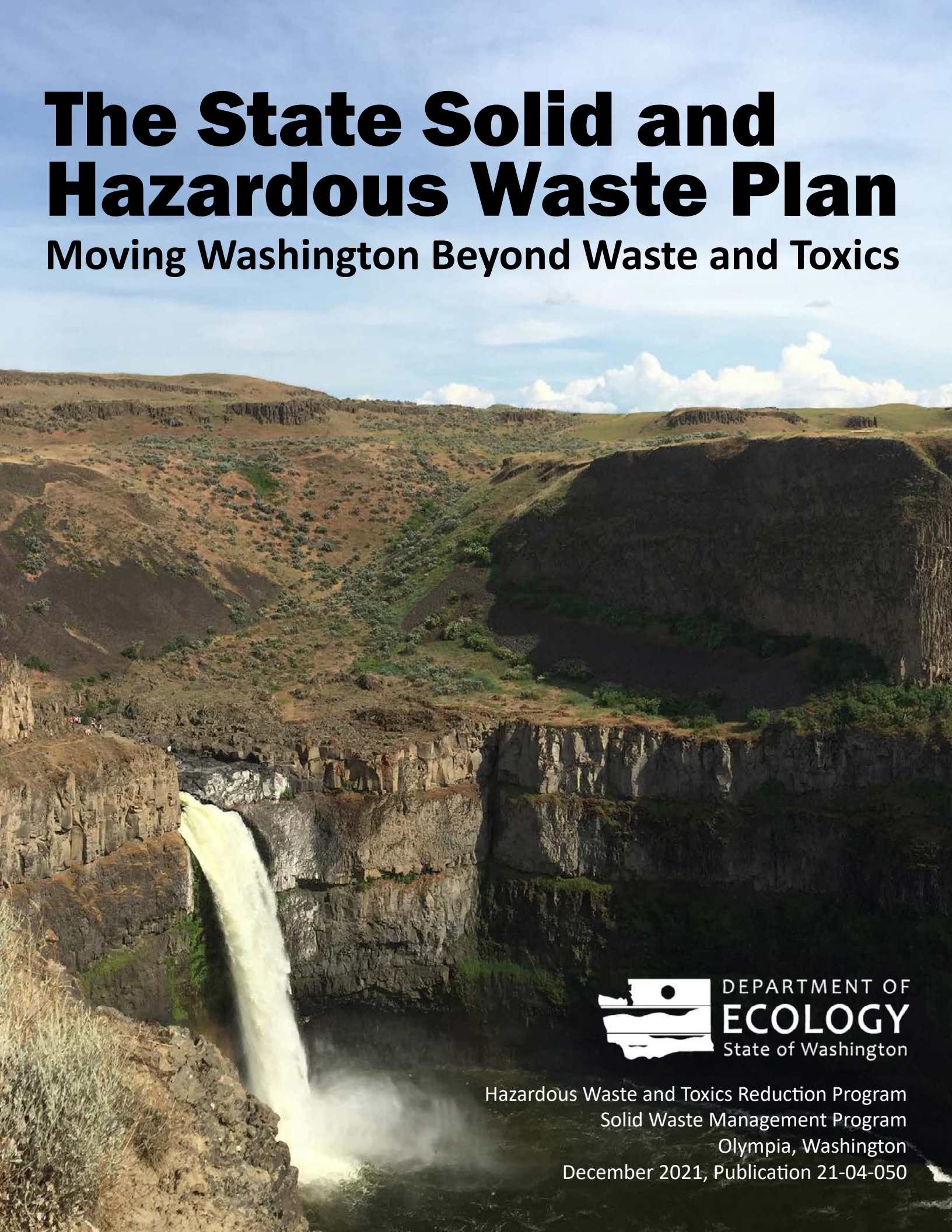
The State Solid and Hazardous Waste Plan

Moving Washington Beyond Waste and Toxics



DEPARTMENT OF ECOLOGY
State of Washington

Hazardous Waste and Toxics Reduction Program
Solid Waste Management Program
Olympia, Washington
December 2021, Publication 21-04-050

Publication Information

This document is available on the Department of Ecology's website at: https://apps.ecology.wa.gov/publications/SummaryPages/2104050.html.

Cover photo credit

- Washington State Department of Ecology, taken on May 24, 2015.

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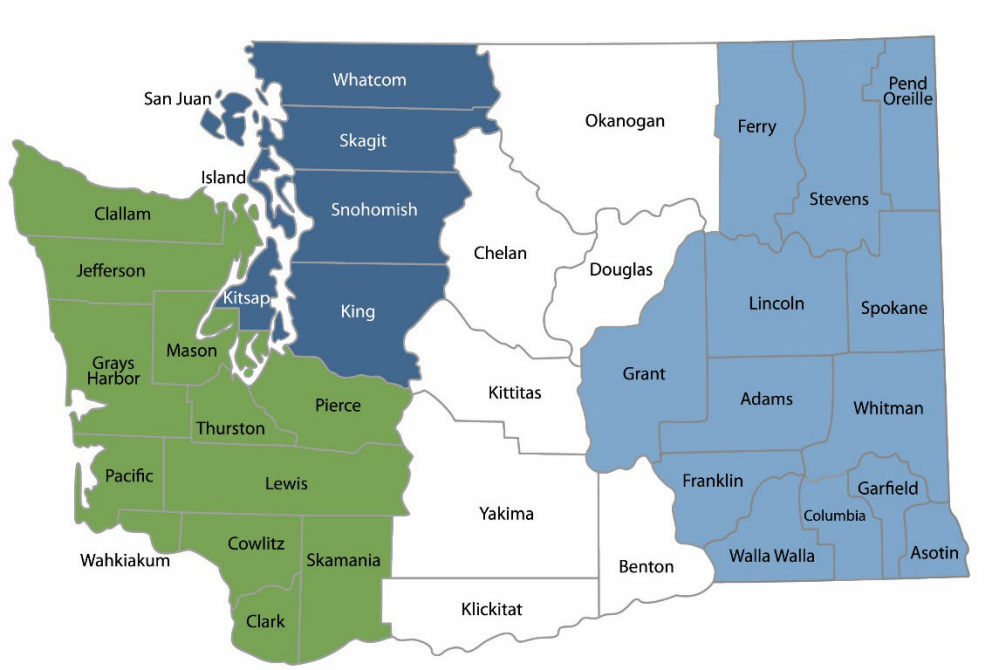

Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400

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Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
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Executive Summary

Chapters 70A.205[3] and 70A.300[4] of the Revised Code of Washington (RCW) require the Department of Ecology (Ecology) to develop a state solid and hazardous plan, and update it regularly. Since 2004, this plan has been referred to as the Beyond Waste Plan or the State Plan.

The State Plan guides the management of waste and materials in the state, and aids local governments as they develop local solid and hazardous waste plans. The State Plan builds on waste hierarchies adopted in the solid and hazardous waste laws of the mid-1980s, which place waste reduction as the highest priority, followed by recycling, and then safe disposal. The state's 30-year vision—to eliminate most wastes and toxics and use remaining waste as resources—supports this hierarchy.

> "…material recovery and waste reduction are essential components to the productive and sustainable use of materials across their entire life cycle to conserve resources, reduce waste, slow climate change, and minimize the environmental impacts of the materials we use."
>
> Sustainable Materials Management Program Strategic Plan,[5] U.S. Environmental Protection Agency, October 2015

The State Plan promotes a sustainable materials management approach. Materials management looks at the full life cycle of materials from the design and manufacturing phase, through the use phase, to the end-of-life phase when the material is either disposed or recycled. This is important because the adverse environmental impacts of extraction, production, and use can be far greater than those associated with disposal when a material becomes a waste. According to the Environmental Protection Agency[6] (EPA), a sustainable materials management approach is essential to conserving our natural resources to meet both today's needs and those of future generations.

The State Plan is organized into five sections. Each section contains an introduction that includes the regulatory framework and goals and actions that support movement towards eliminating, reducing, or safely managing waste and toxic substances over the next five years. Goals describe the desired outcomes and are written broadly for all. Actions outline steps to help get there and focus on what Ecology hopes to do in the next five years, together with our partners in local governments, non-governmental organizations, and industry. In fact, many actions require cooperative work with partners in order to succeed.

Ecology tries to update the State Plan every five years. The COVID-19 pandemic and associated impacts to Ecology operations from office closures, staff furloughs, and a hiring freeze delayed this update.

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[3] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.205
[4] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.300
[5] https://www.epa.gov/sites/production/files/2016-03/documents/smm_strategic_plan_october_2015.pdf
[6] http://www.epa.gov

Ecology made at least some degree of progress on 80 percent of the actions in the 2015 plan. However, many actions in this update are the same or similar to some in the 2015 update, as they represent ongoing work or require additional effort to fully realize.

Washington state continues to work towards the 2035 vision established in 2004 to "transition to a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated."

When preparing this plan update, Ecology provided two opportunities for commenting on a first partial draft, and on a complete second draft. Visit Ecology's State Plan webpage[7] for more information on the update process and the comments received.

[7] https://ecology.wa.gov/Regulations-Permits/Plans-policies/Washington-state-waste-plan/About-the-plan

Framework and Foundations

State Solid and Hazardous Waste Plan purpose and vision

Chapter 70A.205[8] and Chapter 70A.300[9] of the Revised Code of Washington (RCW) require the Washington Department of Ecology (Ecology) to develop a state solid and hazardous plan, and update it regularly. The State Plan guides the management of waste and materials in the state and aids local governments as they develop local solid and hazardous waste plans.

The State Plan's 30-year vision—to eliminate most wastes and toxics and use remaining waste as resources—supports the waste management hierarchy established in the solid and hazardous waste statutes, which identify waste reduction as the highest priority, followed by recycling, and then safe disposal.

In the original 2004 Beyond Waste State Plan, Ecology envisioned a better future for waste in Washington, to be realized by 2035. The year 2035 was chosen because then-Governor Gary Locke adopted a strategy to make Washington state sustainable in one generation, or 30 years. Implementing this vision will help the state become sustainable.

Vision for moving Washington beyond waste and toxics

We can transition to a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated. This will contribute to economic, social and environmental vitality.

Plan update process

The State Plan is updated approximately every five years. The COVID-19 pandemic delayed this update. Ecology created a first draft, which we circulated for public comment. Comments informed revisions to the second draft and the final plan update.[10]

Sustainable materials management

The State Plan promotes a sustainable materials management (SMM) approach, which looks at the full life cycle of materials. The U.S. Environmental Protection Agency (EPA) defines SMM as, "An approach to serving human needs by using/reusing resources productively and sustainably throughout their life cycles, generally minimizing the amount of materials involved and all

[8] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205
[9] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300
[10] Comments can be viewed on the state waste plan webpage: https://ecology.wa.gov/Regulations-Permits/Plans-policies/Washington-state-waste-plan/About-the-plan

associated environmental impacts."[11] This life cycle, as illustrated in Figure 1,[12] includes the design and production phase, through the use and reuse phase, to the end-of-life phase when the material is either disposed or recycled. Recycling and use of recovered materials leads back into the design and production phase. Materials that are extracted from virgin resources are new inputs into the cycle and those that are disposed at end-of-life exit the cycle.

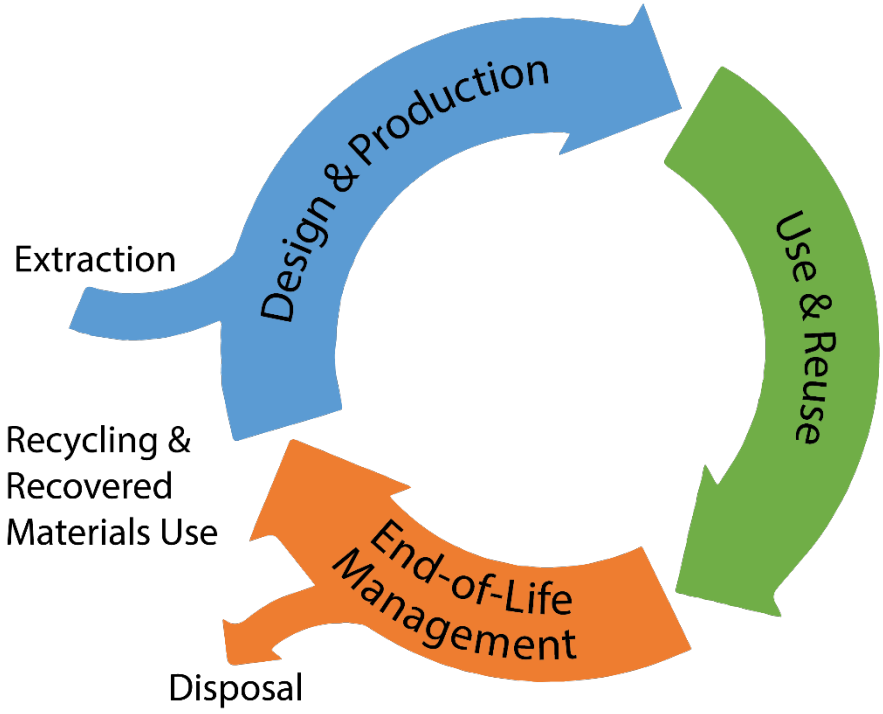


Figure 1: Materials and Products Life Cycle[12]

Looking at the full life cycle is crucial because the adverse environmental and health impacts of extraction, production, and use typically greatly exceed those associated with disposal when the material becomes a waste. By managing materials that become waste through all stages of their life cycle, we are best able to reduce harmful environmental, health, and climate effects.

EPA adopted a framework for sustainable materials management in 2004. EPA's 2009 publication "Sustainable Materials Management, The Road Ahead"[13] laid the foundation to address "the movement of materials through the economy and the environment from extraction to end of life." Oregon was the first state to use this framework as the basis for their state waste management plan in 2010. Since that time, other states have adopted this framework as well.

[11] Environmental Protection Agency, "U.S. EPA Sustainable Materials Management Program Strategic Plan, Fiscal Year 2017–2022," October 2015, https://www.epa.gov/sites/default/files/2016-03/documents/smm_strategic_plan_october_2015.pdf, accessed on August 11, 2021.
[12] Graphic adapted from Oregon Department of Environmental Quality.
[13] https://www.epa.gov/sites/production/files/2015-09/documents/vision2.pdf

Resources are declining worldwide while demand continues to grow. As more people consume more resources in the form of products and materials, it causes more pollution, including greenhouse gases and other toxic releases. This also puts increased pressure on the communities that extract or manufacture these resources.

Using resources faster than the planet can renew them limits the ability of all people to meet their basic needs now and in the future. Since the industrial revolution, society has been operating on the assumption that resources are abundant, readily available, and cheaply disposed. This is not the case. The linear use of resources where we extract materials, use them once, and then throw them away is not sustainable. Not only will we run out of key materials, but the throw-away society continues to pollute our environment with waste and toxics. We need to use fewer resources, and use them in a circular model, as illustrated by the Sustainable Materials Management Cycle in Figure 1.

The SMM framework continues to serve as a useful approach for advancing Washington state goals for sustainable energy and a clean environment, healthy and safe communities, and a prosperous economy.[14] It also supports Ecology's goals to prevent and reduce toxic threats and pollution, protect and manage our state's waters, protect and restore Puget Sound, and reduce and prepare for climate impacts.[15]

Table 1 shows how Ecology's current work fits into the SMM cycle. Since 2015, Ecology has dedicated more efforts and resources to addressing the design and production phase.

"Sustainable materials management (SMM) is a systemic approach to using and reusing materials more productively over their entire life cycle. It represents a change in how our society thinks about the use of natural resources and environmental protection. By examining how materials are used throughout their life cycle, an SMM approach seeks to:

- Use materials in the most productive way with an emphasis on using less.
- Reduce toxic chemicals and environmental impacts throughout the material life cycle.
- Assure we have sufficient resources to meet today's needs and those of the future.

How our society uses materials is fundamental to our economic and environmental future. Global competition for finite resources will intensify as world population and economies grow. More productive and less impactful use of materials helps our society remain economically competitive, contributes to our prosperity and protects the environment in a resource-constrained future."

—From the EPA SMM website[16]

[14] Results Washington: https://results.wa.gov
[15] Department of Ecology 2021–2023 Strategic Plan: https://ecology.wa.gov/About-us/How-we-operate/Strategic-plan
[16] Sustainable Materials Management Basics, U.S. Environmental Protection Agency: https://www.epa.gov/smm/sustainable-materials-management-basics

Table 1: How Ecology's Work Fits Into the Sustainable Materials Management Cycle

Design and Production	Use and Reuse	End-of-Life Management
• Compliance with state consumer product laws • Food waste prevention • Advancing green chemistry • Chemical action plans and alternatives assessments • Toxics reduction assistance to businesses • Pollution Prevention Assistance Partnership and the Product Replacement Program	• Pollution prevention planning • Environmentally preferred purchasing • Technical assistance and information on safe use of chemicals and toxic products • Support re-use networks • Pollution Prevention Assistance Partnership • Plastic Bag Ban • On-request food serviceware	• Pollution prevention planning • Recycling Development Center • Contamination Reduction and Outreach Plans • Post-consumer recycled content requirements • E-Cycle, LightRecycle, and PaintCare extended producer responsibility programs • Solid waste facility assistance • Dangerous waste compliance • Permitting dangerous waste facilities • Corrective action cleanup of legacy contaminated sites • Pollution Prevention Assistance Partnership • Recycling, organics, and moderate risk waste technical assistance

State Plan structure

The State Plan is organized into five sections:

- Managing hazardous waste and materials
- Managing solid waste and materials
- Reducing impacts of materials and products
- Measuring progress
- Providing outreach and information

Each section contains an introduction with background information, the regulatory framework, and goals and actions.

The State Plan update contains 42 goals with 143 supporting actions. Goals describe the desired outcome and actions outline steps to help us get there. The goals and actions derive from

stakeholder input as well as staff expertise. They represent a wide spectrum of steps to move us into a future of less waste and toxics, while working to keep current systems functioning well.

The goals and actions are broadly written for application to many audiences. Actions highlight what Ecology hopes to work on the next five years, in coordination with our stakeholders. Many actions in this update are the same or similar to some in the 2015 update as they represent ongoing work or require additional effort. Other actions embody new work. Whether ongoing or new work, implementing actions depends on available resources.

Actions are also intended to provide guidance to other governments, organizations, and the private sector, and may be carried out by others as well as Ecology. A few can only be accomplished by entities other than Ecology. Together, the goals and actions represent a flexible list of options that support movement toward the State Plan's vision.

Roles for partners

Though the actions are written primarily as work for Ecology, many specify partners necessary to advancing the work. In fact, most rely on partnerships and assistance from others to succeed. Progress on the State Plan depends in large part on the engagement and actions of our partners. Working to reduce and safely manage waste and toxic substances is a group effort!

Partners include, but are not limited to:

- Facility operators.
- Local governments.
- Non-governmental organizations and community groups.
- Other state agencies.
- Pollution prevention planning facilities.
- Product manufacturers and retailers.
- Service providers.
- Waste generators.
- Universities.

Not all partners will engage on all actions. Some actions call for Ecology to work with specific partners. Partners can lead and innovate or address more routine services and challenges. Wherever partners are on this continuum, there are many opportunities to help advance the State Plan's goals. Overall, any projects that focus on reducing waste and toxics advance the State Plan's vision.

Additional information on actions for others will be provided in a forthcoming appendix.

