common recoverable materials. Metal and glass are less common. Disposable plates and silverware are virtually impossible to recover. They might even have data or a report from past events.

Clarify what resources are available for this project. Is there a green team or are you the only planner? How much time, budget and volunteers do you have?

It may also be necessary to do some research to understand the existing conditions. Contact the venue to find out what is included in the use of the space. Walk through the area to understand where the containers are now and how the space will be used during the event, so you can see if waste will be generated in the same places where there are containers. Is there a recycling or compost container buddied with every garbage can? Perhaps there are too many cans and they are really spread out. Can they be moved to create a more central waste station area?

Another way to determine what you should try to achieve is by contacting the vendors and asking them what they plan to bring and hand out to participants. You can also ask them about what waste they might generate in their own cart or work space. Do they prep food on site? Do they end up with a lot of cardboard after their boxes are emptied of literature?

Draft a proposal and meet with event planners to develop a plan

Decide on goals. What materials are you going to capture and how much? Do you want to set a goal of the percent of volume of garbage reduction or bottles captured? How will you know you were successful?

Define roles. Who in the organization will arrange, sign and manage the contract with the hauler after you make recommendations? Who do you contact to talk about volunteer needs? Who will be removing full bags of material and hauling them to larger containers for haulers (this will likely be the volunteers with your leadership)? Are you allowed to contact vendors ahead of time directly or can you include your messages with the other messages that go to them?

Secure a budget. It is crucial to be clear that you have the funding assigned to costs related to waste management. Sometimes event coordinators forget to include this in their budget planning.

Create a site map. This map can include containers and locations for larger waste containers to store before pickup. You should share this map with everyone involved. Identify places where food, boxes and other types of waste will accumulate.

Organize and execute

Arrange for pickup. If there is not already an onsite hauler, contact one to secure larger containers, work out logistics, clarify recovery goals and arrange for pickup of the garbage and/or recovered material. (You may end up having a separate plan for some or all of the recovered material.) In Portland you can look in the phone book or talk to other Master Recyclers to find haulers that give good prices and services.

Everywhere else in the region, commercial haulers are franchised and you will need to call the local jurisdiction to find out which hauler serves the area where the event is located.

You can contact the Metro Recycling Information Hotline 503-234-3000 or search on www.oregonmetro.gov for the Find a Recycler and Find a Hauler pages. From Far West Recycling to your local pig farmer, you can be creative in finding places to bring materials for recovery.



Food courts are common places for waste



Don't forget you can make money from the bottle returns

The BottleDrop Fundraiser Blue Bag program is the best option for returning bottles and cans for redemption after events because they are set up to handle large volumes. It's simple: Fill up a blue fundraiser BottleDrop bag with your Oregon redeemable bottles and cans, drop it off at your local Redemption Center, and your refund will be credited to your BottleDrop Account within 48 hours. No lines, no machines, no waiting, no problem.

Event containers, signs and other assistance

Some parts of the region have special programs to help community event organizations with material recovery. These services are not available in all parts of the region so it is important to look for the options in the location of your event. If your community is not listed below, start with your local jurisdiction's Recycling Specialist to get help with ideas for signs and containers.

Clackamas County Event Recycling Program

Provides community organizations free event recycling assistance, clearstream containers and signage for bottle and can recycling at events that take place within Clackamas County.

Contact: Colleen Johnston 503-742-4464

cjohnston@clackamas.us

City of Gresham

Provides free clearstream containers and signage for community events in Gresham.

Contact: Jennifer Ilminen, 503-618-2525

jennifer.ilminen@greshamoregon.gov

Volunteers

Ask the event coordinators to include your recovery plan needs in their volunteer recruitment and task assignments. Be sure that they provide enough volunteers for the cleanup crew. There is a lot to do at the end of the day! Also make sure they let the volunteers know if they will be doing cleanup so that they dress accordingly. Green Team t-shirts or aprons are a nice way to identify the volunteers. They can post announcements for volunteers at these free web programs: Hands on Portland, CNRG, Craig's List and volunteer match. You can search on the Internet to find them.

You can email the Master Recycler Program Manager to post an announcement to invite other Master Recyclers to help with planning, volunteer and vendor training. Remember, they cannot staff recycling/composting stations (masterrecycler@oregonmetro.gov).

Event coordinator, site supervisor and/or janitorial staff

Your venue's staff can make or break your recycling program. Make sure that all parties understand and will carry out your plans, especially if they are doing the recycling themselves. Establishing a good relationship with the event coordinator, site supervisor, and/or janitorial staff is crucial.

During the event:

1. Set up containers and signs the day before, if possible, using the best practices.
2. Check in and train vendors and volunteers.
3. Spend the day monitoring for problems, checking in with volunteers and looking for contamination or full bags.
4. Move containers, add details to signs (as needed), and use volunteers to help solve unforeseen problems.
5. Find out if you can promote recycling by making some announcements on stage.



Chatten Hayes makes recycling fun with the Festa Italiana Emcee

Post event:

1. **Tear down and clean up.** Materials continue to be generated during cleanup. Assist vendors with tear down. Complete and/or confirm final sorting and pickup of garbage and recycling. Donate food.
2. **Evaluate Your Event's Success.** Ask for feedback and suggestions from everyone involved in the event including organizers, volunteers, vendors, exhibitors and haulers.
3. **Calculate Your Event's Success.** To calculate the recovery rate, ensure ahead of time that your process will allow a clear comparison between garbage and recycling. Sometimes groups state, "We had one garbage can and three bags of recycling." This statement does not give a clear evaluation, because it is unknown how big the can was in comparison to the bags. To calculate your recycling rate you need to be able to compare recycling with the waste generated. We learned in Chapter two of this handbook that *total waste generated* is both garbage and recycling.



Mitzi Sugar counts three bags of garbage from an event with 20,000 attendees

If your hauler/recycler was able to weigh your garbage and recycling, follow up with them the day of the event for final weights.

- Calculate your recycling rate using the following formula: $\text{Recycling Rate} = \frac{\text{Weight Recycled}}{\text{Waste Generated (Weight Recycled + Weight Disposed)}}$
- For example, if an event recycled 5,000 pounds of material and disposed of 3,000 pounds of material, the total waste generated was 8,000 pounds. The recycling rate would be 62.5 percent ($5,000 / (5,000 + 3,000) = 62.5$ percent).

If your hauler was not able to weigh your garbage and recycling you will need another plan for evaluating your recovery rate.

- One option is to calculate your recycling rate using volume as your base with the following formula: $\text{Recycling Rate} = \frac{\text{Cubic Yards Recycled}}{(\text{Cubic Yards Recycled} + \text{Cubic Yards Disposed})}$

Mt Hood Community College Waste Audit 5/12/16

Photo of all Waste Generated in One Day



RESOURCE

You can use the Volume to Weight Conversion Table by the U.S. Environmental Protection Agency to help you estimate the weights of specific materials.

- 1 Cubic Yard = 201.974 026 US Gallons
- For example: if an event recycled three 90-gallon roll carts full of cans and bottles(90X3=270 total gallons). The hauler provided a 2 yard garbage container and it was ½ full. First convert the recycling to yards (201.974 026 / 270=.748 yards of recycling). Then calculate your recycling rate (.748 yards recycled / (.748 yards recycled + 1 cubic yard disposed) = 43 percent recycling rate.
- Because DEQ and local jurisdictions all use weight as their base for a recovery rate you might decide to convert the volume of material to weight using the resource in the sidebar to the left.

4. **Publicize the recycling rate along with the results of waste prevention efforts.** Thank your donors, sponsors and volunteers with a card or a post-event celebration, and share the recycling rates and waste prevention results with them.

REPORTING YOUR HOURS

All work, including emails, research, meetings, training and troubleshooting counts as Master Recycler volunteer hours so long as your primary role is training or planning. Some of these projects may be one-day events, in which case the regular Master Recycler volunteer hours report form will work well.

However, ongoing projects will make this form tedious and confusing to use. On the Report Your Hours webpage, there is a link to download an excel spreadsheet you can use to tally your activities as you go and later email to the Master Recycler Program Manager.