Guiding principles and strategies

As Ecology and others work to advance the goals and actions of the State Plan, key principles and strategies can guide us:

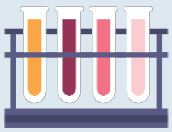
- Focus on preventing wastes in the first place.
- Research issues and policy solutions. Minimize unintended consequences of actions.
- Provide outreach and education in support of topics in the State Plan.
- Create collaborative partnerships and lead by example.
- Work to remove barriers and change behavior with incentives.
- Build on what's already working; take advantage of momentum and complementary actions.
- Take account of human and environmental health, environmental justice, economic viability, and people's quality of life.
- Collect, analyze, and share data.
- Evaluate programs and measure progress.
- Strive for continuous improvement.

Vision and Priorities of the State Plan

We can transition to a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated. This will contribute to economic, social, and environmental vitality.

Mitigate climate change through waste reduction, reuse, and recycling.

Focus on design, manufacturing and use phases, not just end-of-life issues.



Reduce toxic threats in products and industrial processes.

Maximize effectiveness of recycling and organic processing systems.

Priorities

The following priorities will move us closer to the vision and ensure the current system works well.

Mitigate climate change.

- Prevent and reduce waste, including food waste.
- Increase use of processed organics to sequester carbon.
- Leverage opportunities to align waste and toxic chemical reduction efforts with products or processes that also reduce carbon.

Move upstream by increasing focus on design, manufacturing, and use—not just end-of-life issues.

- Gather data on the full life cycle of materials from manufacture, use, and discard.
- Promote environmentally preferred purchasing and independent, third-party certifications and labels.
- Encourage increased producer responsibility for their products.
- Enable more repair and reuse of materials and products.

Reduce toxic threats in products and industrial processes.

- Encourage less toxic products and industrial processes through better design.
- Promote the use of alternatives assessments and green chemistry to find safer substitutes to toxics in products.
- Increase local partnerships to work on toxic chemical source control.
- Reduce or eliminate the use of the most toxic chemicals where safer alternatives exist.

Address systemic issues with recycling (including organic processing).

- Address contamination in recycling and composting systems in order to ensure clean and marketable end products from organics and recyclables.
- Support market creation for recycling, including recycled content.
- Focus on facility compliance, technical assistance, and enforcement.

Progress on the 2015 State Plan

Ecology estimates we made progress on about 56 percent of the 175 actions in the 2015 plan. Seven percent were completed, 15 percent had significant progress, and 34 percent had some progress.

Accomplishment highlights

- **Progress continues on reducing and eliminating toxic chemicals in products sold in Washington.** The new Safer Products for Washington process was authorized by the State Legislature in 2019. This allows the state to ban or otherwise restrict toxic chemicals in consumer products when alternatives are safer, feasible, and available. In accordance with the Children's Safe Product Act, Ecology studied and conducted product testing on children's clothing, footwear, accessories and jewelry, school supplies, play tents and upholstered chairs, and seasonal products. One product testing study found dangerously high levels of toxic cadmium and lead, which led to the recall of 15,000 pieces of children's products sold nationwide.

- **Interest and support continues to grow for the Product Replacement Program[17] and the Pollution Prevention Assistance Partnership[18]** (formerly known as the Local Source Control Partnership). From 2015–2019, partners conducted nearly 15,000 visits to small businesses and helped resolve 90 percent of the nearly 9,000 issues they identified. The Legislature appropriated more than $3 million in 2019 to fund the Product Replacement Program to reimburse some costs to businesses that switch to safer alternatives.

- **Toxic chemicals, their impacts, and the availability of certain safer alternatives are better understood.** Ecology completed studies (often referred to as chemical action plans) addressing PCBs[19] and PFAS,[20] and completed alternative assessments for PFAS in food packaging to prohibit some applications starting in 2023.[21]

- **Washington businesses reduced waste and emissions, toxic chemical use, resource use, and saved money through pollution prevention planning and technical assistance from Ecology**. Ecology provides technical assistance for implementing pollution prevention improvements or toxics reduction projects. In 2019, the 500 Washington businesses required to submit plans to Ecology identifying voluntary reductions in waste or resource use estimated saving $3.9 million in operating costs, 704 million kilowatt hours in energy use, and 533 million gallons of water. They also estimated reducing carbon dioxide (CO_2) emissions by 320,000 metric tons, toxic chemical use by 65 million pounds, and dangerous waste by seven million pounds.

- **Dangerous waste enforcement penalties helped protect vulnerable communities, rewarded businesses that play by the rules, and sent a clear message that polluters pay.** When dangerous waste compliance violations occur, Ecology provides technical assistance to help businesses return to compliance and conducts enforcement when necessary to protect neighboring communities and prevent pollution. In 2019, Ecology issued the state's largest penalty for severely mismanaged dangerous waste.

- **Diverse audiences have more information on hazardous waste and toxic chemicals through more diverse channels**. Over the last five years, Ecology published 44 percent more documents about hazardous waste and toxic chemicals compared to the previous five years,

[17] Product Replacement Program, Washington State Department of Ecology: https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Product-Replacement-Program
[18] Pollution prevention assistance, Washington State Department of Ecology: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Pollution-prevention-assistance
[19] PCB Chemical Action Plan, Washington State Department of Ecology: https://apps.ecology.wa.gov/publications/SummaryPages/1507002.html
[20] Per- and Polyfluoroalkyl Substances Draft Chemical Action Plan, Washington State Department of Ecology: https://apps.ecology.wa.gov/publications/summarypages/2004035.html
[21] Safer Alternatives to PFAS in Food Packaging: Report to the Legislature, Washington State Department of Ecology: https://apps.ecology.wa.gov/publications/summarypages/2104007.html

and doubled the proportion of those published in non-English languages (including Spanish, Vietnamese, and Korean) from 5 to 10 percent.

- **The Recycling Development Center**,[22] created in 2019, is working to establish a cleaner and more sustainable recycling system for Washington. Managed by Ecology in partnership with the Department of Commerce and a diverse advisory board, the center works to facilitate research and development, marketing, and policy analysis to bolster recycling markets and processing in Washington.

- **The statewide Contamination Reduction and Outreach Plan**,[23] or CROP, was developed to reduce contamination in recycling, as required by a 2019 law. The CROP includes resources and guidance for local governments to develop their own CROP. Almost all of the local governments required to complete a local CROP met the June 2021 due date.

- **The Recycle Right Campaign**[24] **addressed recycling contamination reduction.** The campaign includes a partner toolkit for others to use with web, print, radio, and television ads available in both English and Spanish. The initial campaign, which ran statewide, laid the groundwork for future campaigns.

- **Three more extended producer responsibility laws are in place.** Ecology helped implement a producer-run recycling program for **architectural paint**.[25] This program started in April 2021 and will include more than 170 drop-off locations across the state. It will allow residents and small businesses to recycle latex and oil-based paints, keeping them out of landfills and creating new products. The Legislature also passed the nation's first producer take-back law for photovoltaic or solar panels.[26] The producer-funded Safe Medication Return Program, overseen by the Washington State Department of Health, provides safe and convenient disposal of unused pharmaceuticals.[27]

- **Efforts to reduce food waste increased.** A new 2019 law required the creation of a joint agency plan to reduce food waste by 50 percent by 2030. The Use Food Well Washington Plan[28] focuses on three key strategies: preventing food waste, rescuing edible food, and recovering inedible food materials for other uses. Ecology, the Washington State

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[22] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Recycling-Development-Center
[23] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Recycling-Development-Center/Contamination-reduction
[24] https://ecology.wa.gov/recycleright
[25] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Paint-stewardship
[26] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Solar-panels
[27] Safe Medication Return Program: https://www.doh.wa.gov/forpublichealthandhealthcareproviders/healthcareprofessionsandfacilities/safemedicationreturnprogram
[28] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Organic-materials/Food-waste-prevention/Food-waste-plan

Departments of Agriculture, Health, Commerce, the Office of Superintendent of Public Instruction, and more than 150 subject matter experts worked together to create the plan.

- **Statewide policies to address plastics increased.** A ban on plastic carryout bags,[29] set to take effect in 2020, was delayed until 2021 due to the COVID-19 pandemic. Consultants completed a required study of plastic packaging[30] in fall 2020 that included 10 recommendations. Legislation that supports some of those recommendations passed in 2021. The law (Chapter 70A.245 RCW[31]) requires recycled content in many bottles, bans some polystyrene products, and establishes an on-request food serviceware program.

- **Studies addressed solid waste management funding concerns.** In 2017, we published a three-part finance study, Funding Mechanisms for Solid Waste,[32] to assess and identify funding mechanisms and make recommendations to strengthen the state's funding system for solid waste management.

Current trends

Washington has come a long way from the open burning dumps of the 1960s. This is due to the hard work of solid waste collection companies, other businesses, local and state government, and dedicated citizens. We have well-engineered landfills and a recycling infrastructure for some products. Our recycling, composting, and waste collection programs are some of the most progressive and successful in the country. However, Asian recycling market shutdowns highlighted the need for systemic fixes here in Washington and nationally. It also reinforced the need to focus on the first waste management priority: waste reduction or prevention.

Washington businesses altogether generate hundreds of millions of pounds of hazardous waste every year, but overall amounts can vary greatly from year to year. The highest annual amounts occurred in 2013 (nearly 236.7 million pounds, or about 118,350 tons). The lowest amounts occurred in 2003 (82.6 million pounds, or 41,300 tons) and in 2016 (88.7 million pounds, or 44,350 tons). While a variety of factors influence generation, the variation from year to year is primarily due to non-recurrent events such as large contamination cleanups, in some cases from a single source. However, waste generated from recurrent activities appears to have grown slowly over time, despite the number of significant waste generators remaining mostly stable overall.

[29] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Plastic-bag-ban
[30] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Plastics-study
[31] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.245&full=true
[32] https://apps.ecology.wa.gov/publications/summarypages/1707016.html

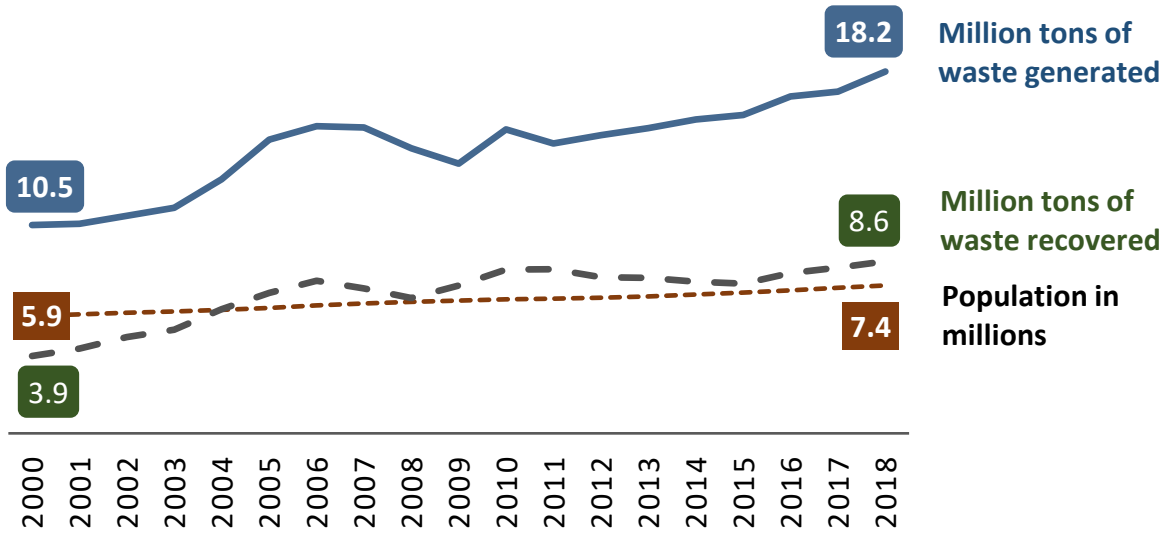
Solid waste generation

Solid waste generation in Washington is increasing. In 2018 (the most recent year we have data available), it reached 18.2 million tons—the highest ever measured. Approximately 53 percent of waste generated in Washington was disposed in landfills and mixed waste incinerators, while about 47 percent of waste was recovered. Washington's population has also increased, but at a much slower rate. Since 2000, population increased by 26 percent, while waste generation increased by 74 percent, nearly triple the amount of population increase (Figure 2).

Solid waste includes all discards from homes and businesses, as well as waste from manufacturing and construction.

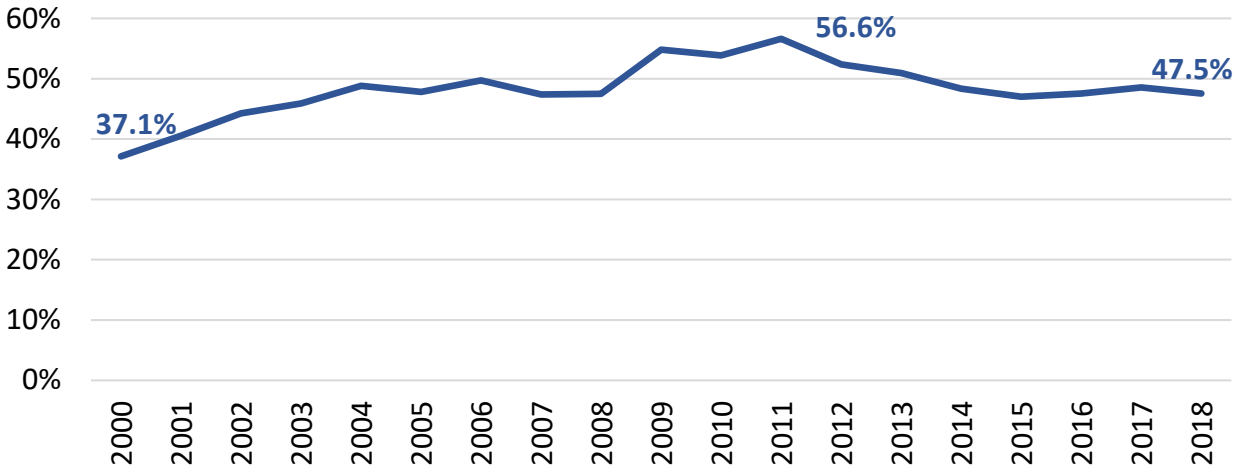
Recovery includes recycling, composting, combustion of source-separated materials, land application, and anaerobic digestion.

Figure 2: Solid Waste Generated and Recovered, and Population in Washington, 2000–2018



Since 2000, the solid waste recovery rate (which is the percent of materials collected for recycling, composting, and other beneficial uses) has increased overall, but is no longer at its peak, as shown in Figure 3. Though we are collecting an increasing amount of materials for recycling and other types of recovery, the amount we are disposing of has increased even more. Since the peak in 2011, recovery has increased by 5 percent, while disposal has increased by 50 percent, leading to an overall decline in the recovery rate. This speaks to the need to reduce waste.

Figure 3: Recovery Rate in Washington, 2000–2018



For data sources mentioned above and more information on current trends, see the solid waste and recycling data webpage.[33]

Hazardous waste generation

Washington's dangerous waste regulations[34] require businesses that generate more than 220 pounds of hazardous waste in any month or 2,640 pounds in a year to report information to Ecology about the types and quantities of waste generated and disposed. These businesses classify as either medium quantity generators (MQGs) or large quantity generators (LQGs), depending on the amount of hazardous waste they generate. Small quantity generators (SQGs) that fall below these thresholds are not required to report. Data reported from waste generators collected since 2003 is analyzed and discussed below.[35]

While there are presumably many more SQGs than MQGs and LQGs in the state, generating an unknown amount of hazardous waste, it most likely totals a small fraction of that generated from MQGs and LQGs. In recent years, the number of MQGs has increased while that of LQGs has decreased (Figure 4). However, LQGs generate the majority of hazardous waste in our state overall (Figure 5). Since 2003, LQGs generated more than 94 percent of the total reported, MQGs generated nearly five percent, and SQGs that voluntarily report generated just over one percent of the total.

[33] https://ecology.wa.gov/Research-Data/Data-resources/Solid-waste-recycling-data
[34] Chapter 173-303 WAC: http://app.leg.wa.gov/WAC/default.aspx?cite=173-303
[35] Data presented doesn't include Hanford waste, treatment by generator, permit by rule wastes, mixed wastes, or activities reported by hazardous waste treatment, storage, and disposal facilities.

Figure 4: Number of hazardous waste generators by generator size, 2003–2020

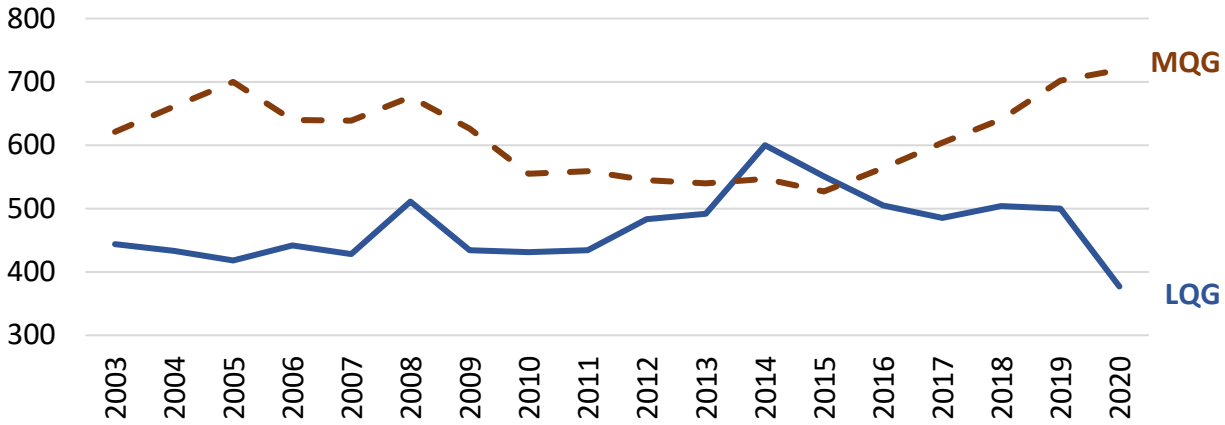
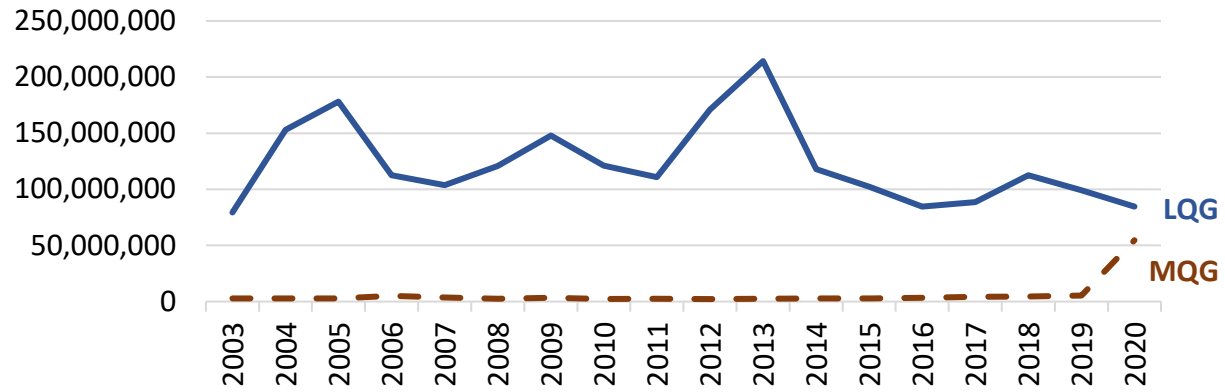
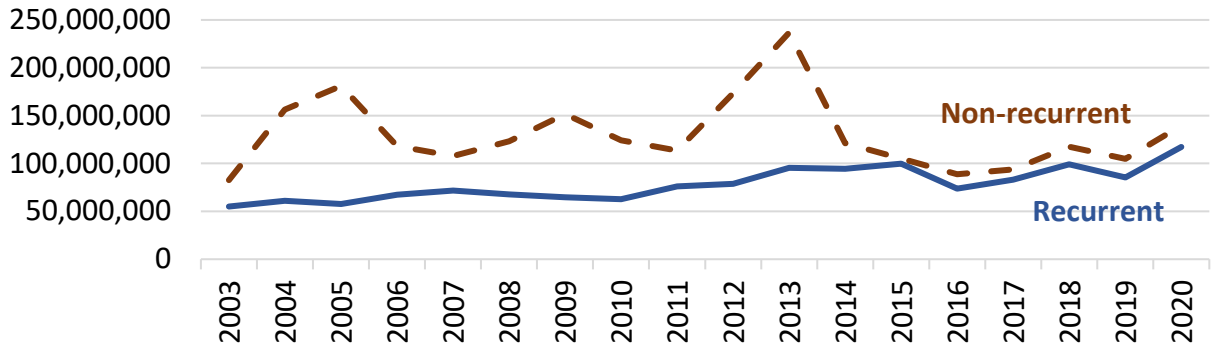


Figure 5: Pounds of hazardous waste generated annually by generator size, 2003–2020



Hazardous waste generation can fluctuate significantly due to a variety of factors that can impact a limited number of generators, such as changes to business operations or economic pressures on related industries. Non-recurrent events can also greatly affect overall generation (Figure 6). The largest contributor to non-recurrent hazardous waste comes from remediation of past contamination, with a much smaller amount coming from spills (onto the ground) and accidental releases (such as into the air or water) or intermittent processes. For example, the last spike in non-recurrent hazardous waste generation between 2012 and 2014 was primarily due to one generator disposing of 77.6 million pounds of contaminated soil. Recurrent waste generation comes primarily from pollution control and waste management processes, and ongoing production and service processes. Recurrent waste shows less variation than non-recurrent generation and has grown slowly since 2003.