Please do not wait until after the event to try and calculate the hours we owe you. You will forget many of the details. If you are not sure how to count hours, contact the Master Recycler Program Manager (masterrecycler@oregonmetro.gov).



SAMPLES AND TOOLS

The next few pages are examples of tools that other Master Recyclers have used and shared from their event recovery projects.

Master Recycler Mentor Miriam Reeber's Bag'o Tricks

<input checked="" type="checkbox"/> Spare sense of humor!!	<input checked="" type="checkbox"/> bungee cord	<input checked="" type="checkbox"/> vinyl/rubber gloves	<input checked="" type="checkbox"/> notepad (pocket sized)
<input checked="" type="checkbox"/> Scissors	<input checked="" type="checkbox"/> twist ties	<input checked="" type="checkbox"/> hand sanitizer	<input checked="" type="checkbox"/> blank paper
<input checked="" type="checkbox"/> Box Cutter	<input checked="" type="checkbox"/> duct tape	<input checked="" type="checkbox"/> tissues or handkerchief	<input checked="" type="checkbox"/> notepaper
<input checked="" type="checkbox"/> pens	<input checked="" type="checkbox"/> cello tape	<input checked="" type="checkbox"/> bandaids	<input checked="" type="checkbox"/> plastic sheet protectors
<input checked="" type="checkbox"/> sharpies (various colors)	<input checked="" type="checkbox"/> binder clips (various sizes)	<input checked="" type="checkbox"/> antibiotic ointment	<input checked="" type="checkbox"/> relevant literature
<input checked="" type="checkbox"/> hole punch	<input checked="" type="checkbox"/> paper clips	<input checked="" type="checkbox"/> cortisone cream	<input checked="" type="checkbox"/> Metro magnets
<input checked="" type="checkbox"/> rubber bands	<input checked="" type="checkbox"/> stapler	<input checked="" type="checkbox"/> sun screen	<input checked="" type="checkbox"/> camera
<input checked="" type="checkbox"/> zip ties	<input checked="" type="checkbox"/> staple remover	<input checked="" type="checkbox"/> bug repellent	<input checked="" type="checkbox"/> large plastic trash bags
<input checked="" type="checkbox"/> rope	<input checked="" type="checkbox"/> safety pins	<input checked="" type="checkbox"/> water bottle	
<input checked="" type="checkbox"/> string		<input checked="" type="checkbox"/> snack (nuts, Protein bar)	

Sample 1: Vendor Letter

[DATE]

A General Letter To Vendors

The [name of event] is counting on you to help make this year’s [event] another huge success. You can do so not only by your generous sponsorship, but also by recycling the material you generate at your booth. Events at [event site] generate a large amount of waste, and the organizing committee is committed to minimizing the amount going into landfills. We ask that you support our efforts to be an environmentally sensitive event.

Please review the waste management procedures below and complete the On-Site Needs and Plan Form. Return the form to [event coordinator] by [date].

[List any specific waste management procedures, such as materials to be recycled, vendor responsibilities, etc.]

On-Site Needs and Plan Form

Please return to [event coordinator] by [date].		
Vendor Company:		
Contact Person:		
Phone:	FAX:	Email:
Please describe any items you plan to distribute at your booth:		
Will your booth operations or items you give away generate any packaging/garbage (plastic wrappers, foil bottle caps, etc.)? Please describe so that we can be prepared:		
Please describe any needs you have on the day of the event (power, tables, chairs, etc.):		
What else do you plan to do/have at your booth? Describe anything else you plan to bring (prizewheels, inflatables, vehicles, etc.):[Name(s)] at [phone number] will be your contact for booth set-up and on-site logistical needs.		

THANK YOU FOR YOUR HELP in making the [event] a great event. See you on [date].

Sample 2: The Bite Of Oregon's Letter to Vendors, 2004

ENVIRONMENTAL GUIDELINES: A RECOMMITMENT TO SUSTAINABILITY

In Oregon, we care not only about what we produce but how we produce it. With a long history as a conscientious recycler, The Bite recommits itself this year to environmental sensitivity with the long-term goal of becoming the most sustainable festival in the nation.

Thanks to the generous support of Portland General Electric, The 2004 Bite of Oregon is to be powered completely by renewable energy sources: wind, hydro- and geothermal power. Thank you, PGE.

By 2008, we aim to make the festival waste-free. We begin our zero-waste campaign this year by asking you to let us know what materials you'll be bringing on site so we may better plan our waste reduction strategies for both this year and next. We'll be performing random waste sampling and weighing all types of waste. Finally, we ask that you avoid certain types of materials as much as possible.

We count on you to make this year's Bite of Oregon a huge success. You can do so not only by your participation, but also by recycling the material you generate at your booth. Events like The Bite generate huge quantities of waste, and we expect you to support our efforts to be an environmentally sensitive event.

WASTE DISPOSAL GUIDELINES

Please review the following waste disposal guidelines, complete the On-Site Needs and Plan Form, and sign below, indicating your agreement.

- The Bite relies principally on Green Team volunteer staff to remove waste from your booth. One will visit your booth occasionally to assist you in managing your waste.
- Plan to separate and contain recyclables inside or behind your booth between pick-ups:
 - Cardboard: flatten and stack
 - Cans: flatten
 - Mixed paper
 - Plastic bottles: flatten
 - Juice boxes: flatten
 - Plastic bags

MATERIALS TO BE AVOIDED

Some materials are either prohibited or strongly discouraged.

- The use of expanded polystyrene food containers (an example is clamshells) is prohibited in the city of Portland.
- Paper or plastic? Each has its environmental pros and cons and the jury is still out on this knotty question. But where you have options, choose recyclable, reusable paper materials (preferably unbleached kraft paper) over petroleum-based, non-biodegradable plastics (especially prolific and persistent, plastic film bags and plastic butter/margarine tubs).
- Avoid multi-material containers. Containers like those typically used in packaging grated cheese and frozen juices can have paper, foil, metal and plastic all in one container. These are impossible to reuse or recycle and go straight to the landfill.

COMING ATTRACTIONS

In the future, watch for these improvements in waste reduction.

- The development of biodegradable serviceware (plates, cups, utensils) proceeds apace. As these become more aesthetic, market-ready and cost-competitive, The Bite will move toward standardization of biodegradable serviceware at the festival.
- Metro is working on a food composting system that we hope to be in place by 2005, designed mainly with the restaurant industry in mind. This will permit the unsorted collection of all biodegradable waste: animal fats, unbleached paper, biodegradable serviceware, etc., without the need for sorting.

Environmental Footprint Form

Please complete the following and mail, fax or deliver the completed form to us. [Fax number]		
Name of Booth:		
Contact Person:		
Phone:	FAX:	Email:
Please list or describe the materials that you will be dispensing as part of your food, beverage, performance or promotional activities (e.g., paper plates, plastic forks, napkins, plastic glasses, glass bottles, glossy brochures, etc.):		
Approximately how many miles will you be driving to operate at the Bite?		
What type(s) of vehicles?		
How many trips?		

Example of ways to go beyond the basics

Sustainability at the BEST Awards Breakfast

The awards breakfast itself was designed to reflect the principles of the event, with strong sustainability practices infused in all aspects of planning.

The Oregon Convention Center (OCC) was selected to host the Awards breakfast based on accessibility, price, and commitment to green practices. Event planners worked with OCC and Aramark (catering) staff to ensure that most of the food was sourced locally and the remainder was organic. The event featured a host of other “green” features:

- Friends of Trees planted a commemorative native tree in honor of each BEST award winner.
- Plant Native provided native plant centerpieces.
- A school to jobs youth program that serves people of color partnered with BEST awards to have 10 youth job shadow at nominee locations and sit with them during the meal.
- Tri-Met provided free passes for all guests to encourage use of alternative transportation.
- Other sponsors provided sustainably-produced door prizes for guests.
- Guests had the opportunity to enter a drawing and offset carbon impacts with a donation to the Climate Trust.
- Doubletree Lloyd Center provided accommodations for keynote speaker Richard Heinberg. The hotel emphasizes water and energy conservation in hospitality practices.
- Event organizers and volunteers minimized automobile travel and resource use in the planning of the BEST Awards Breakfast.
- All printed materials for the event were produced on post-consumer recycled paper.

CHAPTER 21 DISPLAYS AND LITERATURE

INTRODUCTION

As a Master Recycler, you have access to many kinds of literature and displays to supplement your outreach activities. There is really no need to spend your time creating flyers, signs, brochures or displays. We have it all for you! We even have fun giveaways, such as bags, stickers, pencils, and temporary tattoos. Our partners are excited about sharing these resources with you, because they know that people are more likely to use them, and possibly change their behavior, when a real person in the community presents them.

Below is the most current list and the contacts for displays and literature. Some are general to the region, while others are jurisdiction-specific. You are welcome to contact these people, your mentor, or the Master Recycler Program Manager if you want advice on what to check out. www.masterrecycler.org also lists these resources. If this version of the handbook is more than a year old you may want to see if there are new resources available to you on the web.

These kits can include a canopy, table and chairs if your outreach site does not already provide them. Be sure and request them if you need them. It is standard to include tablecloths, pens, tape, string and paperweights, but you can also ask about other items you think you might need. Some of these items are heavy or awkward. You can also request to have just parts of the kit so you can transport it by bus or bike. Presentations may only require parts of the kits as well.

Questions to consider when checking out equipment and materials:

- How many attendees are expected at the event, and what quantity of materials will you need?
- Will the audience at your event want a lot of a particular type of information — such as materials printed in a particular language or more materials about green cleaners?
- Is the event outdoors or indoors?
- Do you need to borrow a canopy, table and chairs, or will the event organizers provide them?
- What is the weather forecast? (hot sun needs a canopy as much as a rainy day)
- Do you have enough room to put screens or display stands next to your table, behind your table or on top of your table?
- Do you want an activity at the table or will you just provide information, answer questions, or engage people as they come by?
- Can you drop off equipment and materials near where you set up or will you have to carry them and if so how far? Will you need to borrow a cart to transport your materials?
- When can you pick up and drop off equipment and materials? (Often this is only possible during business hours.)

RESIDENTIAL CURBSIDE RECYCLING AND COMPOSTING KITS

City of Beaverton Recycling and Garbage

Beaverton City Hall, 12725 SW Millikan Way

Contact:	Elizabeth Cole, 503-526-2460, ecole@beavertonoregon.gov
Key messages:	What goes in the commingled cart, what doesn't. Glass on the side. No plastic bags.
Includes:	<ul style="list-style-type: none"> • Garbage, mixed recycling and glass containers • Sample materials
Literature:	<ul style="list-style-type: none"> • Every Day is Recycling Day flyers • Master Recycler post cards



Clackamas County Recycling and Garbage

150 Beaver Creek Road, Oregon City





<i>Garbage and recycling 'funnels'</i>	<i>Recycling Plinko</i>	<i>Wrap wall</i>
Contact:	Colleen Johnston, 503-742-4463, cjohnston@clackamas.us	
Key messages:	What goes in recycling and garbage carts. Glass on the Side. No Plastic Bags. Only four types of plastic are accepted. Think 'size' and 'shape'. When in doubt throw it out. Top Five Offenders.	
Includes:	<ul style="list-style-type: none"> • Recycling and garbage 'funnels' 	<ul style="list-style-type: none"> • Mini glass bin
Optional:	<ul style="list-style-type: none"> • Wrap wall showing plastic wrap and film accepted at local grocery stores • Materials for sort game • Recycling Plinko Board 	<ul style="list-style-type: none"> • Four View-Masters™ with slides about Waste Prevention, Food Waste Prevention, Toxics, and Backyard Composting. (image in Master Recycler section) • Recycling Wheel
Literature:	<ul style="list-style-type: none"> • Residential Recycle guides • Reduce, Reuse, Recycle guide • Recycling Depot Lists 	<ul style="list-style-type: none"> • Master Recycler post cards • Kid's recycle coloring booklets • Prizes: temporary tattoos, window clings and magnets

City of Gresham Recycling and Garbage

1333 NW Eastman Parkway, Gresham



Gresham Recycle Right game

Recycling table

Contact:	Meghan Borato, 503-618-2134, meghan.borato@greshamoregon.gov	
Key messages:	It is important to recycle right! Keep bags out. Glass goes on the side.	
Includes:	<ul style="list-style-type: none"> Garbage table banner 	<ul style="list-style-type: none"> Standard kit is combined with Eat Smart, Waste Less materials
Optional:	<ul style="list-style-type: none"> Recycle Right game – dry erase sign with magnetic pieces made from reused lids Recycling and garbage ‘tornados’ 	
Literature:	<ul style="list-style-type: none"> In/Out – Sí/No sheets Bring Your Bag window sticker GoCart cards 	<ul style="list-style-type: none"> Reduce, reuse, recycle brochures Metro magnets and publications Greener Cleaner recipe book

Recycle or Not – Reciclar o No

(Available at each local jurisdiction)

Contact:	Your local government contact	
Key messages:	Some items are creating confusion for recyclers in the greater Portland, Oregon area. Check the list in Recycle or Not to make sure you’re recycling right. It won’t take long, but it will make a difference for the environment. Check the list at RecycleOrNot.org or ReciclarONo.org . Recyclers can find out if an item is recyclable at home by submitting a photo to @recycleornot or @reciclarono on Instagram. There will also be a rotating feature item with messages about it. .	
Includes:	<ul style="list-style-type: none"> Recycle or Not game with board, wheel and prizes 	<ul style="list-style-type: none"> Feature item sign board in English and Spanish
Optional:	<ul style="list-style-type: none"> Metro magnets Green Cleaner Handbook 	<ul style="list-style-type: none"> Medical Waste Guide Junk Mail Reduction
Literature:	<ul style="list-style-type: none"> Recycle or Not and Reciclar o no brochures. Metro magnets 	



Recycle or Not table

City of Portland Multifamily Waste Reduction

1810 SW 5th Ave., 710, Portland

Contact:	Genevieve Joplin, 503-568-2803, genevieve.joplin@portlandoregon.gov	
Key messages:	Multifamily collection service in Portland includes garbage and recycling; no plastic bags and glass on the side. Because yard debris and food scrap service are offered at the discretion of the property manager, a visual assessment of the collection area(s) is part of any presentation to multifamily communities.	
Includes:	<ul style="list-style-type: none"> • Yes/No bag of items to sort • Bucket with literature 	<ul style="list-style-type: none"> • Collection area assessment form • Suggested presentation tips
Optional:	<ul style="list-style-type: none"> • Metro magnets • Green Cleaner Handbook 	<ul style="list-style-type: none"> • Medical Waste Guide • Junk Mail Reduction
Literature:	<ul style="list-style-type: none"> • Property Managers: Successful Garbage and Recycling Overview • Keeping Residents Informed; Composting Food Scraps and Service Setup • Durable Signs for Recycling, Garbage and Composting • Residents Guide to Recycling and Garbage • Residents Guide to Composting • Recycling Magnets and Door Hanger Cards 	



City of Portland Be Cart Smart: Every Cart Plays Its Part

1810 SW 5th Ave., 710, Portland



Portland Be Cart Smart banner and game

Portland Be Cart Smart renter display and foodscrap container

Contact:	Genevieve Joplin, 503-568-2803, genevieve.joplin@portlandoregon.gov
Key messages:	Curbside collection service in Portland includes weekly yard debris and food scraps, weekly recycling and every-other-week garbage pickup. Sign up for pickup day notifications. Include the food! Collect all food, including meat, bones, dairy and grains, in your kitchen collection container and empty it into the green roll cart. No plastic bags; keep glass on the side.
Includes:	<ul style="list-style-type: none"> • Be Cart Smart floor banner • Renter information display and foodscrap container • Bring your bag window sticker table top display • Tablecloth, clicker and pens
Optional:	<ul style="list-style-type: none"> • Be Cart Smart Game: Dry erase sign with images of containers, metal easels, game piece items to sort with magnet on back • Master Recycler banner • Yes, no kit: Box of real examples of materials that can be used to discuss what goes in garbage and recycling (compost options not available because they rot, but you could bring some) • Four brightly colored View-Masters™ with slides about Waste Prevention, Food Waste Prevention, Toxics, and Backyard Composting
Literature:	<ul style="list-style-type: none"> • Curbside Collection Guide, Renter Guide, Multifamily guide (come in five languages) • Recycle or Not materials • Bring Your Bag window clings • Oregon E-Cycles • Plastics recycling flyers • Metro magnets and Junk Mail Kit • Master Recycler post cards