Figure 6: Combined pounds of hazardous waste generated annually by origin, 2003–2020



Regulation of products and toxic chemicals

Actions to regulate products, especially plastics and those containing toxic chemicals, continues to increase. In the previous version of the State Plan, Ecology identified eight laws addressing toxics in products in the previous 12 years. Since 2015, the Legislature passed or amended an additional 13 laws on products and toxic chemicals, most of which include significant implementation responsibilities for Ecology. This growth will likely continue, expanding Ecology's activities beyond its historical waste management focus. Table 2 summarizes these laws; see a full list in the Reducing Impacts of Materials and Products section. Many more bills were introduced on these topics than those that became law.

Table 2: Recent laws addressing toxics and products

Toxics in Products	Plastics	Extended Producer Responsibility
• Children's Safe Product Act amendments • PFAS in firefighting foams • PFAS in food packaging amendments for additional restrictions • Safer Products for Washington (Toxic Pollution)	• Plastic product degradability • Plastic packaging evaluation • Plastic bag ban • Recycled content in plastic containers • Expanded polystyrene ban • On-request food serviceware	• Paint stewardship • Solar panel takeback program • Medication takeback program

Demographic trends

Population and demographics influence resource use, waste generation, needs for services, outreach, and environmental justice considerations.

Washington's population is increasing:

- As of April 2020, Washington's population grew to more than 7.6 million people.
- The Washington State Office of Financial Management (OFM) projects state population will reach 7.9 million by 2025 and 8.6 million by 2035.[36]
- Since 1990, migration has contributed more to population growth than natural increase (births minus deaths) and accounts for 63.7 percent of the growth between 2010 and 2020.[37]

Washington's ethnic[38] and racial diversity is increasing:

- The percentage of Hispanic/Latino residents almost doubled during the 1990s and reached 13.5 percent in 2020, an increase from 11.2 percent in 2010.[39]
- While significant numbers of Hispanic/Latino residents live in western metropolitan counties (notably King, Pierce, and Snohomish), the central and eastern side of the state has some of the highest percentages. Adams county has the highest proportion at nearly 70 percent Hispanic/Latino, followed by Franklin county at 55 percent, and Yakima county at 51 percent.[40]
- Non-white racial groups made up 21.5 percent of the state population in 2019, an increase from 17.8 percent in 2010. Asian residents make up the largest minority group at more than 9 percent, followed by those with two or more races at nearly 5 percent, and black residents at more than 4 percent. American Indian Alaska Native residents make up nearly 2 percent and Native Hawaiian or other Pacific Islander residents are nearly 1 percent of the population.[41]

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[36] Washington State Office of Financial Management, "State of Washington Forecase of the State Population November 2020 Forecast," November 2020, https://ofm.wa.gov/sites/default/files/public/dataresearch/pop/stfc/stfc_report.pdf, accessed on August 11, 2021.
[37] Components of population change, Washington State Office of Financial Management: https://ofm.wa.gov/washington-data-research/statewide-data/washington-trends/population-changes/components-population-change
[38] Ethnicity is either Hispanic or non-Hispanic, and those in either category can be of any race.
[39] Population of Hispanic/Latino origin, Washington State Office of Financial Management: https://ofm.wa.gov/washington-data-research/statewide-data/washington-trends/population-changes/population-hispaniclatino-origin
[40] Hispanic population as a percent of total population, Washington State Office of Financial Management: https://ofm.wa.gov/washington-data-research/statewide-data/washington-trends/population-changes/hispanic-population-percent-total-population
[41] State Population Characteristics: 2010-2019, U.S. Census Bureau: https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html

Washington's language diversity is increasing:

- As of 2018, nearly 20 percent of Washington's population speaks a language other than English at home, an increase from 14 percent in 2000.[42]

- After English, Spanish is the most commonly spoken language in the state (9 percent), followed by Chinese (2 percent) and Vietnamese (1 percent).[43] In 2019, Washington's percentage of population with limited English proficiency (LEP) was 7.6 percent, compared to 8.1 percent in 2010 and 6.4 percent in 2000.[44]

- Nearly 4 percent of state households have residents with limited English proficiency. Of these, nearly 21 percent speak Asian or Pacific Island languages, 18 percent speak Spanish, nearly 13 percent speak another Indo-European language, and more than 18 percent speak some other language.[45]

Environmental justice

The passage of Chapter 70A.02 RCW[46] (formerly known as the Healthy Environment for All, or HEAL Act) during Washington's 2021 legislative session brings increased direction and resources for Ecology's environmental justice work. The state of Washington defines **environmental justice** (EJ) as:

> The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, rules, and policies. Environmental justice includes addressing disproportionate environmental and health impacts in all laws, rules, and policies with environmental impacts by prioritizing vulnerable populations and overburdened communities, the equitable distribution of resources and benefits, and eliminating harm.

Disproportionate and cumulative impacts from health disparities, climate change, and exposure risks to toxic chemicals or hazardous substances affect some populations more than others. Creating more equitable approaches takes time, resources, sustained effort, and possibly legal

[42] Persons living in households where language other than English is spoken, Washington State Office of Financial Management: https://ofm.wa.gov/washington-data-research/statewide-data/washington-trends/social-economic-conditions/language-spoken-home
[43] Non-English speakers, Data USA: Washington, Deloitte and Datawheel: https://datausa.io/profile/geo/washington/#demographics
[44] J. Batalova, M. Hanna, and C. Levesque (2021). Frequently requested statistics on immigrants and immigration in the United States. Migration Policy Institute: https://www.migrationpolicy.org/article/frequently-requested-statistics-immigrants-and-immigration-united-states-2020#demographic-educational-linguistic
[45] American Community Survey 2019 data table for limited English speaking households in Washington, United States Census Bureau: https://www.census.gov/acs/www/data/data-tables-and-tools
[46] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.02

reform. These investments are critical to address environmental justice, including racial equity, and to fulfill the State Plan's goals.

Ecology is committed to continuously improving strategies to eliminate disproportionate environmental and health impacts and address inequities, and to providing fair treatment and meaningful involvement for all Washington residents to help shape agency programs, activities, and decisions. This includes program planning and implementation that identifies and considers overburdened communities and underserved populations, and strengthening access for people with limited English proficiency.

Through ongoing assessments and strategic planning, Ecology is determining how best to incorporate EJ practices into the agency's work. This includes more than just complying with Washington's EJ law. Ecology is also reviewing the final report of the EJ Task Force convened by the Interagency Council on Health Disparities[47] and a report by Master of Public Administration (MPA) candidates from the University of Washington's Evans School of Public Policy and Governance who conducted a broad assessment of Ecology's EJ practices and needs at the agency's request in 2019.[48] A key recommendation in these reports and a legal requirement is to use the Washington Department of Health's Environmental Health Disparities (EHD) data and mapping tool to identify areas with cumulative impacts and EJ considerations. Ecology's Hazardous Waste and Toxics Reduction program (HWTR) is currently using mapping tools such as the EPA's EJSCREEN[49] and the EHD map to begin analyzing service equity and cumulative impacts to overburdened communities. Ecology's Solid Waste Management program (SWM) uses the EHD map as part of the scoring criteria in Public Participation Grant applications.[50]

Several of the goals and actions in this plan include opportunities to address EJ and adopt new approaches. Ecology acknowledges that many more EJ opportunities and needs exist with not-yet-clearly-defined actions or practices. Ecology recognizes there is still much more work to do and will continue to invest in and further its commitment to EJ, equity, and anti-racism—and encourages others, including partners and local government, to embrace a similar approach.

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[47] Health Equity Council, "Environmental Justice Task Force Recommendations for Prioritizing EJ in Washington State Government," Fall 2020 https://healthequity.wa.gov/Portals/9/Doc/Publications/Reports/EJTF%20Report_FINAL(1).pdf, accessed August 11, 2021.

[48] University of Washington Evans School of Public Policy & Governance, "Embedding Environmental Justice into the Washington State Department of Ecology," June 1, 2020, https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/45590/Embedding%20Environmental%20Justice%20into%20the%20Washington%20State%20Department%20of%20Ecology.pdf?sequence=2&isAllowed=y, accessed on August 11, 2021.

[49] EJSCREEN: Environmental justice screening and mapping tool, U.S. Environmental Protection Agency: https://www.epa.gov/ejscreen

[50] Program Guidelines: Public Participation Grants 2019-2021, Washington State Department of Ecology: https://apps.ecology.wa.gov/publications/documents/1907006.pdf

If the vision is realized…

Visionary goals shared in the 2015 State Plan are still much the same. They depict a vision for Washington's future if we are successful in advancing this and future State Plans.

- **Greenhouse gas emissions (GHGs) will decrease due in part to wiser management of materials.** Reduced consumption as well as increased reuse and recycling of resources will be recognized as keys to conserving energy use and reducing associated GHG emissions. Washington will use food well without wasting it. Innovative uses for organic materials will help sequester carbon in soils, create bio-energy, and provide food for thriving plants. Less methane and leachate will be generated due to reduced disposal of organic materials in landfills.

- **Sustainable materials management will be commonplace.** Reduction, reuse, and recycling of plastics, metals, glass, wood, organics, and other materials will be widespread and supported by producer responsibility and robust markets. More products will be reused or repaired, resulting in less overall consumption. Recyclable materials will be source-separated from waste, minimizing contamination.

- **Safer products, buildings, and services will be designed for human, economic, and environmental health, and will be readily available.** Products, buildings, and services will minimize hazardous materials throughout their life cycles. Green chemistry[51] will be the norm. Most toxic threats to human health and the environment from hazardous materials will be greatly reduced or eliminated. Demand for effective, environmentally preferable products, buildings, and services will be widespread. Products with toxic components will be managed in a product stewardship system.

- **A stable and long-term solid waste financing system will support and enable the transition to sustainable materials management.** Full costs for managing products, materials, and wastes from design and manufacture to end-of-life will be accounted for in product prices. Funding for waste reduction and recycling programs will be shared by producers without relying solely on waste disposal fees.

- **State regulations and infrastructure will support the reduction and eventual elimination of waste and toxics.** Local waste management plans and pollution prevention plans will focus on sustainable materials management and toxics reduction. Solid and hazardous waste management facilities will promote reduction, reuse and recycling, and safe disposal—and will comply with state and local regulations.

- **Washington businesses will thrive and provide sustainable jobs.** Businesses, employees, and communities will prosper in the domestic and global marketplace as they eliminate waste and replace hazardous materials from products and services with safer ones. Public

[51] Green chemistry means designing products and processes to reduce or eliminate hazardous substances.

confidence will increase, while risk and liability to the public, waste-management workers, and others decrease.

- **Accessible and timely measurement systems will track the life cycle impacts of materials, products, waste, and toxic chemicals.** Important data gaps will be identified and systems developed for producer reporting. Data will provide useful information for stakeholders and direct state and local programs and priorities.

- **Environmental equity and justice for waste- and toxics-related issues will be realized for all Washington residents.** Health disparities will be eliminated from toxic exposures through people's jobs, communities, and homes. All residents will have equitable access to solid and hazardous waste services.

Plan Goals and Actions

Section One: Managing Hazardous Waste and Materials

Introduction

Properly managing hazardous waste and materials (also referred to as **hazardous substances** or **toxic chemicals**) helps protect our environment. Improper management can lead to pollution and contaminated sites, which negatively impacts our environment and, in many cases, human health. The costs of cleaning up contaminated sites are an external cost of hazardous waste and materials that often falls to businesses and taxpayers.

Most of the authority to regulate hazardous waste and materials in Washington state falls under our Hazardous Waste and Toxics Reduction (HWTR) Program.[52] HWTR Program activities focus on toxics reduction through pollution prevention (P2), compliance with regulations, and permitting and corrective action at facilities that manage hazardous wastes.

Federal law uses the term **hazardous waste** to refer to the hazardous waste it regulates. Washington state uses the term **dangerous waste** to refer to hazardous wastes that are regulated by the state[53] but not included in the federal definition. In this plan, Ecology generally uses the term hazardous waste, but when referring to regulatory actions, uses the term dangerous waste.

Even small amounts of hazardous waste can cause safety hazards and environmental impacts. Local governments, under the authority of state laws and regulations, primarily manage small quantities of dangerous wastes created by businesses or households. Washington law refers to this combined waste as **moderate risk waste** (MRW). Ecology regulates most aspects of MRW in Washington.

Authorizing framework: implementation and issues

Pollution prevention

Washington state's Waste Reduction Act[54] passed in 1990. It requires businesses or public agencies to prepare "voluntary reduction plans"[55]—referred to as Pollution Prevention (P2) plans[56]—if they meet one of the following criteria:

- Generate 2,640 pounds or more of recurrent hazardous waste annually.

[52] https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Hazardous-Waste-Toxics-Reduction
[53] Chapter 173-303 WAC: http://app.leg.wa.gov/WAC/default.aspx?cite=173-303
[54] Chapter 70A.214 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214
[55] Chapter 70A.214.110 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214.110
[56] https://ecology.wa.gov/P2Plan

- Report toxic releases as part of the federal Toxics Release Inventory[57] requirement in the federal Emergency Planning and Community Right-to-Know Act.[58]

Chapter 173-307-030 of the Washington Administration Code (WAC)[59] states that P2 plans must consider opportunities to reduce generation of hazardous waste and use of hazardous substances[60] (as defined by Chapter 173-307-020 WAC[61]). P2 plans can also address a broad range of environmental solutions, including:

- Waste reduction.
- Water use reduction.
- Energy efficiency.
- Hazardous substance and toxic chemical use reduction or elimination.

Chapter 173-307-080 WAC[62] states that annual progress reports "must be submitted" to Ecology. However, implementing reduction opportunities identified in P2 plans is voluntary. Ecology offers technical assistance, and in some cases financial incentives, to help businesses identify reduction opportunities and implement projects, with special emphasis on addressing upstream uses or production.

Compliance and compliance assistance

State authority for managing dangerous waste derives from the 1976 federal Resource Conservation and Recovery Act[63] (RCRA) and the 1976 state Hazardous Waste Management Act.[64]

Medium and large quantity generators

The foundation of our compliance efforts are the state's Dangerous Waste Regulations.[65] These regulations require businesses to file an annual report with us if they generate more than 220 pounds of dangerous wastes in any month or 2,640 pounds per year. These businesses classify as medium quantity generators (MQGs) or large quantity generators (LQGs), depending on the amount of dangerous wastes they generate.

Ecology responds to complaints and requests from the public and local government, and conducts formal inspections of dangerous waste generators to evaluate their compliance with regulations. While waste amounts can vary greatly from year to year for an individual waste

[57] https://ecology.wa.gov/TRI
[58] https://www.epa.gov/epcra/what-epcra
[59] Chapter 173-307-030 WAC: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-307-030
[60] Download Washington State Pollution Prevention Planning Hazardous Substances List: https://ecology.wa.gov/Asset-Collections/Doc-Assets/Regulations-Permits/Reporting-requirements/Dangerous-waste-reporting-requirements/Pollution-Prevention-Plan/Washington-State-Pollution-Prevention-Planning-Haz
[61] Chapter 173-307-202 WAC: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-307-020
[62] Chapter 173-307-080 WAC: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-307-080
[63] https://www.epa.gov/rcra
[64] Chapter 70A.300 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300
[65] Chapter 173-303 WAC: http://app.leg.wa.gov/WAC/default.aspx?cite=173-303

generator, more than 1,000 Washington businesses were medium and large quantity generators subject to formal compliance inspections in 2020.

In addition, Ecology provides informal technical assistance visits to help waste generators and businesses address concerns and implement best practices to avoid problems before they occur. Ecology is exploring how best to prioritize compliance efforts—including environmental justice considerations, such as disproportionate impacts to overburdened communities.

Small quantity generators

There are more small quantity generators (SQGs) than MQGs and LQGs. In 2020, there were about 1,300 SQGs in Washington. Although SQGs collectively generate a significant amount of dangerous waste, Ecology employees are not required to—and typically do not—inspect SQGs due to staffing constraints. Local governments, however, have the authority to oversee and assist these SQGs. For more information about SQGs, see the Small Volume Hazardous Wastes and Materials section of this plan.

In 2007, Ecology established the Pollution Prevention Assistance (PPA) partnership to coordinate with specialists at local jurisdictions who visit SQGs and provide technical assistance.[66] Ecology supports partners that provide pollution prevention and waste management assistance to local businesses. To date, these partners have completed more than 35,000 visits and followed up with contacts at nearly 21,000 businesses—helping them properly manage their wastes and correct more than 36,000 issues.

In late 2019, we launched a complimentary Product Replacement Program (PRP) to help SQGs that generate specific waste streams switch to using safer alternative products or processes. For example, in 2019–2020 we found 108 dry cleaners across the state using perchlorethylene dry cleaning washing machines and determined that at least 57 would be interested in switching to a safer alternative. By the end of 2020, we helped 39 dry cleaners replace their systems and receive reimbursements totaling $690,000. Similar efforts are underway to address per- and polyfluoroalkyl substances (PFAS, a class of toxic chemicals) in firefighting foam, polychlorinated biphenyls (PCBs) in light ballasts and building materials, flame retardants in exercise equipment and gyms, and mercury-containing thermostats.

Permitting and corrective action

Ecology issues waste management permits to facilities that treat, store, or dispose of dangerous waste, called treatment, storage, and disposal (TSD) facilities. These facilities provide services to industries and local governments for safe management and disposal of their dangerous waste. The permits ensure that TSD facility design, construction, maintenance, and operations protect people and the environment. A TSD facility must meet the conditions of its permit and

[66] Visit the pollution prevention assistance webpage (ecology.wa.gov/PPA) for a list of partners and their locations.

comply with state and federal regulations during its operation, as well as when it ceases operations and when it closes. Washington currently has 10 active TSD facilities.[67]

If toxic chemicals are released or contamination occurs during TSD facility operation, facility owners may be required to take **corrective action** according to the Dangerous Waste Regulations.[68] These regulations incorporate cleanup processes under the Hazardous Waste Cleanup—Model Toxics Control Act.[69] Ecology oversees TSD closure and corrective action cleanup at these sites. Washington currently has 42 sites of former TSD facilities conducting corrective action clean up or long-term monitoring activities.

Small volume hazardous wastes and materials

Washington's Hazardous Waste Management Act[70] authorizes local governments to regulate moderate risk waste (MRW), with assistance from Ecology. The term **moderate risk waste** can be misleading. These wastes are not necessarily moderate in risks to human health and environment or moderate in quantity. Therefore, it is important to have programs in place to manage these wastes.

Two types of waste are considered MRW:

- **Household hazardous waste.** Household residents disposing of hazardous products—such as pesticides and paint strippers—generate these wastes.
- **Small quantity generator (SGQ) waste.** Businesses that produce less than 220 pounds of dangerous waste per month (with some exceptions) generate SQG wastes.

This statute also requires local governments to write hazardous waste management plans to address these wastes.[71] While all local governments originally submitted hazardous waste management plans to Ecology, over time many local governments began including the contents of hazardous waste plans in their solid waste management plans, referred to as **combined plans**. Plans address proper MRW management and education about reducing, recycling, and disposing of MRW in the jurisdiction, including for used oil.[72]

For household hazardous wastes, local governments operate fixed collection facilities, collection events, or both. They can also provide households with information about how to reduce waste generation or properly recycle or dispose of wastes. Local governments rely heavily on state Local Solid Waste and Financial Assistance (LSWFA) grant funds appropriated by the Legislature to provide these services. In the 2017–2019 biennium, 54 percent of LSFWA funds dedicated to planning and implementation were used to provide MRW services, which was 38 percent of all LSFWA funds (including those allocated for enforcement). Over the past

[67] For a list of current permitted sites, see https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Dangerous-waste-permits
[68] Chapter 173-303 WAC: http://app.leg.wa.gov/WAC/default.aspx?cite=173-303
[69] Chapter 70A.305 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305
[70] Chapter 70A.300 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300
[71] Local Governments to Prepare Local Hazardous Waste Plans, Chapter 70.300.350 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300.350
[72] Used Oil Recycling, Chapter 70A.224 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.224

decade, LSWFA funds have been significantly reduced, resulting in less available funding for MRW services.

Some collection facilities also accept SQG wastes. If not, the SQG may contract directly with a private company to collect their waste. Other options to dispose of some types of MRW include:

- The network of businesses that, for a fee, collect used oil, antifreeze, and batteries.
- Some of the state's product stewardship programs:
  - LightRecyle[73] for mercury-containing bulbs.
  - E-Cycle[74] for some electronic waste.
  - PaintCare[75] for various paints, coatings, stains, and sealers—starting in 2021.

Ecology estimates that current MRW collection programs capture somewhere between 30 to 35 percent of all MRW generated, based on reported data and calculations from Washington's 2016 waste characterization study.[76] Unless taken to programs such as those described above, most people dispose of MRW with other solid wastes, which are then landfilled or incinerated.

While there are no federal or state laws banning the landfill disposal of most MRW, some local governments discourage this activity through ordinance. Collecting more MRW is desirable, but funding to support MRW facilities and programs is hard to come by.

Future directions: looking ahead

Reducing and safely managing hazardous waste and materials is important because it protects people and the environment, saves money, helps prevent expensive clean ups, and is good for the economy. We will need to continue to strengthen partnerships between Ecology, local government, and private businesses to be successful in toxics reduction and hazardous waste management efforts.

Improving pollution prevention through safer alternatives

Pollution prevention makes good economic sense. Washington businesses have saved an estimated $7 million per year due to implementing their P2 plans.[77] The actual amount may be much higher because businesses are not required to report cost savings.

In the past, our efforts with P2 planning focused on assisting businesses and government facilities to reduce hazardous waste. Ecology expects to increase our focus on encouraging facilities to switch to safer alternatives for toxic chemicals or processes, to prevent generating hazardous waste in the first place.

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[73] http://www.lightrecycle.org/
[74] https://ecology.wa.gov/ecycle
[75] https://www.paintcare.org/paintcare-states/washington/#/new-program-in-2020
[76] https://apps.ecology.wa.gov/publications/SummaryPages/1607032.html
[77] Based on estimates of $56 million saved between 2005 and 2013. For more information, see the 2013 publication, Focus on Pollution Prevention: https://apps.ecology.wa.gov/publications/SummaryPages/1104023.html

Improving hazardous waste compliance

Ecology continues to streamline our hazardous waste compliance process, make improvements, and measure progress towards implementing more effective inspections.

For example:

- Ecology regularly updates the regulations and many of our publications to be more user friendly, many of which were updated during the COVID-19 pandemic.
- Ecology improved much of our regulatory guidance to help waste generators better prepare for compliance inspections.
- Ecology initiated an analysis to identify key factors associated with regulatory compliance and will continue working to align inspection priorities (including environmental justice considerations) with these identifiers.

These approaches will help direct resources to areas where Ecology can realize the greatest positive effect of regulatory compliance.

Expanding partnerships and programs

Currently, Ecology's Pollution Prevention Assistance (PPA) partnership includes counties and cities along Puget Sound and the Salish Sea basin, Clark County, and Spokane County. Ecology, PPA partners, and other municipal organizations interested in joining the partnership have expressed support for expanding these opportunities to more counties and health districts—especially in urban centers east of the Cascades, where a large number of SQGs and lower income populations are located.

Likewise, Ecology hopes to expand the successful Product Replacement Program to include options for additional products and toxic chemicals. However, additional funding is necessary to provide these expanded opportunities and support to more areas and businesses.

Filling the funding gap for MRW services

With state population expected to grow, there is continued need for MRW services. However, reduced grant funding has led to a reduction in services in some areas. For example, MRW facilities may limit the types of wastes they collect or reduce the hours they are open to the public.

Appropriated funding for the Local Solid Waste and Financial Assistance (LSWFA) program was recently increased and there is hope this will continue, allowing counties to continue and perhaps restore some MRW services.

Even when full grant funding was available, MRW services were limited and MRW infrastructure needs were not fully met. This indicates that more resources are needed to safely manage household hazardous wastes. Product stewardship programs—in which the products' producers pay for collection, recycling, or safe disposal of their products—can help fill the gap between funding and demand for services. These programs increasingly help provide collection options for some materials typically collected at MRW facilities, such as electronics and mercury-containing lights. Bills have been introduced in other states to establish product

stewardship programs for all household products containing hazardous substances. This is needed to truly provide for sufficient collection opportunities and safe management of these products.

Pollution prevention (P2) goals and actions

GOAL HWM 1: Hazardous waste generators significantly reduce chemical use, waste, emissions, and costs by successfully implementing effective P2 plans and taking other actions. These generators and other industries also use cleaner, more sustainable manufacturing processes and produce less toxic and more sustainable products.

Action HWM 1A: Increase staff focus on implementing P2 opportunities that reduce the toxicity of business processes and products.

Action HWM 1B: Provide technical assistance (through site visits, P2 plan review and assistance, and toxics reduction project implementation assistance) to businesses and public agencies to encourage toxic chemical reduction in business processes and products. Consider racial equality and accessible language when planning and conducting outreach.

Action HWM 1C: Invest in understanding business needs, improving services, and delivering them equitably. Survey facilities and share information on the benefits of P2 opportunities and sustainability.

Action HWM 1D: Measure staff-driven reduction opportunities on an annual basis, working towards a goal of generating new P2 opportunities from 50 percent of all P2 technical assistance site visits. Identify racial equity, health disparities, and socioeconomic factors associated with P2 opportunities to inform selection and implementation of reduction projects.

Action HWM 1E: Develop and implement state or regional efforts to encourage use of safer chemical alternatives and processes in partnership with various business associations, interested local jurisdictions, nonprofit organizations, and community groups. Conduct an equity analysis to inform technical assistance efforts, including assessment of racial equity, health disparities, and language access considerations.

Action HWM 1F: Establish toxic reduction projects that measurably reduce at least 10 percent of pounds or dollars spent in one of the following areas (in order of priority):

- Toxic chemicals used in processes.
- Toxic chemicals in products.
- Toxic Reduction Inventory emissions.
- Hazardous waste generated.
- Other measurable environmental impacts (e.g., energy use, water use/quality, solid waste generation).

Compliance and compliance assistance goals and actions

GOAL HWM 2: Large quantity generators (LQGs) and medium quantity generators (MQGs) comply with the dangerous waste regulations.

> **Action HWM 2A:** Continue to inspect MQGs and LQGs, making these inspections as effective and efficient as possible for the business community, Ecology inspectors, and Washington residents.
>
> **Action HWM 2B:** Track and analyze inspection data to determine effectiveness, including number of inspections, violations returned to compliance, violations returned to compliance within 30 days, changes in facility history, number of enforcements, and regulated community size.

GOAL HWM 3: Facilities have the necessary awareness and information resources to effectively make compliance corrections.

> **Action HWM 3A:** Conduct sector campaigns to inform select businesses about compliance issues, P2, or safer chemical alternatives to address significant, widespread, or recurring compliance issues. Partner with other regulatory agencies, air authorities, local governments, nonprofit organizations, community groups, and small business assistance programs on these campaigns as appropriate.
>
> **Action HWM 3B:** Provide cost-effective training or educational resources (in multiple languages as appropriate) to dangerous waste generators. Examples include topic-specific publications, designation and how-to videos, website updates, and workshops.
>
> **Action HWM 3C**: Seek opportunities to partner with businesses, people of color, and native speakers for feedback on communication products to ensure cultural competency and accurate translations.

GOAL HWM 4: Fewer environmental issues are found at SQGs and local businesses.

> **Action HWM 4A:** Align the Pollution Prevention Assistance (PPA) partnership, Product Replacement Program (PRP), and other small business technical assistance efforts with our toxics reduction strategy and other chemical priorities. Conduct an environmental justice review and share results, guidance, and information about areas of high concern with the partners.
>
> **Action HWM 4B:** Expand the PPA partnership to more areas of the state, increasing the number of participating jurisdictions from 21 to 26, and increasing support to sustain or increase small business technical assistance visits. Program expansion will prioritize less-served geographic areas. Ecology may use the distribution of black, indigenous, and people of color (BIPOC) communities within new participating jurisdictions to help determine funding decisions.
>
> **Action HWM 4C:** Help collect and dispose of firefighting foam containing per- and polyfluoroalkyl substances (PFAS, a class of toxic chemicals) currently housed at or managed by state fire departments and the Washington Department of Transportation.

Action HWM 4D: Continue offering the PRP to replace perchloroethylene-using dry cleaning equipment with cleaner professional wet cleaning or hydrocarbon machines at businesses across the state. Continue providing outreach communication with appropriate languages and cultural messaging.

Action HWM 4E: Identify safer alternatives and help replace foam pits that contain polybrominated diphenyl ethers (PBDE, a class of fire retardant chemicals) at five gymnasiums.

Action HWM 4F: Provide culturally relevant technical assistance in appropriate languages to support small businesses with best management practices to prevent stormwater pollution. Encourage local governments to develop relationships with community-based organizations to reach underserved communities and business owners.

Permitting and corrective action goals and actions

GOAL HWM 5: All treatment, storage, and disposal facilities (TSDs) comply with regulations and operate safely.

Action HWM 5A: Maintain inspector staffing to allow for sufficient compliance, enforcement, and information-sharing activities with TSDs.

Action HWM 5B: Ensure that permittees develop clear, implementable operating permits during permit renewal.

GOAL HWM 6: Potentially liable parties safely manage and work to clean up environmental contamination at their corrective action sites.

Action HWM 6A: Follow a corrective action program implementation plan as required by the Performance Partnership Agreement between EPA and Ecology.

GOAL HWM 7: Parties interested in permitted facilities and corrective action sites will know who to contact and where to find current information.

Action HWM 7A: Maintain public access to each corrective action site's information, including links to each site's electronic document repository on our dangerous waste facility cleanup[78] webpage.

Action HWM 7B: Maintain and follow a communication and public participation plan for every corrective action site. Plans address providing inclusive and accessible information, effective ways to provide feedback, and how Ecology will address feedback and provide rationale for decisions.

Action HWM 7C: Review available demographic and environmental data to identify and prioritize work in areas with cumulative impacts, and encourage local jurisdictions to look at cumulative effects of multiple permits when siting new facilities. Use

[78] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Dangerous-waste-facility-cleanup

environmental, demographic, and health disparities data (from such sources as the Washington Tracking Network, U.S. Census, and the U.S. Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry Social Vulnerability Index[79]) to inform permit decisions for new facilities and support siting in environmentally just ways to reduce harm to historically underserved or low-income areas.

GOAL HWM 8: Dangerous waste facilities and used oil processors maintain financial assurance to ensure ability to safely close.

Action HWM 8A: Ensure each facility has an adequate closure plan and financial assurance.

Small volume hazardous waste and materials (moderate risk waste) goals and actions

GOAL HWM 9: Until toxic chemicals are phased out of products and hazardous product use declines, moderate risk waste (MRW) collection is maximized.

Action HWM 9A: Encourage as much MRW reuse and recycling as appropriate. Promote opportunities to increase reuse and recycling as new technologies and markets develop for MRW materials.

Action HWM 9B: Work with local government health departments, waste collection companies, stewardship organizations, and state waste and recycling associations to explore options to increase MRW collection and recycling, especially in underserved areas.

Action HWM 9C: Coordinate with stewardship organizations, local governments and collection companies to increase inclusive and effective education and outreach efforts to residents and small businesses. These education and outreach efforts will focus on MRW services, safe handling, and disposal options, as well as less-toxic alternatives.

Action HWM 9D: Research reduction, recycling, and disposal options for emerging MRW waste streams, and develop guidance documents when appropriate.

GOAL HWM 10: MRW locations and programs provide increased services for residents, businesses, and underserved communities, with a focus on equity and accessibility.

Action HWM 10A: Actively support existing programs and advocate for new product stewardship programs for toxic or hard-to-handle products (including household hazardous waste and batteries) as a way to increase collection and recycling opportunities across the state.

[79] U.S. Centers for Disease Control and the Agency for Toxic Substances and Disease Registry (CDC/ATSDR) Social Vulnerability Index interactive map, U.S. Department of Health and Human Services: https://svi.cdc.gov/map.html

Action HWM 10B: Track efforts and promote options to increase MRW services in underserved areas, multi-family residences, and for small businesses, and measure progress.

GOAL HWM 11: Facilities that collect MRW are properly permitted (if required) and in compliance with applicable laws and rules.

Action HWM 11A: Provide ongoing technical assistance to health departments and facilities that collect MRW, including local government facilities, retail locations, and collection centers under product stewardship programs. Encourage local health departments to conduct routine inspections of all MRW facilities and conduct inspections of other locations as required.

Section Two: Managing Solid Waste and Materials

Introduction

Solid waste is a broad term that applies to wastes and materials from a variety of activities and sectors. It includes municipal solid waste and recyclables (from households and businesses), organic materials (yard and food debris), and construction and demolition debris.

Washington's solid waste system focuses on making sure residents have access to waste and recycling services, and that waste handling facilities are properly managed to protect human and environmental health. Many jurisdictions also work on reducing waste through a variety of activities and outreach.

Solid waste management's evolving landscape

Prior to and throughout most of the twentieth century, solid waste management focused on safe garbage disposal and landfill management. This is still an ongoing concern.

As people became more aware of finite natural resources and increasing threats from pollution, the focus grew to include recycling. In response, Washington state established some of the leading recycling programs in the country, starting in the early 1990s.

Recently, systemic problems—such as the loss of overseas markets for recyclable materials and contamination in collected recyclable materials—revealed that we must re-evaluate recycling programs. These problems also illustrate the need to increase efforts on waste prevention and source reduction.

While much attention is given to residential waste and materials management issues, the commercial sector (also called the industrial, commercial, and institutional sector—or ICI sector) generates more waste and recycles more material than the residential sector. Based on solid waste and recycling data:[80]

- The residential sector is responsible for 45 percent of disposed (landfilled and incinerated) wastes and 15 percent of recovered materials (i.e., recycled and composted).
- The ICI sector is accountable for 55 percent of disposed wastes and 85 percent of recovered materials.

Authorizing framework: implementation and issues

Local governments have primary responsibility for regulating and overseeing management of solid waste in Washington.[81] Counties, jurisdictional health departments, and cities share this responsibility. Often working with collection companies, local governments provide programs

[80] https://ecology.wa.gov/Research-Data/Data-resources/Solid-waste-recycling-data
[81] Cities and Towns—Miscellaneous Provisions, Chapter 35.21 RCW: http://app.leg.wa.gov/RCW/default.aspx?cite=35.21
Counties Solid Waste Disposal, Chapter 36.58 RCW: http://app.leg.wa.gov/RCW/default.aspx?cite=36.58

and some infrastructure including transfer stations, recycling drop-boxes, and—in some instances—composting operations, landfills, and even collection vehicles and bins. Laws, regulations, and local codes provide direction.

Ecology's Solid Waste Management program[82] provides assistance to and oversight of waste reduction, recycling, organics conversion, and disposal programs. Activities include:

- Technical assistance on solid waste handling facility performance and landfill monitoring;
- Local waste plan guidance; and
- Grant funding for cleanup, waste reduction, recycling projects, and enforcement.

The Washington Utilities and Transportation Commission[83] (UTC) regulates the state's key solid waste management service providers: the solid waste collection companies.[84] These companies play a major role in collecting and hauling waste, recyclables, and organics. They may also operate transfer stations, landfills, and waste-to-energy, composting, and recycling facilities. Counties must use the UTC-franchised service provider for garbage collection, but may contract for residential curbside recycling. Cities may choose to use the UTC- franchised service provider, contract for services, or provide their own services.

The main statute governing solid waste is Solid Waste Management—Reduction and Recycling.[85] This broad-reaching statute was originally written in 1969 and has been amended many times.

Solid waste system issues

Solid waste system financing

Much of Washington state's solid waste system financing relies on solid waste disposal fees or tipping fees, along with service charges and some grant funding. The system's financial needs include the costs of meeting existing regulatory requirements, long-term care of landfills, and recycling and waste reduction programs. Local governments in particular are concerned about how to sustain funding for solid waste infrastructure and programs when the goal is to reduce waste disposal—the source of significant funding.

Drop-off recycling programs are often funded by tipping fees or grants. Curbside collection of garbage and recyclables is funded by ratepayers. In the franchise system overseen by the UTC, rates are approved by the commission and costs for both waste and recycling must appear on the bill as separate line items. Cities, however, do not often show a separated cost for recycling in the overall garbage bill.

[82] https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Solid-Waste-Management
[83] http://www.utc.wa.gov/Pages/default.aspx
[84] Solid Waste Collection Companies, Chapter 81.77 RCW: http://app.leg.wa.gov/RCW/default.aspx?cite=81.77
[85] Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205

In 2017, Ecology contracted for research on alternative funding mechanisms for waste reduction and recycling. The three-part study, "Funding mechanisms for Solid Waste," provide useful recommendations, even though recycling markets have been disrupted by overseas import restrictions in recent years.[86]

Local solid waste plans

Counties are required to prepare local solid waste plans,[85] which are a linchpin of Washington's solid waste system. Cities can choose to sign onto county plans or create their own plan.

Local solid waste plans must include information about disposal, financing systems, recycling, composting, and waste reduction programs, as applicable.

In 2019, a law passed[87] that required counties with more than 25,000 residents to include a contamination reduction and outreach plan (CROP) within their solid waste plan to help reduce recycling contamination.

Local governments are also required to adopt hazardous waste management plans under the Hazardous Waste Management statute.[88] Increasingly, local governments are combining the hazardous waste and solid waste plans into one document.