Washington County Reduce, Reuse, Recycle

155 N First Ave Suite 160, Hillsboro



Reduce, Reuse Recycle table

Washington County rolling kit

Contact:	Ricardo Palazuelos, 503-846-3651, ricardo_palazuelos@co.washington.or.us
Key messages:	What goes in recycling and garbage carts and what doesn't; glass on the side. No plastic bags. Sign up for pickup day notifications. Take toxics and needles to their proper place. Avoid toxics by using greener cleaners.
Includes:	<ul style="list-style-type: none"> • Garbage and Recycling Day Display. Choose between table-top banner (to be used indoors only) or floor-standing banner (can be used indoors or outdoors) • Durable Rolling kit with supplies
Optional:	<ul style="list-style-type: none"> • Garbage and Recycling Day Spin wheel and prizes • A variety of literature display stands • Four brightly colored View-Masters™ with slides about Waste Prevention, Food Waste Prevention, Toxics, and Backyard Composting • Master Recycler banner • Cute Reduce, Reuse, Recycle Props
Literature:	<ul style="list-style-type: none"> • Waste reduction tip sheets and residential recycling brochures • RecycleWise newsletters • Metro magnets and publications • Coloring books, Spanish and English • Recycle or Not materials

SUSTAINABLE CONSUMPTION

City of Portland Resourceful PDX Kit

1810 SW 5th Ave., 710, Portland

Contact:	Genevieve Joplin, 503-568-2803, genevieve.joplin@portlandoregon.gov
Key messages:	Ideas for making simple changes in everyday choices. Save More, Live More. Share tips and resources so people can 1) Buy smart, 2) Reuse, 3) Borrow & Share and 4) Fix & Maintain. These actions can help save money, support the community, conserve natural resources and leave people with more time to enjoy with friends and family. Life transitions (moves, having a child) are good times to seek alternatives.
Includes:	<ul style="list-style-type: none"> • Pop-up banner • Interactive map display with a focus on four categories to show where people can go for resources and how to use them • Color coded pieces and dry erase pens • Table top displays for each topic and Bring Your Bag • Tablecloth, pens, clicker, and paper weights
Literature:	<ul style="list-style-type: none"> • Resourceful PDX card • Resourceful PDX mapr • Bring Your Bag window clings, Metro magnets



Clackamas County Sew a button/repair

150 Beaver Creek Rd, Oregon City



Contact:	Colleen Johnston, 503-742-4463, cjohnston@clackamas.us
Key messages:	By learning how to properly care for and repair the material items in our lives, we can help reduce the environmental impact of the products we buy, save money, and find joy in fixing things.
Includes:	<ul style="list-style-type: none"> • Sew Easy banner • Button Bookmarks: Teach people how to sew a button by making a button bookmark they can take home
Literature:	<ul style="list-style-type: none"> • Every Thread Counts information on purchasing durable and repairing textiles • Craft ideas for buttons • List of upcoming Repair Fairs

Washington County

155 N 1st Ave, Suite 160, Hillsboro



Contact:	Ricardo Palazuelos, 503-846-3651, ricardo_palazuelos@co.washington.or.us
Includes:	<ul style="list-style-type: none"> • Know your stuff magnetic game. Has a set of questions and answers for Reduce, Reuse, Recycle and for ESWL. • The Story of Stuff Display. A bilingual (English/Spanish) journey through how our stuff gets made, sold and disposed of. Lightweight and easy to set up; comes in a carrying case. • Repair and Reuse table prop.

GREENER CLEANER KITS

Clackamas County Green Cleaner

150 Beaver Creek Rd, Oregon City



Contact:	Colleen Johnston, 503-742-4463, cjohnston@clackamas.us
Key Message:	It is safer and easier to make your own cleaners, learn how to read labels, what to do with toxic waste. Also understanding signal words like Danger and Warning. Pros and cons of Dr. Bronner's vs Murphy Oil.
Includes:	<ul style="list-style-type: none"> • Green cleaner display board (small or large boards available) • Supplies to make one of three greener cleaners: Soft Scrub, Ant Bait or All Purpose Cleaner • Safety Data Sheets for all products on display
Literature:	<ul style="list-style-type: none"> • Green Cleaner Recipe booklets • Household Hazardous Waste flyers • Metro coupons for disposal of toxics • Hazardless Home Handbook • Metro magnets

Washington County Green Cleaner

155 N 1st Ave, Suite 160, Hillsboro

Contact:	Ricardo Palazuelos, 503-846-3651, ricardo_palazuelos@co.washington.or.us
Key messages:	Many cleaners are unhealthy for you and your family. There are simple and safe alternatives that can save you money. Read warning labels.
Includes:	<ul style="list-style-type: none"> • Non-toxic ingredients, recipes, and descriptions of each ingredient and its cleaning properties. • A receipt listing the total cost of the ingredients shows how cost-effective green cleaners can be! <p>(Note: this kit weighs about 15 pounds.)</p>



FOOD WASTE PREVENTION KITS

City of Beaverton Eat Smart, Waste Less

Beaverton City Hall, 12725 SW Millikan Way

Contact:	Elizabeth Cole, 503-526-2460, ecole@beavertonoregon.gov
Key message:	Americans waste 20% of their food. Learn simple tips to save money and stop food waste. SMART STORAGE – keep fruits and vegetables fresh by storing them correctly.
Call to action:	Take the Eat Smart, Waste Less Challenge. Ask people to take the pledge to reduce their food waste at home. It's a 4-week challenge where they will receive one email a week with tips and tricks to reduce their food waste. If they complete the survey at the end of the four weeks they will receive a reusable produce bag.
Includes:	<ul style="list-style-type: none"> • Table sign • Eat Smart, Waste Less table banner • "How much food do we waste?" interactive game • Produce bags and food storage containers for display only • Produce storage sorting game • A-Z book for reference
Literature:	<ul style="list-style-type: none"> • Half-sheet food storage guide • Food storage guide magnets • Pledge forms • Stickers



Clackamas County Eat Smart, Waste Less

150 Beaver Creek Road, Oregon City



Contact:	Colleen Johnston, 503-742-4463, cjohnston@clackamas.us
Key messages:	Eat Smart, Waste Less. Take the Challenge. Shop with meals in mind. Prep now and eat later. Store food properly. Eat what you buy. Track your food waste.
Includes:	<ul style="list-style-type: none"> • Produce bag prizes for ESWL challengers • ESWL wheel with food related questions, prizes for kids, and basket of fruits and veggie
Optional:	<ul style="list-style-type: none"> • Eat Smart, Waste Less Plinko. People can drop the ball to determine which action area they will focus on in the challenge
Literature:	<ul style="list-style-type: none"> • Fridge Storage flyer; Fruit & Vegetable Storage half sheet • Food Preservation flyers and cards • ESWL pledge forms • Shopping pads • Smart storage magnets

City of Portland Eat Smart, Waste Less

1810 SW 5th Ave., 710, Portland



Contact:	Genevieve Joplin, 503-568-2803, genevieve.joplin@portlandoregon.gov
Key messages:	<p>Eat Smart Waste Less (ESWL) – Portlanders are taking simple steps to cut down on wasted food & wasted money! Preventing food waste saves money and resources like water, land, energy, time and heart of workers who grow, transport and sell our food to us. Reducing trips to the grocery store reduces exposure to coronavirus for ourselves & others. Note: shift focus away from compost or “waste”; instead guide conversations upstream towards keeping food edible, and saving resources.</p> <p>Reducing spoilage of food already on hand is fastest path to greater action, but kit materials focus on three waste prevention strategies: 1. meal planning and shopping lists to buy only what is needed, 2. proper storage to keep food fresh and tasty, 3. and ways to make sure food at home is eaten before spoiling.</p> <p>Households can also take the Eat Smart Waste Less Challenge (ESWL). Measure your household food waste and receive simple tips for keeping food good enough to eat! Explore the Master Recycler YouTube Channel Eat Smart, Waste Less play list to see Master Recyclers using these talking points.</p>
Includes:	<ul style="list-style-type: none"> • Food storage magnetic game board and game pieces with hints and tips on the back • A-Z Food Storage Guide (to be used as reference for Master Recyclers tabling, not for hand out) • Seeds as giveaways
Literature:	<ul style="list-style-type: none"> • Food storage tips • Food storage sheets • Kids activity book “An Apple Isn’t Just an Apple”