Ecology's grant programs

Local solid waste plans must be complete and in good standing for the jurisdiction to receive grant funding from our Local Solid Waste Financial Assistance program.[89] This assistance is often an important part of local funding to prepare required waste plans and to implement waste reduction, recycling, and solid waste enforcement programs.

The Hazardous Waste Cleanup—Model Toxics Control Act[90] specifies the use of funds collected under this law for local waste plans and programs. Funding for these grants has been significantly reduced in the past decade, creating challenges for many local jurisdictions. Funding was increased in the 2021–2023 biennial budget, but remains below historic levels.

Ecology also provides funds for waste reduction and recycling through two competitive grant programs:

- Public Participation Grants[91] are for individuals and not-for-profit public interest organizations to implement the state's waste management priorities. They can also be used to increase public understanding and involvement in cleaning up contaminated sites.

[86] For more information, see the Financing Solid Waste for the Future section on this webpage: https://ecology.wa.gov/Waste-Toxics/Solid-waste-litter/Solid-waste
[87] https://app.leg.wa.gov/billsummary?BillNumber=1543&Year=2019&Initiative=false
[88] Chapter 70A.300 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300
[89] https://ecology.wa.gov/programs/swfa/grants/cpg.html
[90] Chapter 70A.305 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305
[91] https://ecology.wa.gov/ppgrants

- Waste Reduction and Recycling Education Grants[92] are for local governments and non-profit organizations to design local or statewide education programs to help the public with litter control, waste reduction, recycling, and composting.

Solid waste, materials, and infrastructure

Waste reduction and recycling

Washington's waste management hierarchy has been in statute[93] since 1984. It places waste reduction as the highest priority for managing waste, followed by recycling, and then responsible disposal (energy recovery, incineration, or landfill).

In 1989, the Waste Not Washington Act established a 50 percent recycling goal, which Ecology calculates via a recovery rate. From 2009–2013, the state met this goal, but the percent recovered has since declined.

Ecology now emphasizes waste generation as its primary measurement. This is a more accurate way to assess if Washington residents and businesses are truly reducing waste. We are not. From 2000–2017, Washington's population increased by 24 percent and waste generation increased by nearly triple that amount (64%). While waste reduction has been the highest priority for waste management in statute since 1984, we are not yet moving in the right direction. For the most recent data, download the Solid Waste Generated and Recovered in Washington spreadsheet.[94]

Commingled recycling

Under state law, local governments are required to plan for and provide access to recycling via curbside, drop boxes (which is more common in rural areas), or both. Most of Washington's curbside recycling programs collect commingled materials, in which all recyclable materials from the household are placed into one bin. Material recovery facilities (MRFs) sort these recyclables into separate commodities, which are baled and sent to other facilities for processing into materials that can then be used to make new products.

Commingled recycling programs lead to higher collection rates as the ease of putting all recyclables into one bin leads to increased participation. Unfortunately, commingled recycling also results in more contamination in the bins. This increased contamination takes two forms:

- Many people place non-recyclable items in bins thinking or hoping the items will be recycled—sometimes called **wishful recycling**. This issue is often exacerbated by confusing labels that mislead people into believing non-recyclable items are actually recyclable.
- Despite advanced technology, MRFs are unable to perfectly sort commingled materials. This results in **residual contamination**, where some incorrect items are included in bales

[92] https://ecology.wa.gov/WRRED
[93] Solid Waste Management—Reduction and Recycling, Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205
[94] Downloadable spreadsheet: https://ecology.wa.gov/Asset-Collections/Doc-Assets/Solid-waste/Solid-waste-recycling-data/WasteGenerationAndRecovery-2017

(such as metal in plastics bales or plastic in paper bales) and sent to the wrong end user. Technology that could do a better job of sorting, such as robots, is expensive.

Multi-family housing is a growing population with unique challenges. Many do not provide recycling services, but for those that do, contamination issues can be even greater. Residents tend to move frequently and some may not speak English as their primary language. This increases difficulties in learning what and how to recycle, if recycling services are even provided.

Since commingled recycling collection began in the early 2000s, recycling contamination has been a growing concern—particularly for end-markets in China and other Asian countries. In 2018, China's government implemented new restrictions on what recyclables may be imported into their country due largely to concerns about contamination. As China was the major buyer of Washington's (and other states') recyclables, this significantly impacted Washington's recycling programs and created major recycling disruptions across the country. Other Southeast Asian countries soon followed China's lead and imposed import restrictions of their own. There are now numerous efforts underway, in Washington and nationally, to reduce contamination, create domestic markets, and "reset recycling."

In response to the export market restrictions, Washington's Recycling Development Center[95] was created in 2019. Led by Ecology in coordination with the state's Department of Commerce and an advisory board, the center facilitates research and development, marketing, and policy analysis to bolster recycling markets and processing in the state.

Plastic waste

Plastic wastes are problematic. They are increasingly in the news and receiving much public scrutiny. Major concerns include single-use plastic items, plastic marine debris, litter, micro-plastics, and improper recycling practices that put residents in developing countries at risk.

According to the Ellen MacArthur Foundation, 32 percent of plastic packaging escapes collection systems.[96] The Pew Charitable Trusts projects the flow of plastic into the ocean to nearly triple by 2040.[97] Significant actions are needed on all levels to reduce this trend.

Only a small percent of plastics are actually recycled—estimated at less than 9 percent of all plastics ever manufactured.[98] Some plastics are more easily recycled than others. Plastics with resin codes 1 (PET—soda or water bottles) or 2 (HDPE—milk jugs) have good markets. However, plastics with resin codes 3–7 have challenges throughout the recycling system such as sorting,

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[95] Chapter 70A.240 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.240
[96] Ellen Macarthur Foundation, "The New Plastics Economy: Rethinking the Future of Plastics," 2016, https://www.newplasticseconomy.org/assets/doc/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf, accessed on July 27, 2021.
[97] The Pew Charitable Trusts, "Breaking the Plastic Wave: A Comprehensive Assessment of Pathways Towards Stopping Ocean Plastic Pollution," October 23, 2020, https://www.pewtrusts.org/-/media/assets/2020/10/breakingtheplasticwave_mainreport.pdf, accessed on July 27, 2021.
[98] According data from EPA for 2017, the overall plastics recycling rate was 8.4 percent. Read more at https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/plastics-material-specific-data.

processing, and available end markets. While plastics provide benefits, including in such things as durable products and medical supplies, too many plastic items are improperly managed.

In 2019, concerns about plastics led to the passage of the Plastic Packaging Evaluation and Assessment law.[99] This law required a third-party state-wide study of plastics management and recommendations to the Legislature for better plastics management.[100] The study was completed in October 2020 and includes ten recommendations to reduce and manage plastic packaging in Washington.

Concerns about plastics have also led to an increase in local bans of plastic bags as well as a statewide plastic carryout bag ban passed in 2020.[101] Other single-use plastic items have also been banned locally, and beginning in 2022, single-use serviceware will only be made available to customers by request. Some expanded polystyrene products have also been banned statewide, as per 2021 legislation (Chapter 70A.245 RCW,[102]). These bans will become effective in 2023 and 2024.

This statute also requires post-consumer recycled content requirements for plastic beverage containers, plastic containers for personal care and household cleaning products, and plastic trash bags. A stakeholder committee was also required to determine recycled content requirements for additional plastic products.

Funding

The Waste Reduction, Recycling, and Model Litter Control Act (WRRLCA),[103] a tax on frequently littered items, provides funding for roadside litter pickup by Ecology Youth Corps, local governments, and some state agencies. It also provides funding for Ecology's waste reduction and recycling programs, including the new Recycling Development Center.

For a decade (starting with the 2008 recession), a sizable portion of the WRRLCA account was diverted to other state agencies. This left no funding for litter prevention and reduced litter pick up, waste reduction, and recycling work.

In the 2019–2021 biennium, most WRRLCA funding was restored by the Legislature, providing Ecology with resources to bring back work that had been on hold and address the new challenges of today. However, use of funds was frozen due to economic concerns from the COVID-19 pandemic. It appears there will be full funding and the ability to use it in in the 2021–2023 biennium.

The Model Toxics Control Account[104] is a main source of funding for Ecology's technical assistance for solid waste facilities, local solid waste planning, and grant oversight.

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[99] Chapter 70A.520 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.520
[100] Evaluation, Assessment, and Recommendations for the Responsible Management of Plastic Packaging in Washington https://apps.ecology.wa.gov/publications/SummaryPages/2007028.html
[101] Plastic Bags, Chapter 70A.530 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.530
[102] Chapter 70A.245 https://app.leg.wa.gov/RCW/default.aspx?cite=70A.245
[103] Chapter 70A.200 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.200
[104] Model Toxics Control Operating Account, Chapter 70A.305.180 RCW: https://app.leg.wa.gov/rcw/default.aspx?cite=70A.305.180

Both of these accounts also fund important solid waste-related grants for local governments and non-profit organizations and community groups.

Solid waste handling and disposal

Washington state law sets the standards for proper solid waste handling and disposal, which Ecology regulates in rules. Over the past 40 years, solid waste disposal has become much safer and far more protective of health, habitat, and natural resources.

Most solid waste handling facilities are regulated under the Solid Waste Handling Standards.[105] In 2018, updates to this rule made a number of substantive and clarifying revisions. Key issues addressed were waste in piles, inert wastes, contaminated soils, and clarification of the definition of waste versus commodity. Municipal solid waste landfills are regulated under Criteria for Municipal Solid Waste Landfills,[106] which was updated in 2012.

Local health departments have permitting authority for solid waste handling and disposal facilities in their jurisdictions. Ecology engineers, hydrogeologists, and facility specialists provide technical assistance to the health departments as well as solid waste facility owners and operators.

Ecology staff also oversees cleanup at several solid waste landfills throughout the state. There are nearly a thousand solid waste handling facilities of various types, sizes, and purposes in the state, including 14 operating municipal solid waste landfills.[107]

Since tracking first started in 1991, disposal has been moving from public to privately owned landfills. The privately owned Roosevelt Regional Landfill in Klickitat County is the state's biggest landfill and takes waste from more than 25 counties, as well as from other states and Canada. A large privately owned landfill in Oregon also takes wastes from some Washington jurisdictions. In all, there are 14 municipal solid waste landfills operating in the state: 11 publicly owned and 3 privately. These landfills received 5.5 million tons of waste in 2019 and have an estimated capacity of 280 million tons, or about 40 years at current disposal rates. There is also one Waste-to-Energy Facility in Spokane—the only incinerator in the state that burns municipal solid waste.

While there are fewer operating publicly owned landfills, there are many closed landfills that local governments must maintain and monitor for many years. In addition, local governments own and operate transfer stations, where waste is delivered and compressed onto tractor-trailer containers for shipment to regional landfills.

Organic materials and infrastructure

Organic materials include yard debris, discarded food, and other wastes that come from plant and animal sources. The laws and rules governing organics management are found primarily in

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[105] Chapter 173-350 WAC: http://app.leg.wa.gov/WAC/default.aspx?cite=173-350
[106] Chapter 173-351 WAC: http://app.leg.wa.gov/WAC/default.aspx?cite=173-351
[107] You can find disposal amounts and other information on the Solid Waste and Recycling Data webpage at https://ecology.wa.gov/Research-Data/Data-resources/Solid-waste-recycling-data.

the Solid Waste Management—Reduction and Recycling statute[108] and Solid Waste Handling Standards rule.[105]

Food waste

Food and yard waste make up an estimated 28 percent of Washington's municipal waste stream. More than half of that (16 percent) was identified as food waste in the 2015–2016 Washington Statewide Waste Characterization Study.[109] Estimates indicate that close to half of all food disposed was edible at the time of disposal. National organizations, such as ReFED[110] and Natural Resource Defense Council,[111] estimate that up to 40 percent of all food grown is never eaten. This not only wastes the food, but also the labor, energy, water, and fossil fuels used to produce it.

These impacts led the Project Drawdown[112] organization to identify food waste reduction as the third most important action people can take to arrest and reverse climate change.

In 2019, Washington legislators passed a law that set a state goal to reduce food waste 50 percent by 2030, and required the creation of a plan to help achieve that goal.[113] Ecology is developing this plan with stakeholders, for delivery to the Legislature in late 2021.

Managing organic waste

Focusing on reducing the amount of organic material disposed results in social and environmental benefits. For example, edible food can be diverted to hunger relief organizations and inedible food can be used to create products, such as animal feed, soil amendments, biopower, or biofuel.

Keeping organic wastes and materials out of landfills also helps reduce methane emissions. In 2002, the Legislature updated Solid Waste Management—Reduction and Recycling[114] with a 10-year goal to eliminate yard debris sent to landfills in areas with available and effective alternatives. While an increasing number of alternatives exist, yard debris continues to be sent to landfills at significant levels (6.7 percent of disposed municipal solid wastes or 308,154 tons annually based on the 2015–2016 Washington Statewide Waste Characterization Study).

Many local governments have established programs to divert organic wastes and materials from disposal, such as backyard composting and curbside collection that delivers the material to commercial or municipal composting facilities. The focus of the curbside collection program is primarily on single-family households, and is not feasible in every location due to limited composting facilities and lack of interest or need in some locales, such as rural areas that tend to practice on-site management. Pilot programs to test organics collection at multi-family

[108] Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205.
[109] https://apps.ecology.wa.gov/publications/SummaryPages/1607032.html
[110] https://www.refed.com
[111] https://www.nrdc.org
[112] https://www.drawdown.org
[113] Food Waste Reduction, Chapter 70A.205.715 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205.715
[114] Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205

properties reveal barriers including regular turnover of residents and increased amounts of contamination that make organics collection at the properties problematic. We remain open to alternative means to process organics in community conversion systems as well as increasing feasibility of curbside collection programs.

Most commercial compost facilities in the state accept food waste because it supplies valuable nitrogen and moisture to the composting process. Some of these facilities now accept compostable packaging along with food waste. However, confusion over which facilities accept compostable products and difficulty in identifying compostable products versus their non-compostable plastic counterparts have led to contamination in the finished compost, making it more difficult to sell the finished compost.

Due to concerns of apple maggot contamination in organics collected in areas of Washington where the apple maggot is established, transporting those organics to areas that are free of the apple maggot is now restricted unless WSDA treatment protocols are implemented. This has caused an over-capacity issue for compost facilities in Western Washington, where it can be difficult to site new compost facilities.

Two recent laws address challenges with composting. In 2019, the Plastic Product Degradability law passed, requiring proper labeling on compostable and biodegradable products.[115] In 2020, the Legislature passed a law encouraging state and local agencies to purchase compost.[116] The law also created a pilot project to provide financial assistance to farmers to offset the cost of using locally made compost. This section of the law was vetoed due to budget concerns, but warrants revisiting.

More information about amount of materials composted at permitted compost facilities is available on Ecology's compost webpage.[117]

Currently, there are nine dairy farms using anaerobic digesters to manage manure, produce energy, and recover fiber and nutrients. Roughly half of these farms also accept pre-consumer food waste from food processors in order to boost energy recovery (no post-consumer food is accepted at dairy digesters). There are also anaerobic digesters at 65 of the nearly 300 wastewater treatment plants in Washington that take food waste. While there are challenges associated with increasing the amount of food waste processed at wastewater treatment digesters, many facilities are actively exploring how to expand this waste management option.

Development of biofuels and bio-generation of electricity from organic wastes and materials has slowed due to competition with low fuel and electricity costs in Washington state. In-state biofuel producers are selling fuel to California and Oregon markets due to better prices in those

[115] Chapter 70A.455 RCW: Plastic Product Degradability: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.455&full=true
[116] RCW 43.19A.120: Use of compost products in projects: https://app.leg.wa.gov/RCW/default.aspx?cite=43.19A.120
[117] https://ecology.wa.gov/compost

states. With the recent passage of the Washington's Clean Fuel Program,[118] in-state markets are projected to grow.

Future directions: looking ahead

Washington state will continue to respond to challenges and opportunities in order to provide innovative waste management solutions and move towards more sustainable materials management.

Recycling

Our long-established and esteemed recycling programs are in flux. We need sustainable, reliable, and responsible end-markets for our recyclable materials. Many believe recycling will not be able to continue as it has been and that systemic changes are needed.

One common suggestion is an extended producer responsibility system for packaging and printed paper, similar to what currently exists in Canada, Europe, and other regions. This type of system can provide consistency and financing, and help address end-markets and growing problems with plastics in our environment. Policies requiring recycled content in products and truth in recyclable labeling claims are also getting increased attention.

Others tout new chemical recycling technologies, which are processes that break plastics down into their original components to be remanufactured or used as fuel. These technologies are not yet proven at scale.

Whatever the best path forward, it is vital to increase engagement with those manufacturing products that end up in our waste and recycling streams.

Evolution of waste

Waste composition is always changing. This change is referred to in the industry as the **evolving ton**. Newspapers used to be a standard component of our waste and a valuable element of recycling programs. Instead, now corrugated cardboard makes up an increasing percentage of the feedstock. In addition, there is a larger component of cartons and plastic pouches that protect our food, but cannot yet be effectively recycled at scale. How we manage these materials to maximize their value from a life cycle or materials management cycle standpoint must also continue to evolve.

Moving from a waste management hierarchy to a clean materials framework, as discussed in the Center for Sustainable Infrastructure report,[119] may provide a path forward. This new framework recognizes that most of the environmental damage comes when materials are extracted and processed into products—not when they become waste. The clean materials framework aims to shrink the environmental footprint while creating new jobs.

Waste reduction

[118] Chapter 70A.535 RCW; https://app.leg.wa.gov/RCW/default.aspx?cite=70A.535&full=true
[119] https://www.sustaininfrastructure.org/clean-materials-2040-blueprint

Recycling challenges have reinvigorated the need to focus on the highest waste management hierarchy priority: waste reduction.

Most environmental impacts of the materials we use and manage as wastes are related to their extraction and manufacturing. To really reduce waste and have the biggest environmental benefit—including the reduction of greenhouse gasses—we need to look upstream at what and how much we use, and then reduce our consumption. Growing efforts to reduce waste include reuse and refill systems for some food items, personal care products, cleaners, restaurant take-out containers and other avenues. The COVID-19 pandemic temporarily slowed some of these endeavors.

Another approach getting increased attention is right to repair. The ability to repair the growing number of electronic products has been severely limited. Legislatures in numerous states have introduced right to repair laws for many years, although so far none have passed. Increasing support for repair, including from some major electronics companies, may shift the landscape soon.

One important area to reduce waste and associated climate impacts is in reducing the amount of wasted food. Given the new state goal and other commitments, this should be a growing focus of our collective work.

Opportunities for organics wastes

Diverting organic wastes to animal feed, soil amendments, and energy recovery can help the state reach greenhouse gas reduction goals. With the passage of The Climate Commitment Act[120] of 2021, the Legislature established clear support for reducing the amount of greenhouse gases emitted in the state. The Climate Commitment Account identifies that reducing methane emissions from landfill by diverting organic materials from disposal is an important strategy to fund in order to reduce greenhouse gas emissions.

While more organic waste and materials are collected in the state, demand for the finished compost made from collected organics has not kept up with production. Reasons for this can include the sometimes poor quality of the finished material, the cost of the finished compost, and the technical issues associated with spreading the compost on fields. The end result is overstock at some commercial compost facilities.

To reduce the overstock, in 2020 the Legislature amended the Recycled Product Procurement[121] to add a qualified requirement for state and local governments to buy locally produced compost. The recognition of the value of this material to sequester carbon may help improve markets in the future. Issues around making and distributing compost in Washington underscores why preventing organic waste generation is a top priority.