Washington County Eat Smart, Waste Less Challenge

155 N 1st Ave, Suite 160, Hillsboro

Contact:	Ricardo Palazuelos, 503-846-3651, ricardo_palazuelos@co.washington.or.us
Key message:	By making small shifts in how we shop, prepare and store food, we waste less, save money and conserve the valuable resources associated with food production.
Call to action:	Pledge to practice what we call SMART Storage. After taking the pledge, they can receive a SMART storage magnet guide. If they want more information, but aren't ready to commit, they can receive a SMART storage guide card. For more information on the Challenge visit www.EatSmartWasteLess.com
Includes:	<ul style="list-style-type: none"> • Food storage magnet game board with easel and magnetic food pieces with tips on back • Floor banner and two small tabletop message displays • Chalkboard Activity
Optional:	<ul style="list-style-type: none"> • Spin wheel and prizes
Literature:	<ul style="list-style-type: none"> • Fridge Storage flyer • Fruit and Vegetable Storage half sheet • Food Preservation flyers and cards
Props:	<ul style="list-style-type: none"> • Four pieces of food to accompany the Eat Smart, Waste Less presentation.
Power Point:	<ul style="list-style-type: none"> • Go online to the Master Recycler kits page to download the Power Point presentation
Party Kit	<ul style="list-style-type: none"> • Go online to the Master Recyclers kits page to find the Just Eat it Movie Viewing Party Screening Took Kit guide and a flyer template for recruitment • Includes prizes for a drawing • Laptop and projector available upon request



Washington County Eat Smart/Waste Less table, food storage board, spin wheel with prizes and with a case and activity chalkboard

CHAPTER 22 PLACES TO VOLUNTEER

INTRODUCTION

From art to building salvage, fixing to sharing, composting demonstrations to staffing an information booth, there is a niche in just about every corner of the greater Portland area for a Master Recycler. People in this region are excited to have Master Recyclers join in because they know that you know your stuff. Many organizations will make announcements in the monthly newsletter and Master Recycler volunteer calendar online. But they also welcome the Master Recycler who takes the initiative to contact them.

This chapter is devoted to Master Recyclers who would like to find a spot where they can settle in and do some deeper volunteer work. It is a listing of organizations or projects where Master Recyclers have become regulars. Some of them are one-time events that Master Recyclers return to participate in year after year. Some of them are organizations that need your expertise for a one-time special project. Some have on-going projects that need a committed volunteer to take the lead. You will learn about the organization mission, how Master Recyclers have gotten involved in the past, and the contact information. It is up to you what you do next. You can decide to jump in with some of the existing projects or contact an organization and say that you want to use your special talents and see if they have a need for you.

YOUR LOCAL JURISDICTION

During the class, you will have met the staff from the jurisdiction that hosted that particular class and learned about how Master Recyclers can participate in their campaigns. Previous chapters have also discussed many of the local government campaigns by topic. This is a listing of all of the local jurisdictions' major campaigns and projects so that you can see them at a glance.

City of Beaverton

Elizabeth Cole ecole@beavertonoregon.gov 503-526-2665

- Multi-family *door to door outreach*
- Beaverton Information Booth on Residential Solid Waste and Recycling
- Eat Smart, Waste Less tabling and presentations (food waste prevention)
- Adopt a multifamily housing community

Clackamas County

Colleen Johnston, 503-742-4463, cjohnston@clackamas.us

- Clackamas County Information Booth on Residential Solid Waste and Recycling and toxics reduction
- Multifamily door to door outreach
- Repair Fairs

City of Gresham

Meghan Borato, 503-618-2134, meghan.borato@greshamoregon.gov

- Gresham Information Booth on Residential Solid Waste and Recycling
- Eat Smart, Waste Less tabling
- Adopt a multifamily housing community
- Earth Day E-waste Collection Event
- Repair Fairs and Swaps

City of Portland

Genevieve Joplin, 503-823-0232, genevieve.joplin@portlandoregon.gov

- Business recycling assistance
- Be Cart Smart (Residential recycling and composting information booth)
- Resourceful PDX (Information booth that promotes reuse, fix and maintain, sharing and buying smart)
- Multifamily presentations and information booth
- Special project assistance
- Adopt a multifamily housing community
- Eat Smart, Waste Less program

Washington County

Ricardo Palazuelos, 503-846-3651, ricardo_palazuelos@co.washington.or.us

- Reduce, Reuse, Recycle and Eat Smart, Waste Less information booth and community presentations

Heather Robinson, 503-846-3660, heather_robinson@co.washington.or.us

- Multi-family *door to door outreach*
- Adopt a multifamily housing community
- Repair Fairs

OTHER PARTNERING ORGANIZATIONS

The organizations (below) are presented alphabetically. After this list there are two indexes so you can search by location and by topic.

Center for Diversity and the Environment

cdeinspires.org

Mission statement: *We harness the power of racial and ethnic diversity to transform the environmental movement by developing leaders, catalyzing change within institutions and building alliances.*

Ways Master Recyclers have volunteered:

- Join Environmental Professionals of Color (EPOC) to network with fellow leaders of color who work on critical environmental issues.
- Volunteer to support their many individual, organizational and systemic programs.

What does not count as volunteer hours:

- If you just attend trainings without the intention of applying the information to a specific project.

Clackamas Waste Reduction Education Program

Laurel Bates, Waste Reduction Education Coordinator 503-742-4454, lbates@clackamas.us

Mission Statement: *The Clackamas County Office of Sustainability and the Clackamas County Refuse and Recycling Association work together to support school sustainability and recycling efforts with resources, recycling containers, presentations and education kits.*

Ways that Master Recyclers have volunteered:

- Master Recyclers with an education background have assisted Laurel in classroom presentations and programing in Clackamas schools.

Community Warehouse

3969 NE MLK Jr Blvd, Portland 97212 | 8380 SW Nyberg St, Tualatin 97062 | 503-891-7400

www.communitywarehouse.org/volunteer-2

Mission Statement: *We help vulnerable populations improve the quality of their lives and become self-sufficient by providing them with basic household furnishings. Community Warehouse is the only full-service furniture bank in the Portland metro area. In the last three years alone, Community Warehouse has provided essential furniture and household items to more than 22,000 low-income people. After visiting Community Warehouse, recipients have enough furniture, beds, kitchen items, and linens to create a safe and stable home and allow them to devote their time and resources to meeting other needs such as employment assistance, health care, or food.*

Ways Master Recyclers have volunteered:

- Outreach Ambassadors: help with special Community Warehouse fundraising events, outreach fairs and spreading the word, and information booths in community events.
- Staffing the Community Warehouse van at Neighborhood Cleanups to ensure that only reusable household items are accepted.
- Join the Board of Directors.

Cracked Pots

crackedpots.org/

Mission Statement: *to use art to encourage our community to creatively look at trash. Reuse is at the heart of all we do.*

Cracked Pots has two events that promote reuse and art.

- Cracked Pots McMenamins Edgefield Garden Art Show. Artists sell recycled garden art.
- Glean is an art show also sponsored by Metro. Five artists are selected each year to glean materials from the Metro transfer station and spend five months making art and blogging about it.

Cracked Pots also runs the ReClaim-it Store. ReClaim It! sells items and artists materials that have been gleaned from the dump or received from local businesses. Metal boxes, wooden window frames, musical instruments, turned chair legs, heavy glass shelves, fishing rods and golf clubs, flooring and tile samples, interesting metal pieces, old typewriter parts, old tools...who knows what else will be added each week as our gleaners sort through the dump, looking for treasures?

Ways Master Recyclers have volunteered:

- Check out materials and kits from one of the local jurisdictions and staff a booth at the Cracked Pots Edgefield Artshow in Troutdale. This is a two day event that usually takes place on a Tuesday and Wednesday in July.
- Support the Glean Art Show or ReClaim It! Store through outreach, articles. One Master Recycler helped design storefront displays to promote creative reuse.
- Join Cracked Pots' Board of Directors

Things that don't count as volunteer hours:

- Helping with inventory in the store.