With the passage of the clean fuels program (Chapter 70A.535 RCW[122]) in-state markets for fuels and power made from organic feed stocks are expected to grow. Research and

[120] http://lawfilesext.leg.wa.gov/biennium/2021-22/Pdf/Bills/Senate%20Passed%20Legislature/5126-S2.PL.pdf?q=20210520133824
[121] Chapter 43.19A RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=43.19A
[122] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.535&full=true

development of collection systems to feed digesters and other conversion technologies will be needed.

Ecology will continue to work with other state agencies, institutions of higher education, and industry to identify ways to reduce generation of organic wastes and find ways to increase beneficial management of these materials.

Disposal facilities

South-central Washington has a well-established transport system and significant landfill capacity—enough for at least 40 years, at current estimates. Some areas of the state also have increased interest in waste-to-energy facilities, though siting such facilities would be challenging. Some landfills found incentives to develop landfill gas to energy. This is a complex and evolving issue.

While Ecology strives for less waste overall, disposal facilities will be a critical element of Washington's solid waste management system for the foreseeable future. Landfills provide the most plausible option for some materials at this time. Materials continue to have an environmental impact after they have been disposed through leachate and methane release. Mitigating those impacts and ensuring safe and legal disposal remains a priority.

Solid waste system issues goals and actions

GOAL SWM 1: Sustainable mechanisms to finance recycling, diversion, and waste reduction programs are identified and adopted. Tip fees better reflect full costs of managing the waste system, including infrastructure needs and closure and long-term care of waste facilities.

> **Action SWM 1A:** Continue to search for and promote sustainable mechanisms to finance recycling, diversion, and waste reduction programs.
>
> **Actions SWM 1B:** Share information about the costs and benefits of recycling, and promote best management practices that service charges and tip fees reflect full costs of managing the waste system.

GOAL SWM 2: Climate and other environmental impacts of materials management methods are better understood through various tools, including life cycle assessments. The highest and best use of materials are identified and promoted, prioritizing waste reduction and quality recycling.

> **Action SWM 2A:** Develop recommendations and establish goals based on key impact assessments on the production, use, reuse, and end-of-life phases from waste composition studies, EPA's Waste Reduction Model[123] (WARM), and other publicly available life cycle models and tools.
>
> **Action SWM 2B:** Encourage local governments to add goals in local plans that focus on reducing life cycle impacts, reducing waste generation, and promoting reuse and

[123] https://www.epa.gov/warm

responsible recycling (appropriate to their jurisdiction), and to include waste generation metrics.

Action SWM 2C: Research and educate the public about the connection between climate change, waste, and materials management.

GOAL SWM 3: Local governments have current solid and hazardous waste plans and grants that support their waste management needs and work towards reducing waste and toxic chemicals, in accordance with local resources. Grants are also provided to nonprofit organizations and individuals to support outreach and education on waste reduction and management. Plans and grants address equity and environmental justice issues.

Action SWM 3A: Provide technical assistance and funding to help local governments add recycling contamination reduction and outreach elements to their local plans and implement these elements.

Action SWM 3B: Provide planning and grant assistance to help local governments and other grantees implement programs to manage their waste streams in ways that support the waste management hierarchy and better meet resident needs. In providing assistance, consider local challenges and opportunities, environmental justice issues, and geographic and demographic differences in order to provide needed assistance using equitable and inclusive approaches.

Action SWM 3C: Incorporate environmental justice and equity into grant programs. This includes strategies such as requirements for accessibility in publications, providing documents in languages represented in the community, and reducing economic and organizational capacity barriers to applying for and managing grants.

Action SWM 3D: Update local planning guidelines and create a planning resource library. Include guidance and tools related to environmental justice and equity, such as demographic data and health disparities mapping tools, to focus efforts and inform plans.

Solid waste, materials and infrastructure goals and actions

GOAL SWM 4: Washington residents and businesses generate less waste, as measured per capita.

Action SWM 4A: Highlight waste generation data, instead of the recycling rate, to promote the need for waste reduction and focus on opportunity materials for reducing waste.

Action SWM 4B: Collaborate with and support local jurisdictions, businesses, and organizations to promote reuse, refill, and repair, and help shift to durable, reusable, and less wasteful products. Incorporate reduction and reuse into procurement, policies, and existing materials.

Action SWM 4C: Research to determine best strategies for addressing waste prevention and reduction, analyzing policy solutions. Focus research on reuse, refill, repair, durable products, less wasteful alternatives, and the benefits of reduced consumption.

Action SWM 4D: Study and share models of successful reuse and sharing programs. Identify and work to eliminate potential barriers, and create incentives for reuse and sharing systems.

Action SWM 4E: Encourage and provide grants to projects that focus on reducing or preventing waste and toxic chemicals, as able. Create model projects that others can use.

GOAL SWM 5: Washington's recycling system provides usable feedstocks for remanufacturing from major sectors and waste streams.

Action SWM 5A: Work with trade organizations, solid waste collection companies, local governments, and other parties to maintain and promote best management practices for curbside and drop-box recycling. Design outcomes to yield the highest value within the recycling stream and minimize contamination, cross-contamination, and other system-loss issues.

Action SWM 5B: Implement the state contamination reduction and outreach plan[124] to reduce recycling contamination, including guidelines for what and how materials should be collected in recycling programs. Provide and keep current an online resource to share contamination reduction best management practices from our partners.[125]

Action SWM 5C: Use existing research and support additional research to determine best solutions for recycling system challenges. Research will focus on upstream solutions, materials, collection, processing, emerging technologies, markets, and communication, with emphasis on domestic processing. It will also evaluate and promote collection models that provide the cleanest feedstocks.

Action SWM 5D: Examine and explore policy solutions for problematic recyclable material streams—including multifamily, commercial, and construction debris—and develop strategies and recommendations to address their specific issues.

GOAL SWM 6: The Northwest has a robust reuse and recycling infrastructure that includes stable and varied end-markets.

Action SWM 6A: Operate the Recycling Development Center, with the Department of Commerce and advisory board, to further development of markets and processing for recyclable materials, as well as waste reduction.[126] Collaborate with other entities conducting similar efforts, and coordinate with local and regional partners to expand reach.

The Recycling Development Center will:

- Provide assistance to businesses to improve recycling markets.

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[124] Washington State Recycling Contamination Reduction and Outreach Plan (CROP): https://apps.ecology.wa.gov/publications/SummaryPages/2007021.html

[125] Recycling Contamination Reduction Best Management Practices & Resources Companion Guide: https://apps.ecology.wa.gov/publications/SummaryPages/2007031.html

[126] Recycling Development Center, Chapter 70A.240 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.240

- Promote use of recycled material feedstocks and recycled-content products.
- Conduct research, evaluate data, and analyze policies on recycling markets, reuse, and waste reduction.

Action SWM 6B: Conduct service equity analyses of the following through The Recycling Development Center:

- Residential recycling collection service across Washington state for single and multifamily populations.
- Processing and remanufacturing of recyclable materials.

These analyses will support our work to direct efforts to those most in need and ensure access to recycling benefits for as many Washington residents as possible.

GOAL SWM 7: Plastics in the waste stream are reduced. Plastics are managed systemically with a priority on prevention, reduction, reuse, and recycling to minimize impacts to the environment.

Action SWM 7A: Consult with industry and other interested parties to develop options to minimize environmental impacts of plastic packaging and single-use plastic products. Options will include roles for producers, and use findings from the legislatively required study.[127]

Action SWM 7B: Engage in efforts to address plastic packaging and single-use plastics—including improved labeling, recycled content and other policy solutions. Assess and promote policies with the best impacts. Stay abreast of emerging technologies, life cycle impacts, and marine debris. Coordinate with others to develop expertise on micro-plastics.

Action SWM 7C: Support and provide technical assistance to help shift to the use of durable, reusable products and away from a reliance on single-use products.

Action SWM 7D: Address and reduce plastics in the waste stream by focusing in part on common items in marine debris, using data from the litter survey and other sources.

Action SWM 7E: Implement legislatively mandated plastic reduction initiatives and laws including the plastic bag ban,[128] recommendations developed from the plastic packaging study,[127] and other new laws as they are enacted.

GOAL SWM 8: Effective design, policies, and programs prevent and pick-up litter.

Action SWM 8A: Create an effective, inclusive, comprehensive, litter-prevention campaign that is embraced by diverse stakeholders and residents. Target specific behaviors and the most heavily littered materials in prevention efforts. Analyze policies and design changes that could help reduce litter.

[127] Plastic Packaging, Chapter 70A.520 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.520
[128] Plastic Bags, Chapter 70A.530 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.530

Action SWM 8B: Complete a litter survey, which may include an assessment of brands or littered plastics connected to marine debris or other areas. Use litter survey data to evaluate the litter tax based on what items are taxed and most frequently littered. Based on this evaluation, recommend changes to the tax structure or its administration.

Action SWM 8C: Analyze the efficiency, effectiveness, equity, and safety of our litter programs, and make appropriate updates and improvements.

Action SWM 8D: Lead a partnership of state, county, and local agencies to pick up litter and illegal dumps. Oversee programs including the Ecology Youth Corps, Community Litter Cleanup Program grants, and funding for litter programs at other state agencies.

Action SWM 8E: Look for opportunities to collaborate and share resources with NGOs and community groups to advance litter prevention and pick-up efforts. Identify and share actions that producers and others can take to complement this work.

GOAL SWM 9: Sham recycling and improper disposal decrease.

Action SWM 9A: Communicate and work with local governments and recycling businesses to uphold and enforce recycling laws, rules, and requirements. Explore options for enforcement.

Action SWM 9B: Work with Washington Utilities and Transportation Commission[129] to ensure Transporter Law provisions are implemented. Register transporters and enforce as needed.

GOAL SWM 10: Solid waste handling facilities (permitted and permit-exempt) operate in compliance with all regulatory criteria.

Action SWM 10A: Provide ongoing technical assistance—including landfill monitoring—to facilities and jurisdictional health departments to help facilities comply with regulations and minimize adverse environmental impacts.

Action SWM 10B: Interface with local governments, facility representatives, industry associations, advocacy organizations, and other stakeholders to address widespread barriers to facility compliance and strategies to overcome those barriers.

Action SWM 10C: Inspect select exempt recycling facilities to verify conditionally exempt status and assess compliance. Seek ways to increase oversight of exempt facilities, including requesting additional resources.

Action SWM 10D: Provide training options for jurisdictional health departments to increase their expertise in regulating, permitting, and closing landfills. Assist landfill operators to help landfills reach the end of the post-closure care period successfully and transition to custodial care.

[129] http://www.utc.wa.gov/Pages/default.aspx

GOAL SWM 11: Landfills[130] that have experienced uncontrolled releases of contaminants to the environment will conduct corrective actions to remedy those releases.

Action SWM 11A: Use authority under the solid waste regulations and the Model Toxics Control Act to implement cleanup actions at landfills that experienced uncontrolled contaminant releases to the environment.

Action SWM 11B: Work to ensure that facilities in need of funding for cleanup actions can pursue the available state grant program options.

GOAL SWM 12: State and local governments have increased understanding of solid waste-to-energy and material recovery technologies.

Action SWM 12A: Stay abreast of solid waste energy and material recovery technologies—such as chemical recycling, pyrolysis, gasification, and others—to provide technical assistance on managing solid wastes in line with the state's waste management hierarchy.

Organic materials and infrastructure goals and actions

GOAL SWM 13: Food waste prevention and recovery efforts advance the state towards the goal of 50 percent reduction of food waste by 2030. Work to reduce food waste focuses on prevention first, followed by food rescue, then recovery, following the Washington organics management hierarchy.[131]

Action SWM 13A: Implement the Use Food Well Washington Plan,[132] prioritizing:

- Prevention: not making food waste in the first place.
- Food rescue: diverting safe, nutritious food to hunger relief organizations.
- Recovery: repurposing organic waste into animal feed, soil amendments to improve soil health and sequester carbon, energy recovery, and fuels.

Action SWM 13B: Work with the Pacific Coast Collaborative West Coast Voluntary Agreement[133] to reduce food waste from grocers along the west coast, adding other sectors as able.

Action SWM 13C: Promote and disseminate inclusive and accessible food waste prevention tools and information to the public, other agencies, businesses, and local governments. Provide tools to help people prevent, donate, and properly manage food residuals, including on our food waste prevention webpage.[134]

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[130] **Landfills** refers only to those operating under Chapters 173-304, 173-306, 173-350, and 173-351 WAC.
[131] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Organic-materials#gallery
[132] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Organic-materials/Food-waste-prevention/Food-waste-plan
[133] http://pacificcoastcollaborative.org/food-waste/
[134] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Organic-materials/Food-waste-prevention/Food-waste-plan

Action SWM 13D: Work with hunger relief organizations, local and state agencies, and other entities to increase the amount of safe and nutritious food rescued for human consumption.

Action SWM 13E: Focus on food waste metrics, including tracking our baseline and progress toward the 2030 goal, further identifying disposal of edible food versus inedible food, and supporting efforts to develop and implement food donation tracking metrics.

Action SWM 13F: Encourage the use of grants to fund food waste prevention and rescue programs. Encourage these programs' inclusion in local government solid waste management plans.

GOAL SWM 14: Understanding and use of recycled organic products to amend soil, filter storm and surface water, and sequester carbon, which helps diversify end-use markets.

Action SWM 14A: Coordinate with universities, extension programs, Washington State Department of Agriculture, local governments, and other organizations to educate farmers, landscapers, and residents on the beneficial impact of using organically derived soil amendments. Support the use of locally made compost in agriculture, and in state and local public works projects.

Action SWM 14B: Support universities, state and private storm and surface water professionals, nonprofit organizations, and other entities to assess and promote the ability of compost, biochar, and other recycled organics to reduce contaminants and suspended solids in stormwater through various water filtration applications.

Action SWM 14C: Work with universities to research, document, and share information on using recycled organics for soil carbon sequestration. Support and coordinate with Washington State University to create a model to estimate carbon sequestration from organic waste-derived soil amendments.

Action SWM 14D: Work with universities, the Washington State Department of Commerce, and private industry to convert more organics (food and woody biomass) into soil amendments, fuels, energy, and other applications.

Goal SWM 15: Organics processing infrastructure is sufficient and diversified.

Action SWM 15A: Support local government education on backyard composting and other on-site organics management techniques. Promote these efforts' inclusion in local government solid waste management plans and Ecology grant applications, including for multi-family properties, underserved, and less resourced areas.

Action SWM 15B: Support scalable, localized systems for managing food scraps and yard debris, including community-scale anaerobic digesters and other suitable organic processing technologies.

Action SWM 15C: Support expansion of current organics processing technologies. Key practices include integrating multiple technologies at composting facilities and using

anaerobic digestion at industrial sites and wastewater treatment facilities—with the addition of food residuals for increased energy and fuel production.

Action SWM 15D: Evaluate and document barriers to broadening the use of composting, anaerobic digesters, vermicomposting, black soldier flies, and other technologies for managing manure and pre- and post-consumer food waste. Identify and seek to implement solutions.

Action SWM 15E: Encourage the use of grant funds for diversified organics management technologies that convert collected organics into beneficial end products.

GOAL SWM 16: Compost facilities operate well and produce clean, quality end products.

Action SWM 16A: Work with local governments, collection companies, composters, and other stakeholders to provide technical assistance and promote education and other actions to produce clean end products.

Action SWM 16B: Monitor issues associated with compostable packaging—including PFAS[135]—and support research as possible.

Action SWM 16C: Support research on organics management processing systems, tools, methods, and mixtures that can help reduce or eliminate major odors or other emissions at organics management facilities.

Action SWM 16D: Encourage assessments of contamination (plastic, metal, glass and other non-organic materials) in collection carts and compost, in order to promote changes to reduce contamination.

[135] https://ecology.wa.gov/PFAS

Section Three: Reducing Impacts of Materials and Products

Introduction

Reducing toxic threats

Toxic chemicals contained in products and used in industrial processes are released during manufacture, use, or at end-of-life, impacting the environment and human health. Reducing toxic chemical use helps protect the health and safety of workers, households, and communities.

Designing processes and products that use fewer toxic chemicals means:

- Less dangerous waste generation.
- Less need for government regulation.
- A cleaner environment.
- Improved human health.
- Lower economic costs.

Ecology works with other state agencies, including the Department of Health and the Department of Enterprise Services, to identify the most problematic chemicals and safer alternatives, promote green chemistry innovation, and provide state and local agencies with guidance for purchasing safer products.

Reducing climate and other impacts

Reducing the climate impacts of the materials and products we use and dispose of is another way to reduce impacts. There are significant climate impacts from materials use. According to an EPA study, approximately 42 percent of U.S. greenhouse gas emissions are associated with the provision of goods and food. This includes the energy used to produce, process, transport, and dispose of the food we eat and the goods we use.[136]

A **consumption-based emissions inventory** can calculate these impacts, and account for the emissions associated over the life cycle of materials and products, including extraction, production, distribution, use, and disposal.[137] Carefully considering the types and amounts of materials we use can help reduce impacts to our climate.

There is growing public demand for products and packaging that are less toxic, less wasteful, more durable, or more recyclable. Life cycle analysis is the main way to assess the impacts of material use at this time, though it is expensive and imperfect. For example, life cycle assessments do not yet address all impacts, including marine debris or exposure to toxic

[136] U.S. Environmental Protection Agency, "Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices," September 2009, https://www.epa.gov/sites/production/files/documents/ghg-land-materials-management.pdf, accessed on August 11, 2021.
[137] Oregon leads the country in conducting Consumption Based Emissions Inventories: https://www.oregon.gov/deq/mm/Pages/Consumption-based-GHG.aspx

chemicals during use, and are best supplemented with additional information. Plastics, which pose significant problems to oceans and other ecosystems, can have smaller carbon footprints compared to other materials.[138, 139] Finding the best path forward will be challenging.

As quoted in the Center for Sustainable Infrastructure's Clean Materials report,[140] "Arguably, the two most urgent challenges are global climate change and the loading of toxic chemicals in human bodies. Tackling these two urgent crises will require strategies that span the life cycle of our products and materials."

Authorizing framework: implementation and issues

Reducing toxicity of materials and products

In 2019, the Washington State Legislature passed groundbreaking legislation[141] that addresses toxic chemicals in consumer products. Ecology implements this law through the Safer Products for Washington[142] program.

With this new law, our state leads the nation in its authority, by rule, to regulate toxic chemical classes in consumer products by implementing restrictions or reporting requirements when viable safer alternatives exist. The law identified the first five priority chemical classes to address:

- Organohalogen flame retardants and flame retardants identified in Chapter 70A.430.010 RCW.[143]
- Per- and polyfluoroalkyl substances (PFAS).
- Polychlorinated biphenyls (PCBs).
- Phenolic compounds.
- Phthalates.

The law also outlines a robust stakeholder advisory process, and requires consultation with experts (including from the Department of Health) and regular reports to the Legislature.

The law establishes a repeating process that requires Ecology to:

1. Designate priority chemicals to address.
2. Identify priority products that contain these chemicals.

[138] Oregon study on Mail-order packaging: https://www.oregon.gov/deq/FilterDocs/LifeCycleInventory.pdf
[139] NPR article: https://www.npr.org/2019/07/09/735848489/plastic-has-a-big-carbon-footprint-but-that-isnt-the-whole-story
[140] https://www.sustaininfrastructure.org/clean-materials-2040-blueprint
[141] Toxic Pollution, Chapter 70A.350 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.350
[142] https://ecology.wa.gov/ToxicsInProducts
[143] Children's safe products, Chapter 70A.430 RCW: https://app.leg.wa.gov/rcw/default.aspx?cite=70A.430

3. Decide whether or not to regulate chemical-product combinations by requiring reporting or chemical restrictions.
4. Adopt rules to implement regulatory actions.

During implementation, Ecology must consider disproportionate impacts on historically overburdened populations.

Ecology also oversees implementation of more than a dozen other consumer product laws and rules enacted over the past several decades, which focus on specific product types and chemicals known to be toxic to human health and the environment:

- The Packages Containing Metals and Toxic Chemicals law[144] of 1991 limits levels of lead, mercury, cadmium, and hexavalent chromium used in product packaging. The law was amended in 2018 to restrict the use of per- and polyfluoroalkyl substances (PFAS) in specific applications of food packaging when safer alternatives are identified.
- The Mercury Education and Recovery Act[145] of 2003 restricts mercury-containing products such as thermometers, toys, novelties, thermostats, switches, and more.
- The Persistent, Bioaccumulative Toxics (PBT) rule[146] directed by Executive Order 04-01 in 2004 establishes criteria to prepare and implement Chemical Action Plans (CAPs) for each PBT or group of PBTs.
    - CAPs are comprehensive plans that identify, characterize, and evaluate uses and releases of a specific chemical, and provide recommendations for actions to protect human health and the environment.
    - CAPs don't ban or regulate chemicals, but the recommendations in the plans can lead to legislative or regulatory action.
    - Ecology develops each CAP in collaboration with other agencies and experts, including the Department of Health and representatives from businesses, local government, human health, and environmental advocates.
- The Polybrominated Diphenyl Ethers (PBDE)—Flame Retardants law[147] of 2007 bans these chemicals from several uses in mattresses, electronic enclosures, and furniture.
- The Children's Safe Product Act[148] of 2008 bans the use of lead, cadmium, and several phthalates in children's products.[149] It also requires manufacturers of children's products sold in Washington to report if their product contains a chemical of high

[144] Chapter 70A.220 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.222
[145] Mercury, Chapter 70A.230 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.230
[146] Chapter 173-333 WAC: https://apps.leg.wa.gov/wac/default.aspx?cite=173-333
[147] Chapter 70A.405 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.405
[148] https://ecology.wa.gov/CSPA
[149] Chapter 70A.430 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.430

concern to children[150] and why they use that chemical in the product. The law was amended in 2016 to ban the use of specific flame retardants in children's products and residential upholstered furniture.

- The Replacement of Lead Wheel Weights law[151] of 2009 bans lead from wheel weights.
- The Better Brakes law[152] of 2010 restricts the use of several heavy metals and asbestos in automotive brake pads and shoes, and provides a schedule to phase out copper use in these materials.[153]
    - Brake pads manufactured after 2021 must contain less than 5 percent copper by weight.
    - Brake pads manufactured after 2025 must contain less than 0.5 percent copper by weight.
- The Bisphenol A (BPA)—Restrictions on Sale law[154] of 2010 bans this chemical from bottles and cups for children, as well as sports bottles.
- The Stormwater Pollution—Coal Tar law[155] of 2011 prohibits coal tar in pavement products.
- The Recreational Water Vessels—Antifouling Paint law[156] of 2011 initiated restrictions on antifouling boat paint. The Legislature amended some restrictions in 2018 and again in 2020 to allow more time to evaluate safer alternatives.
    - Paint containing cybutryne will be prohibited starting in 2023.
    - Paint containing copper will be prohibited starting in 2026 if Ecology determines that safer and effective alternatives are feasible, reasonable, and readily available by June 2024.
- The Firefighting Agents and Equipment—Toxic Chemical Use law[157] of 2018 prohibited PFAS (per- and polyfluorinated alkyl substances) in firefighting materials[158] and firefighting foam, and restricted PFAS in firefighting personal protective equipment.

While product-related laws target specific products and chemicals, implementation of these laws can result in significant environmental improvements. For example, copper from brake friction materials often finds its way from roads into waterbodies, harming fish and polluting

[150] As defined by the Children's Safe Products—Reporting Rule, Chapter 173-334 WAC: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-334
[151] Chapter 70A.435 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.435
[152] https://ecology.wa.gov/BetterBrakes
[153] Brake Friction Material, Chapter 70A.340 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.340
[154] Chapter 70A.335 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.335
[155] Chapter 70A.440 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.440
[156] Chapter 70A.445 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.445
[157] Chapter 70A.400 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.400
[158] https://ecology.wa.gov/ToxicsInFirefighting

water. In urban areas, brake pads account for up to half of the copper entering our waterways, and we estimate that 66 tons of copper per year enters the Puget Sound from brake pads.[159] When the law is fully implemented in 2025, this source of copper pollution will be virtually eliminated.

Testing and compliance

Ecology is responsible for ensuring compliance with many of the laws addressing toxic chemicals in products. Ecology routinely tests products[160] to determine if manufacturers are complying with these regulations. To date, testing has focused on—and found—several classes of toxic chemicals in consumer products, such as:

- PCBs, found in some consumer products such as pigments or inks.
- Toxic metals including lead, mercury, cadmium, antimony, and cobalt.
- Phthalates, used in plastics and fragrances.
- Parabens, used as preservatives in personal care products and cosmetics.
- Volatile organic chemicals including formaldehyde.
- Flame retardants including PBDEs and other substitutes.

The presence of a toxic chemical in a product does not necessarily mean that the product is unsafe. However, some bans on specific uses of chemicals help protect human health, such as BPA in baby bottles or heavy metals such as lead in packaging. When Ecology finds a restricted or unreported chemical in a product, Ecology contacts the manufacturer and offers compliance assistance. To date, all of the manufacturers Ecology has worked with have returned to compliance.

Reducing other impacts of materials and products

The 1988 Waste Reduction statute[161] encourages "voluntary efforts to redesign industrial, commercial, production, and other processes to result in the reduction or elimination of waste by-products." This definition of waste reduction includes all in-plant practices that reduce, avoid, or eliminate waste generation or waste toxicity prior to generation.

The Solid Waste Management—Reduction and Recycling statute[162] has included the importance of reducing and managing waste from products since 1989. The law references packaging and consumer products in the first line of its intent section. It also addresses particular products that were troublesome at the time it was written (e.g., tires and vehicle batteries) and references the need to study others (e.g., packaging, polystyrene, and diapers). Concern for many of these products, and others, continues today. Actions to address these concerns are increasing.

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[159] https://ecology.wa.gov/BetterBrakes
[160] https://apps.ecology.wa.gov/ptdbreporting/
[161] Chapter 70A.214 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214
[162] Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205

Washington's product stewardship programs

Product laws related to sustainable materials management include Washington state's five product stewardship programs—also known as extended producer responsibility programs. These laws require producers to take responsibility for collection and recycling or safe disposal of their products at end-of-life, many of which contain toxic chemicals.

- The E-Cycle Washington Program[163] established electronics recycling for computers, TVs, laptops, monitors, tablets, e-readers, and portable DVD players. The law passed in 2006 and the program has been in operation since January 1, 2009.[164]
- The LightRecycle Washington Program[165] established a product stewardship program for lights containing mercury—a highly toxic metal—to keep the substance out of the environment. The law passed in 2010 and the program began operations on January 1, 2015.[166]
- The Photovoltaic Module Stewardship and Takeback Program[167] of 2017 was the first of its kind in the nation. It intended to get ahead of what will become a significant waste stream and conserve the rare earth minerals in solar panels. Initially set to start in 2022, the Legislature twice postponed program implementation, now set for 2024.
- The Safe Medication Return Program[168] of 2018 established the first statewide manufacturer-funded take-back program for pharmaceuticals, overseen by the Department of Health. The program began operation in November 2020. [169]
- The Architectural Paint Stewardship Program[170] of 2019 established Washington as the ninth state to have a product stewardship law for paint. Starting in April 2021, the PaintCare program[171] provides recycling or proper disposal of interior and exterior architectural paints sold in five-gallon containers or smaller.

Bills have been previously introduced to the Legislature to establish additional product stewardship programs for batteries, sharps, and plastic or other packaging, among others.

Environmentally preferable purchasing

Environmentally preferable purchasing[172] (EPP) is the practice of procuring goods and services that cause less harm to humans and the environment than competing goods and services that

[163] https://ecology.wa.gov/ecycle
[164] Electronic Product Recycling, Chapter 70A.500 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.500
[165] https://www.lightrecycle.org
[166] Mercury-Containing Lights—Proper Disposal, Chapter 70A.505 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.505
[167] Chapter 70.510 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.510
[168] https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/HealthcareProfessionsandFacilities/SafeMedicationReturnProgram
[169] Drug Take-Back Program, Chapter 69.48 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=69.48
[170] Chapter 70A.515 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.515
[171] https://www.paintcare.org/paintcare-states/washington/#/new-program-in-2021
[172] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Environmentally-preferable-purchasing

serve the same purpose. Washington has a broad mandate for EPP activities that includes laws and executive orders directing state agencies to purchase environmentally preferred products.

- Recycled Product Procurement[173] has been in place since 1991. Its purpose is to increase the purchase of products with recycled content by public agencies, such as office supplies, landscaping products, and re-refined motor oil.
- The state law on Procurement of Goods and Services[174] passed in 2012. It states that an agency may consider best value criteria, including whether the bid considers human health and environmental impacts, in determining the lowest responsive and responsible bidder. In 2014, a section was added to the Procurement of Goods and Services law that prohibits PCBs in goods the state purchases.[175]
- In 2020, Governor Inslee updated Executive Order 20-01, State Efficiency and Environmental Performance[176] (SEEP) from the 2018 version, directing Ecology and the Department of Enterprise Services to provide state agencies with guidance on EPP.
- Also in 2020, the Legislature passed the Use of Compost Products in Projects[177] law to encourage the purchase and use of compost by state and local agencies, in recognition of the importance of composting to waste and carbon reduction goals.

In addition to state directives, some local governments and other political subdivisions have adopted EPP practices to help reduce their impact on Washington's environment and human health.[178]

Sustainability of products and packaging

Numerous local governments have banned single-use products including bags, straws, and expanded polystyrene food serviceware. State legislators are also introducing an increasing number of bills banning or otherwise regulating these products.

- In 2020, a statewide plastic bag ban passed (Chapter 70A.530 RCW).[179] It was to take effect in January 2021, but the 2020 COVID-19 pandemic delayed implementation.
- In 2021, the Legislature passed a new law, Chapter 70A.245 RCW,[180] which establishes post-consumer recycled content for a number of plastics containers. This law also bans

[173] Chapter 43.19A RCW: http://app.leg.wa.gov/RCW/default.aspx?cite=43.19A
[174] Chapter 39.26 RCW: http://app.leg.wa.gov/RCW/default.aspx?cite=39.26
[175] Products and products in packaging that does not contain polychlorinated biphenyls, Chapter 39.26.280 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=39.26.280
[176] https://www.governor.wa.gov/sites/default/files/exe_order/20-01%20SEEP%20Executive%20Order%20%28tmp%29.pdf
[177] RCW 43.19A.120: Use of compost products in projects: https://app.leg.wa.gov/RCW/default.aspx?cite=43.19A.120
[178] Visit Ecology's website on Buying Green – Sustainable Purchasing for more information and for a list of examples of sustainable procurement in local governments: https://ecology.wa.gov/EPP
[179] Plastic Bags, Chapter 70A.530 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.530
[180] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.245

certain polystyrene products and requires food service businesses to affirm customers want optional serviceware before providing disposable utensils or condiment packages.

Consumer product companies are increasingly focusing on recyclability or sustainability of packaging or other products. Growing concern on single-use items, marine debris, and struggles with the recycling system have led to the formation of multiple industry and advocacy organizations and pledges.

Many companies have pledged to make their packaging reusable, recyclable, or compostable by 2030. This is similar to the goal called for in the Ellen MacArthur New Plastics Economy.[181] These goals are not yet possible to achieve in our current system due to lack of recyclable material supply. Some believe requirements to use post-consumer recycled content in packaging will solve this problem, but that policy alone is not sufficient to address all problems with the recycling system.

According to some life cycle analysis research, not all of these goals may provide for the best environmental impact. For example, some compostable packaging can have a larger environmental footprint than plastic packaging, due to the water and fuel needed to grow the materials.[182] Also, reducing the total amount of materials used, even if the materials are not recyclable or compostable, can be the most beneficial from a life cycle perspective.

Multiple company-funded organizations, such as The Recycling Partnership and the Sustainable Packaging Coalition, are working to address recycling and other concerns. Ecology is engaged with these and other groups working towards a more sustainable path forward.

Better-informed people make better purchasing choices, so Ecology provides information about toxic chemicals in products and environmentally preferable purchasing. This includes sharing results of product testing programs with policy makers, product manufacturers, businesses, and residents.

Future directions: looking ahead

Public health concerns about everyday consumer products that contain toxic chemicals are growing. Knowing when and how chemicals are used in products helps us better understand where safer alternatives are needed. By sharing data from testing and reporting, Ecology encourages manufacturers to find safer alternatives to toxic chemicals for their products and processes.

Progress in this area will take strong partnerships between the state, private businesses, industries, and other organizations. The growing demand for products that do not contain toxic chemicals drives innovation in business and industry. This creates opportunity for Washington businesses to lead the nation in reducing toxics in products and compete in tomorrow's marketplace.

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[181] https://www.ellenmacarthurfoundation.org/our-work/activities/new-plastics-economy
[182] Oregon's Popular Packaging Attributes webpage: https://www.oregon.gov/deq/mm/production/Pages/Materials-Attributes.aspx

Because of growing public concern about toxics in products and the slow process of the 2016 federal reform of the Toxic Substances Control Act,[183] state legislators will likely continue to address the need to take action. Some interest groups will likely continue to call for specific restrictions on emerging contaminants or certain chemicals in products.

There may also be legislation proposed to promote economic incentives for green chemistry innovation and market drivers that encourage safer alternatives' development and adoption. Ecology expects to see continued focus on efforts to reduce toxic chemicals that affect vulnerable populations and sensitive environments.

Since other states and countries are continuing to expand product stewardship programs, it is likely there will be more legislation introduced in Washington state. Laws for solar panels, pharmaceuticals, and paint passed in 2017, 2018, and 2019, respectively. Other products being discussed for stewardship programs include batteries, carpet, sharps, vaping products, mattresses, carpet, household hazardous waste, packaging, and wind turbine blades. Not all are in agreement that product stewardship programs are the best policy, especially for products like packaging. Other policy ideas that address systemic needs are not forthcoming. Therefore, both the number of stewardship bills introduced and support for these programs—including from producers—increases.

Interest in EPP is expanding, especially as a way to address toxic chemicals throughout the supply chain. Implementing the SEEP Executive Order[184] may leverage state government purchasing power to help make environmentally preferable and reusable products more available or less expensive.

Public concern about non-recyclable packaging, single-use products, and planned obsolescence will continue. Reuse and refill systems are developing rapidly. Calls for right to repair are increasing. Ecology anticipates additional policy actions to reduce single-use item—especially those made of plastic—and to promote durability, reuse, and repair. There will also be ongoing dialogue with product manufacturers to encourage better design.

Reducing impacts of materials and products goals and actions

GOAL RIMP 1: Safer products for a non-toxic, healthy, and prosperous Washington are identified, available, and used by residents and businesses.

> **Action RIMP 1A:** Identify at least five priority chemical classes and priority products that are a significant source of, use, or contain chemicals from these classes every five years according to Chapter 70A.350 RCW.[185]
>
> **Action RIMP 1B:** Gather information about chemicals through collaboration with the Department of Health, information requests to manufacturers, required disclosure, and environmental monitoring.

[183] http://www2.epa.gov/laws-regulations/summary-toxic-substances-control-act
[184] https://www.commerce.wa.gov/growing-the-economy/energy/state-efficiency-and-environmental-performance-seep/
[185] Toxic pollution, Chapter 70A.350 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.350

Action RIMP 1C: Promote use and development of safer alternatives, and adopt necessary restrictions on priority chemicals in priority products when safer alternatives are available.

Action RIMP 1D: Encourage the State Legislature and the federal government to promote legislation that requires disclosure of ingredients in products and expands chemical disclosure requirements under the Emergency Planning and Community Right to Know Act,[186] Toxic Release Inventory,[187] Toxic Substance Control Act,[188] and other laws.

GOAL RIMP 2: Residential, commercial, and institutional sectors increasingly accept and use environmentally preferable products and services.

Action RIMP 2A: In cooperation with the Department of Enterprise Services,[189] increase governmental agencies' purchases of environmentally preferable products and services through cooperation, executive order, policy, or law. Encourage policies that promote the purchase of reusable, durable, recycled-content, and safer products. Support the creation of incentives or requirements for manufacturers bidding for state and local contracts to disclose toxic ingredients.

Action RIMP 2B: Promote the use and benefits of environmentally responsible products and services for public and private sectors, supporting and providing education and outreach activities with partners across diverse demographic and geographic areas.

Action RIMP 2C: Support efforts to develop measurement and tracking systems for green purchases.

Action RIMP 2D: Promote awareness and increase purchases of products with independent third-party labels, certifications, and disclosures—such as EPA's Safer Choice[190] program. Ensure labels are effective, credible, and transparent. Advocate for establishing the Safer Choice program in statute.

GOAL RIMP 3: New product stewardship programs increase collection, reuse, and recycling of toxic or hard-to-handle products and packaging, and provide equitable access to services.

Action RIMP 3A: Track and strategically support product stewardship programs and other producer-led initiatives for toxic or hard-to-handle products and packaging. This will help advance:

- Sustainable financing for end-of-life management.
- Improved access and more accessible services.
- Increased collection rates.

[186] https://ecology.wa.gov/EPCRA
[187] https://ecology.wa.gov/TRI
[188] http://www2.epa.gov/laws-regulations/summary-toxic-substances-control-act
[189] http://des.wa.gov/Pages/default.aspx
[190] http://www2.epa.gov/saferchoice

- Incentives for improved product design.

Action RIMP 3B: Work with stakeholders to advance product stewardship programs that use and complement existing collection and waste management infrastructure, cover fair and reasonable costs, collect robust data, and provide inclusive, accessible outreach.

Action RIMP 3C: Explore ways to use product stewardship or other strategies to incentivize manufacturers to reduce their products' environmental impacts.

GOAL RIMP 4: Manufacturers increasingly design products and packaging to reduce climate and other environmental impacts, which may include material reduction, recycled content, durability, reusability, recyclability, reduced toxicity, and fewer single use products.

Action RIMP 4A: Research and promote how best to reduce environmental impacts of products and packaging, partnering with trade associations and manufacturers to address design.

Action RIMP 4B: Monitor and participate in regional and national efforts to improve labels, symbols, messages, environmental product declarations, and other claims regarding the sustainability, reuse, recycling, or compostability of packaging and other materials.

Action RIMP 4C: Maximize opportunities to engage with manufacturers and other groups working on waste prevention, reuse, recycling and sustainability of products and packaging.

Action RIMP 4D: Encourage manufacturers to complete self-evaluations on their products and processes, such as life cycle analyses, alternative assessments, or footprint projects, and to make improvements.

GOAL RIMP 5: Manufacturers and other chemical users significantly reduce the presence of toxic chemicals, including persistent, bioaccumulative toxics (PBTs), in products.

Action RIMP 5A: Use technical assistance, training, and incentives to encourage manufacturers, businesses, and local government to adopt safer alternatives for priority chemicals.

Action RIMP 5B: Advance green chemistry and responsible use of nanotechnology by supporting the implementation of green chemistry principles and green engineering principles.

Action RIMP 5C: Monitor implementation of the Frank R. Lautenberg Chemical Safety for the 21st Century Act,[191] Toxic Substances Control Act,[192] and associated regulations.

Action RIMP 5D: Promote a "community of practice" for the emerging chemical hazard assessment and alternatives assessment field to help manufacturers and other chemical

[191] https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/frank-r-lautenberg-chemical-safety-21st-century-act
[192] http://www2.epa.gov/laws-regulations/summary-toxic-substances-control-act

users reduce unnecessary toxic chemicals in products and industrial processes, and influence design of more sustainable products and processes.