Down the River Cleanup on the Clackamas (Annual Event)

www.welovecleanrivers.org

Description: An on-river, volunteer litter clean up. Water paddle crafts, on-land teams and rafters join in to remove trash. Attracting over 300 people, and typically removing 3 to 4 tons of trash from the Clackamas River. There are about five parks where the event is staged.

Ways that Master Recyclers have volunteered:

Several years into the event Master Recyclers started helping get materials recycled. Now as much as 50 percent is recycled. This event has job descriptions you can find on the website. These two jobs count as volunteer hours:

- Organize the recycling plan.
- Sorter Captains: lead teams of 10+ to set up and sort incoming materials for recycling.

Jobs that don't count as volunteer hours:

- Sorter assistants, registration, on-land volunteer.

Eco-School Network

Ecoschoolnetwork.org

Description: The Eco-School Network is an organization of parents promoting sustainable practices and raising ecological awareness in elementary schools in Oregon. The Network equips parents and students to lead school communities toward sustainability through free training and ongoing support.

Ways Master Recyclers have volunteered:

- Attending the training
- Helping a school become Oregon Green School Certified
- Leading student green teams
- Participating in earth day activities.

Free Geek

1731 SE 10th Avenue, Portland | www.freegeek.org

Mission Statement: *Free Geek transforms used technology into opportunity, education, and community. Free Geek receives donated used computers from the public and businesses, and Build volunteers refurbish them with care. These computers are then adopted out to our Adoption volunteers in exchange for 24 hours service or after successfully completing our Build Program.*

Ways Master Recyclers have volunteered:

- Provide a presentation on recycling.
- Provide a workshop in the classroom or training in the rebuild program.
- Promote Free Geek with an information booth at community events.

Things that don't count as volunteer hours:

- Recycling and rebuilding computers.
- Helping with inventory in the store or warehouse.

Habitat for Humanity ReStore

10445 SE Cherry Blossom Dr, Portland | 13475 SW Millikan Way, Beaverton | 610 NE 181st Ave, Gresham

Pdxrestore.org

Description: *PDX ReStore locations are stocked with new and reclaimed building materials, furniture, appliances and other home goods, and are the reuse equivalent to Home Depot. All proceeds go to help build homes for families.*

Ways Master Recyclers have volunteered:

- PStaffing a summer booth with ReStore outreach staff.
- Offering a workshop or training at any of the stores on creative reuse or recycling.

Things that don't count as volunteer hours:

- Helping with inventory in the store.
- Accepting donations.
- Repairing or recycling materials that have been donated

James Recycling Collection Events

jshrecycling.com

Mission Statement: *James Recycling is a private locally owned recycling company that runs events for the collection of a variety of non-curbside recycling materials. Events take place in various locations throughout the region.*

Ways Master Recyclers have volunteered:

- Help promote events.
- Help with the Inspect & Correct area, as follows: Donors with soft plastics, large or small rigid plastics and Styrofoam recycling items will be directed to Inspect & Correct, where you will 1) Review donor contents for cleanliness and acceptability. 2) Offer suggestions and answer questions, 3) Recommend and oversee any needed corrections, and 4) Approve donor corrections and forward them to the drop-off areas.

What does not count as volunteer hours:

- Collection events involve a lot of hauling and sorting of waste. It is okay if you end up doing some of this work, but it cannot be the primary role you play. Your primary role should be to supervise or advise the other volunteers how to do this or act as a key contact for the public.

Milwaukie Farmer's Market

Colleen Johnston (Class 36) colleen.johnston@providence.org

Description: Learn tabling ropes with two pros or just have fun at a great little market. Join two Master Recycler Mentor's Colleen Johnston (Class 36) and Rob Kappa (Class 37) at this creative and popular information booth that frequents this market several Sundays in the summer months.

MROc (Master Recyclers of Color)

groups.google.com/g/MROC_PDX | www.facebook.com/mrocpxd

Mission Statement: *Master Recyclers Of Color (MROC) is a community group for any individual who identifies as Black, Indigenous or a Person of Color, who is interested in waste and recycling.*

Ways Master Recyclers have volunteered:

- Monthly meetups
- Social media, e-networking
- Zine, food garden outreach
- Organizing speakers, presenters and tours.

Ecochallenge.org

www.ecochallenge.org/hello/

Mission Statement: *Ecochallenge.org is a non-profit organization that inspires people to take responsibility for Earth.*

Ways that Master Recyclers have volunteered:

- Organize your church, coworkers, friends or family to take the fall EcoChallenge. For two weeks, in mid-October, challenge yourself to change one habit that benefits both you and the planet. Create a profile and report your results online.

Things that don't count as volunteer hours:

- If you just do challenge by yourself without involving others (it is great to do, but just doesn't count as hours).

Oregon Green Schools

oregongreenschools.org

Mission Statement: *Oregon Green School is dedicated to energizing and engaging students through student-driven activities that advance their understanding and ownership of sustainability. Oregon Green Schools is helping with programs to recycle, reduce waste, save energy and conserve water with:*

- Hands-on assistance.
- Curriculum and funding resources.
- Recognition and events.

Ways Master Recyclers have volunteered:

- Use the OGS Certification process to get your local school certified.
- Help OGS recruit schools in the region.
- Provide assistance to several schools in the region.

Oregon Zoo

Master Recycler Program Manager, masterrecycler@oregonmetro.gov

Description: The Oregon Zoo's mission includes offering education on wildlife, their habitats and what we can all do to protect them. Master Recyclers have many ways that you can participate in this mission and have fun family-friendly activities that reach a diverse audience.

Ways Master Recyclers can volunteer:

- Check out materials or create your own display and set up a table almost any day in the zoo.
- Set up a table at a number of scheduled education days and major events like Howloween, Hop into Spring, and Zoo nights.

PlanetCon (Westside Planet Alliance)

PlanetCon.org

Description: PlanetCon is a community recycling, swap and repair event that offers a hall of exhibitors with information as well. A group of Master Recyclers in Hillsboro and Forest Grove began partnering with Washington County and local recyclers to collect non-curb-side recycling along with conducting a swap event and repair fair.

Ways Master Recyclers have volunteered:

- Joining the planning committee.
- Staffing an information booth on Eat Smart, Waste Less, Waste-Free Advocates, toxics, recycling and more.
- Helping on the day of the event with logistics, greeting and helping people understand recycling.
- Repairing items in the Repair Fair section.

Rebuilding Center

3625 N. Mississippi Avenue, Portland 97227 | www.rebuildingcenter.org/volunteer

Mission Statement: *We offer affordable used building and remodeling materials with the goal to promote the use of salvaged and reclaimed materials — a non-profit resource to strengthen environmental, economic and social fabric of local communities. As a community building organization, we have inverted the volunteer model and would love to hear how we can serve you and expand your ambitions and skill sets.*

Ways Master Recyclers have volunteered:

- Receive training on Rebuilding Center programs and staff information booths at the region-wide home and garden and remodeling tradeshows (mostly at the Convention Center and Expo Center in NE and N Portland) to promote purchasing of salvaged materials and deconstruction options right when people are thinking about making changes to their home.
- Help with the newsletter, blog or website.
- Join their volunteer leaders program.
- Collect stories of creative reuse for their website and community board.

Things that don't count as volunteer hours:

- Helping with inventory in the warehouse.

Repair Fair

repairpdx.org (Portland and Gresham) | repairfair.org/ (Beaverton to Hillsboro)

Description: Repair Fairs or Repair Cafés are events where volunteers with “fixing” skills help others fix broken items. Volunteers may be able to repair small appliances like blenders or coffee makers, jewelry, bikes or clothing that needs a new button or a zipper fix. Good things can happen at a Repair Fair, including: meeting new people, learning useful skills and keeping items in use. Repair PDX started a Repair Voucher program in 2021. People can select their own repair company or one from a list by Repair PDX and then present the voucher. Repair PDX will pay the repair company for the repairs.

Ways Master Recyclers have volunteered:

- Help organize a Repair Café.
- Assist with public orientation and entry.
- Teach people how to repair.
- Outreach for RepairPDX's new Repair Voucher Program

Scrap

1736 SW Alder Street, Portland | portland.scrapcreativeuse.org

Mission Statement: *Inspiring creative reuse and environmentally sustainable behavior by providing educational programs and affordable materials to the community.*

Ways Master Recyclers have volunteered:

- Provide a workshop on creative reuse.
- Bring a group to one of the workshops or parties.
- Help with fundraising events.
- Teach at the summer camp.
- Help with teacher trainings.

Things that don't count as volunteer hours:

- Helping with inventory in the warehouse.

Trash for Peace

Portland schools | www.trashforpeace.org/

Mission Statement: *Turn trash into peace. To educate and spread awareness about the capacity we have as human beings to use our creativity and innovation to replace the concept of trash with resourcefulness and giving back. We strive to encourage people to reduce, reuse, and then recycle for a healthier and more peaceful planet.*

Trash for peace works on Youth empowerment, business outreach, and creative bin designs all focused on achieving their vision: Empowered, healthy communities living in a world without waste. One program of Trash for Peace is Ground Score. Ground Score is an association of environmental workers who create and fill low-barrier waste management jobs. They created outreach materials to support our local waste pickers through proper set-out of our bottles and cans

Ways Master Recyclers have volunteered:

- Use their classroom manuals to conduct creative reuse presentations in classrooms.
- Empower youth of all ages to promote self-esteem, leadership, team building, and job skills through the lens of environmental education.
- Help with waste free cooking classes.
- Promote the rights of waste pickers with Ground Score outreach materials to support through proper set-out of our bottles and cans.
- Join the Board of Directors

Waste-Free Advocates

www.wastefreeadvocates.org

Mission Statement: *Waste-Free Advocates empowers and connects Oregon communities to minimize over-consumption and waste..*

Ways Master Recyclers have volunteered:

- Work with companies' Green Teams to inspire coworkers to think of waste prevention ideas dealing with lunchtime choices (food carts, GoBox, BYOs, etc.) and in other aspects of their daily activities.
- The Oregon Legislature convenes in February. Help us target and track environmentally sensitive legislation through the house and senate.
- Become a Board Member.
- Write newsletter articles.

Your Local Farmer's Market

www.oregonfarmersmarkets.org/

Description: Farmer's markets are a bustling center to communities throughout the region. Along with providing our region with farm fresh food, they are also community gatherings of music and information-sharing that take place usually weekly sometimes more often. It is best to contact the Master Recycler Program Manager to find out if a Master Recycler is already involved in your market.

Ways Master Recyclers have volunteered:

- Check out a kit from your local jurisdiction and set up an information booth. Some Master Recyclers have even set up a booth one day a month for the summer months and rotated the topic. Use the contact information in the directory for your market to find out if they would allow a free space for you to set up. Also ask them if they have a table, chair and canopy available.
- Provide technical assistance in helping the market reduce waste or become the ongoing sustainability coordinator. Connect them with resources, work with your local jurisdiction's Recycling Specialist to identify places that take hard to recycle or compost materials, help them improve recycling/composting signage and containers or implement a durables program for the food vendors.

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GLOSSARY

A/B

Anaerobic Digester – Machinery that processes organic waste with microorganisms and limited oxygen, the combination of which generates methane and carbon dioxide for the purposes of burning for fuel.

Backyard compost – A variety of methods of decomposing organic material to create a soil amendment. Organic material that should be composted in a backyard compost pile includes food scraps and grass clippings, leaves, garden waste. No meat, dairy, grains, pet waste or paper products.

Bins – A small rectangular plastic 14 gallon container with handles. In most parts of the metro region this container is only used to collect glass. But in some areas it is still used for other recyclables as well. Some parts of the region also refer to these containers as curbies.

Biodegradable material – Materials that can be broken down by micro organisms into simple stable compounds such as carbon dioxide and water. Most organic material such as yard debris, wood, food scraps and paper are biodegradable

Browns – A term used to denote organic materials high in carbon, more specifically, materials whose carbon to nitrogen ratio is higher than 30:1. Materials high in nitrogen are referred to as greens. Browns and Greens are two factors in creating favorable conditions for backyard pile composting along with water and air.

C

Castings – Manure, i.e., excretion, of earthworms. Earthworm castings are high in nutrients for plants and microorganisms.

Collection – The component of a waste management system which results in the passage of a waste material from the end user to a point of recovery, a transfer station, or final disposal.

Commercial waste – Waste materials originated from wholesale, retail, institutional or service establishments, such as office buildings, stores, markets, theatres, hotels, and warehouses. Rental housing with five units or more are also considered commercial waste customers.

Compost – The decomposition or processing of organic material to create a soil amendment. A secondary objective of composting is to treat aerobically degradable materials that may otherwise enter landfills from decomposing anaerobically, releasing greenhouse gases.

Commercial Compost Facility – A large scale commercially or municipally-owned facility designed to decompose and/or digest organic material. In Oregon, commercial compost facilities must have permits that ensure they manage stormwater, vector and odor. Permits and technology determine organic accepted material. Some regional compost facilities accept just yard and landscape debris. Some manage only food. Others manage food scraps and limited food-soiled paper. Washington facilities accept a broader range of food-soiled paper and some biodegradable plastics.

Consumption – The purchase or use of goods and services for satisfaction of a need or want.

Construction – A process that consists of the building or assembling of infrastructure.

Contamination – 1) Unintended materials mixing with desired materials for recycling or compost (glass is a contaminant in a paper stream); 2) Materials that are too soiled, such as with food or dirt, to be recyclable.

Cullet – Recycled or waste glass used in glassmaking.

Curbside collection program – An on-site waste and recycling collection system for residents and businesses.

D

Deconstruction – The selective dismantlement of building components, specifically for the separation of materials for re-use, recycling, energy recovery, and waste management.

Demolition – The expedient tearing-down of buildings and other structures previous to retrieving the materials for reuse or recycling. Materials must be separated afterward by hand or in a Materials Recovery Facility.

Department of Environmental Quality (DEQ) – The Oregon Department of Environmental Quality (DEQ) is a regulatory agency whose job is to protect the quality of Oregon's environment. DEQ is the agency responsible in Oregon for setting waste management goals and evaluating recovery rates.

Discards Management – The use and reuse of materials based on the environmental and social impacts associated with the end of the life of the materials. Usually used in contrast to Materials Management.

Downcycling – The process of converting waste material into new material or products which results in loss of viability or value of the material.

E

Ecosystem – A natural unit consisting of all plants, animals and micro-organisms (biotic factors) in an area functioning together with all of the non-living physical (abiotic) factors of the environment.

Ecosystem services – The benefits provided by ecosystems that contribute to making human life both possible and worth living.

Electronics – Any device (television, radio, computer, appliance etc.) that operates with an electrical current and often has small working parts such as microchips.

Electronic Waste (e-waste) – Discarded, surplus, obsolete, broken electrical or electronic devices. E-waste is generally associated with computers, but can include anything you might plug in or use a battery to operate (e.g. iron, toaster, TV, iPod).

Embodied energy – The energy that was used in the making of a material or product.

Energy – A variety of phenomena utilized by humans from the use of natural resources. Primary uses are for electricity, heat (including gas stove burners), production and transportation of goods, and electronic communications. Oregon receives approximately 40 percent of its energy from the burning of coal, 40 percent from hydro, and a mix of other sources for the remaining 20 percent. Many utility companies, including Portland General Electric and Pacific Power, offer clean energy programs, through which an additional charge to a resident's bill will go exclusively to the purchasing of renewable energy. Energy conservation practices demand side efforts targeted at conserving available energy resources.

Environment – 1) Complete ecological units that function as natural systems without massive human intervention, including all vegetation, animals, microorganisms, soil, rocks, atmosphere and natural phenomena that occur within their boundaries. 2) Universal natural resources and physical phenomena that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity.

Equity – The right of every person to have access to opportunities necessary for satisfying essential needs and advancing their well-being.

F

Food Scrap – Waste composed of raw or cooked food materials. It includes both food materials discarded before or during food preparation, such as vegetable peelings, meat trimmings, and spoiled or excess ingredients, and those discarded after food preparation, including excess or spoiled food.

Franchise – A contract between haulers and local governments that allots specific territories and requires standardized services and fees.

G

Grasscycling – Leaving grass clippings on your lawn after mowing to break down and add nutrients.

Green Chemistry – The design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green chemistry applies across the life cycle of a chemical product, including its design, manufacture, use, and ultimate disposal. Green chemistry is also known as sustainable chemistry.

Greenwashing – The practice of companies disingenuously spinning or marketing their products and policies as environmentally friendly.

H

Hauler – A private company that collects garbage, yard debris/compost and recycling.

Hazardous Waste – Waste that poses substantial or potential threats to public health or the environment. Properties frequently included are: carcinogenic, ignitable, oxidant, corrosive, toxic, radioactive, and explosive. U.S. environmental laws further describe a hazardous waste as a waste that has the potential to cause, or significantly contribute to an increase in mortality (death) or an increase in serious irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Hazardous Products – Products or contents of produced goods which have potential negative effects to human or environmental health through their production, use or disposal. Such products usually have a safe or healthier alternative and require proper disposal methods.

High-grade processing – Systems in which loads rich in recyclable materials are run through equipment that separates usable materials from contaminants.

I

Incineration – A waste treatment technology that involves the combustion of waste materials and/or substances for the purpose of energy recovery. Energy recovery is the last option in the Oregon State law hierarchy of waste recovery.

Integrated Waste Management Plan – A municipal plan with specified waste reduction goals and integrating multiple controls, including source reduction, recycled-content products, post-consumer recycling, composting, land and water management, commerce networks, and tracking of waste generation and disposal through assessment of the waste stream and recycling potential of an individual business, industry, institution, or household.

Intention-behavior gap – A psychological term for the gap between the possession of knowledge, values and awareness, and behavior.

Intersectionality – the idea that multiple identities intersect to create a whole that is different from the component identities. The theory that individuals think of each element or trait of a person as inextricably linked with all of the other elements in order to fully understand one’s identity.

J/K/L

Junk mail – Third-class mail sent at a discount rate in large quantities, consisting of advertising and often addressed to resident or occupant, and referred to as direct mail or advertising mail by the mail and advertising industry. The EPA estimates that 44 percent of junk mail in the U.S. is discarded without being opened or read, equaling four million tons of waste paper per year, with only 32 percent recovered for recycling. Another assessment states that 250,000 homes could be heated using the equivalent energy required to produce a single day’s worth of junk mail.

Landfill – A site for the final disposal of waste materials by burial.

Landfilling – The process of burying solid waste (or ashes that result from incineration) underground.

M

Manufactured Goods – Goods that have been produced by way of machinery, tools and labor.

Materials Management – The use of materials based on the environmental and social impacts associated with the materials across their entire life cycle. (EPA)

Materials Markets – Economic structure created through demand by private industry for materials used to manufacture products. Materials markets include both virgin and reclaimed materials.

Materials Recovery Facility (MRF) – Pronounced murf. A specialized plant that receives, separates, and prepares recyclable materials for end-user materials markets.

Metro – An elected regional government serving Clackamas, Multnomah and Washington counties and the 25 cities in the Portland region. Metro provides region-wide planning and coordination to manage pressing growth, infrastructure, and development issues that cross jurisdictional boundaries.

Mulch – Covering for soil for the purpose of retaining moisture and reducing weeds. Mulch should not generally be mixed into the soil; it is not a fertilizer or soil amendment.

Multifamily Housing – Residential buildings with five or more units. Rented units such as apartments or owner-occupied units such as condos can both fall under this category.

N/O

Norm – 1: an authoritative standard. 2: a principle of right action binding the members of a group and serving to guide, control, or regulate proper and acceptable behavior

Organic Material – Matter that has come from a once-living organism, is capable of decay or the product of decay, or is composed of organic compounds.

Organic Waste – Biodegradable waste, typically originating from plant or animal sources, which may be broken down by other living organisms. Some organic waste decomposes more easily than others.

P/Q

Paradigm Shift – An important change that happens when the usual way of thinking about or doing something is replaced by a new and different way.

Planned Obsolescence – The intentional production of a product that is planned or designed by the manufacturer to lose its value, become outdated, and/or cease to work after an expected period of time or use in order to increase profits.

Plastic Film – A thin sheet of material, usually plastic and usually transparent, used to wrap or cover things or make bags.

Pollution – The introduction of contaminants into an environment that causes instability, disorder, harm or discomfort to the ecosystem.

Precautionary Principle – The principle that the introduction of a new product or process whose ultimate effects are disputed or unknown should be resisted until scientific consensus is established that it is not harmful.

Precycling – A way of reducing waste through reduction and reuse which includes the consumer taking into consideration the impact of the consumption of goods on the environment.

Product Stewardship – Where everyone involved in the lifespan of a product is called upon to take up responsibility to reduce its environmental, health, and safety impacts. Often the manufacturing of products does not require that they include these costs to society and the burden is placed on consumers and government. Product Stewardship laws add the responsibility to manufacturers as well.

R

Recovery – The extraction of discarded materials for reuse, recycling, composting or energy generation in order to capture some of the energy and natural resources used to make products and replace the consumption of virgin resources to make new products.

Recycle – The action of processing used materials into new products so as to conserve natural resources and energy, curb air and water pollution and reduce greenhouse gas emissions.

Reduce – The practice of minimizing consumption of natural resources and energy and generation of waste through careful consideration before production or purchase of a good or service.

Repurpose – The use of something for a purpose other than its original one.

Reuse – The practice of reusing something exactly as it was meant to be used without having to process it like we do for recycling. Reuse can also be about thinking differently about the objects around us and seeing if they can meet new needs.

S

Salvage – The act of rescuing materials for reuse in the original form or the resulting material.

Sanitary Landfill – A landfill where waste is isolated from the surrounding environment.

Sharing or Access Economy – A business model in which individuals are able to borrow or rent assets owned by someone else usually through a technology platform.

Social Marketing – Theory and practice that seeks to develop and integrate marketing concepts with behavior science that benefits individuals and communities for the greater social good.

Solid waste – Any discarded (abandoned or considered waste-like) materials. Solid wastes can be solid, liquid, semi-solid or containerized gaseous material.

Source Reduction – See Reduction.

Source Separation – The segregation of recyclables at the point of generation (home, work) and before collection.

Sustainability – To meet the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable Consumption – The use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations.

T/U/V/W/X/Y/Z

Transfer Station – A local preparation site that temporarily accepts trash, toxic materials, compostables and/or recyclables from residents, businesses and commercial waste haulers. Materials are usually then combined and compacted for transportation to landfills, compost facilities or markets at further distances.

Upstream (Impacts) – The environmental effects of the production, packaging, and transportation of goods and services. Upstream impacts contrast with the use phase and disposal or waste recovery phase (or Downstream Impacts).

Vermiculture – The use of redworms to break down organic materials such as food scraps, newspapers, and cardboard, yielding nutrient-rich castings for fertilization.

Virgin Source Materials – New raw materials that are extracted, mined, refined, and used to produce goods. The purpose of reusing and recycling is to replace the need for virgin source materials. Waste prevention avoids the need for the virgin source and recycled/reused material.

Waste – See also Solid Waste. Unwanted or undesired material. A material that has outlasted its purpose or is left over. The trait of using resources carelessly, imprudently, or without thrift.

Waste Generation – The act of consuming goods and services that result in undesired material. The resulting waste is usually expressed in weight, generated by a specific area or entity over a course of time that must be processed through reuse, recycling, composting, incineration or landfilling. The only part of the waste hierarchy that is not part of waste generation is waste prevention (Reduce).

Waste Management – The processes of the collection, treatment and disposal or return to markets of materials after their use phase. Proper waste management reduces the negative impacts waste has on environment and society.

Waste Prevention – See Reduce.

Waste Shed – An area where waste is generated and then collected together for processing or recovery.

Waste Stream – The total flow of solid waste generated from homes, businesses, institutions, and manufacturing plants that is recycled, burned, or disposed of in landfills, or segments thereof such as the residential waste stream or the recyclable waste stream.