Action RIMP 5E: Enforce regulations restricting toxic chemicals in products and packaging laws. Update legislation as needed to address emerging threats.

GOAL RIMP 6: Protect air, water, and land resources to reduce the likelihood of contamination from toxic pollution sources, especially in areas with environmental justice considerations.

Action RIMP 6A: Implement toxic reduction initiatives and environmental monitoring to measure long-term trends related to chemicals of concern.

Action RIMP 6B: Ensure the agency's toxic reduction strategy is adequately represented and given priority in the Puget Sound Action agenda.[193]

Action RIMP 6C: Identify and implement actions to reduce PBTs and other toxic chemicals or chemical classes through the Chemical Action Plan[194] (CAP) process. Within the CAP process, research phthalate chemicals, write new CAPs, and work with stakeholders to implement all CAP recommendations.

Action RIMP 6D: Update the Persistent Bioaccumulative Toxins (PBT) rule[195] to include priority chemicals based on new science and information.

Action RIMP 6E: Work to secure funding—such as through the National Estuary Program[196]—for toxic chemical reduction activities in major water bodies, including Puget Sound and the Columbia River Basin. Participate in the Columbia River Toxics Workgroup.

[193] http://www.psp.wa.gov/action_agenda_center.php
[194] https://ecology.wa.gov/CAPs
[195] Chapter 173-333 WAC: https://app.leg.wa.gov/wac/default.aspx?cite=173-333
[196] http://water.epa.gov/type/oceb/nep/index.cfm#tabs-2

Section Four: Measuring Progress

Introduction

The saying goes, "What gets measured, gets managed." At all levels of government, officials use data to evaluate the effectiveness of programs and initiatives. Data analysis helps determine future directions, identify gaps, build budgets, and support environmental justice. Careful data collection and analysis is vital for properly run programs.

Since 2004, the State Solid and Hazardous Waste Plan has included a measuring progress initiative. The main intent of this section is to assess a path toward measuring progress on some key aspects for achieving the plan vision, and make recommendations that support that path. The secondary intent of this section is to support data for plan actions by identifying gaps and providing supporting recommendations that would help to fill those gaps.

Most of the data that local government, private companies, and Ecology collect in the solid and hazardous waste system is required in statute or rule. For example, a regulated solid waste facility is required to annually report solid waste materials received to Ecology and its local health department. Ecology uses data to report our performance to the Office of Financial Management for budget development and other decision making, as well as in outreach and publications.

You can find much of the data Ecology's Solid Waste Management Program collects, including data referenced in this plan, on the solid waste and recycling data[197] webpage. Ecology's Hazardous Waste and Toxics Reduction Program collects, uses, and shares data as outlined in this chapter of the plan.[198] Efforts are currently underway to assess existing performance measures and reporting methods, and develop more accurate and useful ways to incorporate data-driven decision making into Ecology's work, help set priorities, and adjust course as needed.

Ecology and others rely on many outside datasets to accomplish goals, especially in the area of environmental justice. For example, demographic data from the U.S. Census Bureau is analyzed and summarized by the Office of Financial Management (OFM) and incorporated along with other datasets into the Department of Health's Environmental Health Disparities (EHD) map.[199]

Authorizing framework: implementation and issues

State law and rule requirements generally drive Ecology's data collection and analysis. Regulations often require tracking to help gauge performance and show that changes are

[197] https://ecology.wa.gov/Research-Data/Data-resources/Solid-waste-recycling-data
[198] We may collect, but do not share confidential business information about products or processes used by manufacturers.
[199] https://www.doh.wa.gov/DataandStatisticalReports/WashingtonTrackingNetworkWTN/InformationbyLocation/WashingtonEnvironmentalHealthDisparitiesMap

working as intended. Other data drivers include program performance goals and individual project needs.

The following are the most comprehensive mandates for data collection and reporting related to hazardous and solid waste in Washington.

- The federal Emergency Planning and Community Right to Know Act[200] requires businesses that legally store or release chemicals to report releases to Ecology so they can be included in a Toxic Release Inventory.[201]
- Under the Hazardous Waste Management law,[202] Ecology uses automated data systems to track amounts of dangerous waste generated each year and proper transport, treatment, and disposal. Ecology uses such data to estimate dangerous waste generation for the state.
- The Waste Reduction law[203] requires pollution prevention (P2) plans from facilities that generate more than 2,640 pounds of dangerous waste per year or that are required to report as part of the national Toxic Release Inventory. Ecology uses the data in the P2 plans to help facilities reduce their hazardous waste generation and toxic chemical use.
- The Solid Waste Management—Reduction and Recycling law[204] requires Ecology to track and report the quantity of materials disposed and collected for recycling, as reported by solid waste handling facilities statewide. The law also gives the state authority to collect other solid waste collection and disposal data, including moderate waste risk data. These data are used to determine solid waste generation and recovery rates. As of 2019, Ecology is required to track food waste[205] in order to measure progress towards the statutory goal to reduce food waste 50 percent from 2015 levels by 2030.
- The Waste Reduction, Recycling, and Litter Control Act[206] provides funding for litter pickup by Ecology Youth Corps,[207] local governments, and some state agencies, among many other activities. Amounts of litter picked up are tracked and reported. Litter surveys are completed when funding allows, which has been infrequent.

[200] https://www.epa.gov/epcra/what-epcra
[201] https://ecology.wa.gov/TRI
[202] Chapter 70A.300 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300
[203] Chapter 70A.214 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214
[204] Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205
[205] Food Waste Reduction, Chapter 70A.205.715: https://app.leg.wa.gov/rcw/default.aspx?cite=70A.205.715
[206] Chapter 70A.200 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.200
[207] https://ecology.wa.gov/EYC

- The Children's Safe Products Act[208] requires manufacturers of children's products sold in Washington to report if their product contains a chemical of high concern to children.[209] Manufacturers also must explain why they use the chemical in their products.
- The Brake Friction Material law[210] (also known as the Better Brakes Law) restricts the use of several heavy metals and asbestos in automotive brake pads and shoes. Manufacturers are required to report concentrations of copper, nickel, zinc, and antimony in brake materials sold in Washington.

Priorities for data collection are set in statute and rules, as outlined above. Establishing rules that govern reporting under these laws requires public processes that provide an opportunity for all interest groups to influence requirements, such as which facilities have to report and the details of those reports.

Ecology and our partners, such as local government staff and industry representatives, want additional, timelier, and more transparent waste data for our state. The types of data we can collect are limited by constraints set in rules and statute, time lags for processing data, and staffing resources to pursue data not required in rules.

Some data gaps that are key to measuring progress have no clear answer as of the writing of this plan. For example, Ecology and partners would like to have more information about end markets for recyclable materials. Multiple avenues have identified this issue, so far without a satisfactory solution. Ecology would like to assess this issue over the coming plan period and work with data providers to fill this and other data gaps. This may require new rules or laws.

The pressure is on at all levels of government to show meaningful results tied to environmental impacts. As a result, data collection and analysis by Ecology and our partners is expanding and evolving. Washington's Legislature and Governor are highly interested in agency effectiveness and use data to help set priorities. Ecology continues to look to such data as a tool in determining levels of funding, staffing, and changes in program activities.

Future directions: looking ahead

Our partners—such as local governments, business and industry, non-governmental organizations, and the public—are interested in the data Ecology collects. Some organizations use the data to help set priorities, evaluate programs, and respond to new laws. Ecology will need to continue to be responsive to stakeholders' data needs as issues emerge and priorities change. Ecology and our partners should explore the potential to address data gaps as new legislation is developed.

There is growing demand for interactive and creative visual displays of data—for example, using infographics, maps, and dashboards. There is also a trend toward using more data in public

[208] Chapter 70A.430 RCW: https://app.leg.wa.gov/rcw/default.aspx?cite=70A.430
[209] Defined by Children's Safe Products—Reporting Rule, Chapter 173-334 WAC: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-334
[210] Chapter 70A.340 RCW: https://app.leg.wa.gov/rcw/default.aspx?cite=70A.340

outreach on social media channels, blogs, and websites. Ecology is using these avenues of distribution and monitoring the need for changes.

In 2021, the Legislature passed Chapter 70A.02 RCW,[211] which established requirements and timelines for agencies to address environmental justice, including:

- Create and use standard methods to develop, track, and evaluate environmental justice goals.
- Use the recently developed Washington State Department of Health mapping tools with environmental health disparities data[212] to inform efforts and measure long-term reductions in disparities.

With increasing emphasis on showing results in a meaningful way and with more tools available to choose from, there are opportunities for improved ways to measure progress. Ecology and our partners need to think strategically about where to focus data collection and analysis efforts, and how to improve data collection and address gaps.

Measuring progress goals and actions

GOAL DATA 1: Data informs efficiency, effectiveness, and environmental justice considerations of materials and waste management and toxic chemical reduction.

Action DATA 1A: Evaluate how to maximize the effectiveness of toxic chemical reduction efforts, using data in support of strategic outreach. Use positive case studies to educate others and recognize successful programs.

Action DATA 1B: Analyze and share data on service distribution and environmental effects to overburdened communities and areas with environmental justice considerations.

Action DATA 1C: Improve dangerous waste and toxics reduction data integration to increase staff effectiveness with technical assistance and compliance efforts.

Action DATA 1D: Use environmental justice mapping tools and design measurable goals when addressing environmental justice.

GOAL DATA 2: State agencies, local governments, and audiences from affected communities can make informed decisions to help reduce risks to human health and the environment from toxic chemicals.

Action DATA 2A: Develop measures to track changes in the amount of toxic chemicals in products, focusing on products regulated under state law, such as:

[211] Chapter 70A.02 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.02
[212] Washington State Department of Health Environmental Health Disparities Map: https://www.doh.wa.gov/DataandStatisticalReports/WashingtonTrackingNetworkWTN/InformationbyLocation/WashingtonEnvironmentalHealthDisparitiesMap

- The "Better Brakes" law[213] (Brake Friction Material).[214]
- The Children's Safe Products Act[215] (Children's Safe Products).[216]
- Other applicable laws in which Ecology is testing products to determine compliance.

Action DATA 2B: Share information about facility and company pollution releases and toxic chemical reduction using our Toxic Release Inventory[217] website and social media.

GOAL DATA 3: Data on the environmental impacts of materials—from extraction, manufacture, purchase, and discard—are tracked and used to inform decisions.

Action DATA 3A: Complete a state waste characterization study every four years, including sector analyses for construction and demolition debris, moderate risk waste, organics (including food waste), products, and packaging. Coordinate this study with waste characterization studies done at the local level.

Action DATA 3B: Characterize recyclables and contamination by conducting sampling studies on recyclable materials and organic materials. Coordinate with studies done at the local level.

Action DATA 3C: Use waste composition studies, EPA WARM,[218] and other publicly available life cycle models to assess key impacts in the extraction, production, use, reuse, and end-of-life phases.

Action DATA 3D: Conduct a consumption-based emissions inventory for Washington state.

Action DATA 3E: Assess and improve the efficiency and effectiveness of waste and materials data to best support existing programs, new laws, and emerging issues. Transition to online reporting for all solid waste handling facilities. Pursue updated reporting requirements in order to fill data gaps and collect more thorough and timely data.

Action DATA 3F: Collect data regarding where and how recyclable material is used or recycled. This action will be led by the Recycling Development Center, in cooperation with partners.

[213] https://ecology.wa.gov/BetterBrakes
[214] Brake Friction Material, Chapter 70A.340 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.340
[215] https://ecology.wa.gov/CSPA
[216] Chapter 70A.430 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.430
[217] https://ecology.wa.gov/TRI
[218] https://www.epa.gov/warm

Section Five: Providing Outreach and Information

Introduction

This plan's success relies in part on providing effective outreach and needed information to stakeholders on solid and hazardous waste and materials management issues.

Outreach helps keep stakeholders informed of rules, laws, programs, data, research, and other developments. It also informs and encourages desired actions, such as choosing safer chemicals and products, or recycling correctly.

Selecting the right audience and conducting effective outreach is an ever-changing practice. In this age of social media and digital communication, there are a growing number of ways to share information, but also increased competition for everyone's attention. Relying on digital forms of communication—such as webinars, social media, and online meetings—can also create barriers to participation for populations with limited access to technology and internet.

Ecology is committed to ensuring that diverse audiences have meaningful access to services, information, and input on policy directions. This means routinely evaluating who the intended audience is, then planning for inclusive engagement that addresses the languages, cultures, literacy, abilities, and other characteristics of the audience.

Despite the growing demand for outreach and information, funding is limited and typically ebbs and flows. During times of economic hardship—such as the 2008 recession or, more recently, the COVID-19 pandemic—funds for agency-sponsored education and outreach are often cut by the Legislature. A recent renewal of outreach efforts, such as the Recycle Right[219] campaign, were stalled or canceled due to budget impacts from the COVID-19 pandemic.

Despite these challenges, Ecology is committed to creating relevant, effective, and innovative outreach on solid and hazardous waste and materials management issues. We also want to ensure our engagement and outreach work reflects a commitment to environmental justice and upholds Title VI Civil Rights compliance obligations.

Authorizing framework: implementation and issues

Many statutes acknowledge the importance of outreach for both solid and hazardous waste and materials.

- Solid Waste Management—Reduction and Recycling[220] calls for both state and local government to provide education. This should address "the need to reduce, source separate, and recycle solid waste," as well as to "promote the concepts of waste reduction and recycling." The statute also establishes the 1-800-Recycle information line,[221] a directory to help guide people to recycling locations. In 2019, a requirement was added for state and local governments to help reduce contamination in the

[219] https://ecology.wa.gov/recycleright
[220] Chapter 70A.205 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205
[221] https://1800recycle.wa.gov

recycling stream by creating and implementing Contamination Reduction and Outreach Plans (CROPs).

- The Waste Reduction, Recycling, and Model Litter Control Act[222] calls for increasing public awareness of waste reduction and recycling participation needs. This statute also establishes a grant program[223] for governments and nonprofit organizations to educate the public about litter control, waste reduction, recycling, and composting.
- The Hazardous Waste Management statute[224] requires local governments to have a plan for providing "ongoing public involvement and public education in regard to the management of moderate-risk waste." Education addresses risks from improper use and disposal, methods of proper handling and disposal, and ways to reduce waste.
- The Model Toxics Control Act[225] addresses hazardous waste cleanups by allocating grant funding for local governments to provide outreach (and other programs) included in their plans. This act also provides grant funds for non-governmental groups to deliver outreach and education.
- The Waste Reduction statute[226] establishes an office of waste reduction to encourage reducing wastes and use of hazardous substances, and creates school awards for waste reduction and recycling programs at schools. Both of these activities were curtailed for many years due to budget reductions, though the school awards program was restored in 2020.
- The product stewardship laws for electronics,[227] mercury-containing lights,[228] and paint[229] include outreach requirements for producers and, to varying degrees, for Ecology. As part of these extended producer responsibility programs, producers must fund outreach.
- Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, color, and national origin, including limited English proficiency. Ecology's Performance Partnership Agreement with EPA addresses the agency's commitment to environmental justice and Title VI.

Future directions: looking ahead

The complexity and variety of solid and hazardous waste and materials continues to increase; therefore, communication needs continue to grow as well. Efforts to reduce waste and toxic

[222] Chapter 70A.200 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.200
[223] Waste Reduction and Recycling Education Grants: https://ecology.wa.gov/WRRED
[224] Chapter 70A.300 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.300
[225] Chapter 70A.305 RCW: https://app.leg.wa.gov/rcw/default.aspx?cite=70A.305
[226] Chapter 70A.214 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214
[227] Electronic Product Recycling, Chapter 70A.500 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.500
[228] Mercury-Containing Lights—Proper Disposal, Chapter 70A.505 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.505
[229] Architectural Paint Stewardship Program, Chapter 70A.515 RCW: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.515

chemicals and encourage reuse and repair require clear, culturally relevant, and effective communication to promote changes in behaviors.

Public concern about the use of toxic chemicals continues to grow; more people want to know risks and alternatives to limit exposure to toxic chemicals in their environment and in products. Outreach work in this area is needed. Growing opportunities and demand for digital outreach, including more webinars and social media, are areas to explore.

Finding creative ways to address ongoing outreach is needed, including partnerships with service providers and producers, among others. Outreach techniques, such as community-based social marketing, will become more important—especially given the state's increasing population growth overall.

Further, Washington's population of residents who do not speak English as their primary language is one of the largest and fastest growing in the United States. There is increasing need to design culturally effective communication strategies, and evaluate and strengthen our public outreach activities to reach diverse audiences. Translation and co-creation with a culturally and linguistically diverse set of partners are vital.

Providing outreach and information goals and actions

GOAL INFO 1: The majority of regulated businesses understand how to comply with the Dangerous Waste Regulations[230] and why it is important to implement their Pollution Prevention plans. They understand that waste must be addressed during the design phase—not at the end-of-life phase—and, when possible, reduce waste before it is created.

> **Action INFO 1A:** Deliver industry-specific information on the Dangerous Waste Regulations, compliance, and implementing Pollution Prevention (P2) plans[231] using Ecology's website and other means.
>
> **Action INFO 1B:** Conduct dangerous waste outreach and online education, including workshops at Ecology's regional offices.
>
> **Action INFO 1C:** Develop a communication strategy that inspires businesses to address the social and economic benefits of environmental compliance, pollution prevention, and sustainable consumption. This strategy will take into consideration community-based social marketing methods and will consider incentives to encourage behavior change.

GOAL INFO 2: Small businesses understand how to safely handle hazardous substances and waste.

> **Action INFO 2A:** Identify gaps and develop a comprehensive small business outreach program for state and local jurisdictions, as well as other small business programs that can coordinate with local government outreach programs. Consider how best to work

[230] Chapter 173-303 WAC: https://app.leg.wa.gov/WAC/default.aspx?cite=173-303
[231] https://ecology.wa.gov/P2Plan

with vendors and others to help distribute this information. Translate small business outreach materials to other languages as appropriate.

Action INFO 2B: Publicize chemical hazard assessment information and promote the use of EPA's Safer Choice program in Shoptalk[232] and other channels, such as the Safer Alternatives to Toxic Chemicals[233] website.

GOAL INFO 3: The public and other interested parties have access to reliable information about toxic chemicals in products, including how to avoid and properly dispose of them.

Action INFO 3A: Provide product-testing data on our website for enhanced public access to information for interested parties, including government agencies and tribes.

Action INFO 3B: Provide information about toxics in products, safer alternatives, recycling options, and proper disposal on our website. Partner with local governments, service providers, and other public health information.

Action INFO 3C: Encourage manufacturers to disclose ingredients and use labeling to promote the public's right-to-know what is in consumer products.

Action INFO 3D: Seek grant funds and promote their use to educate students, educators (preschool through college), and the public on less toxic products and related topics.

GOAL INFO 4: Communication strategies, outreach materials, and public engagement activities are inclusive, accessible, and in compliance with Title VI of the Civil Rights Act, and aligned with Washington State Environmental Justice Task Force recommendations.[234]

Action INFO 4A: Evaluate and strengthen outreach activities to ensure diverse audiences have meaningful access to services, information, and input on policy directions. Use Washington State Environmental Justice Task Force recommendations, including language-specific and culturally appropriate communication strategies and methods in outreach and public involvement efforts.

Action INFO 4B: Create protocols and resources to help ensure outreach and information is inclusive, accessible, and effective. Evaluate and address potential barriers to meaningful access and for compliance with the Title VI procedural checklist.[235] Encourage partners and other organizations to do the same.

GOAL INFO 5: Positive educational messages on reducing food waste, reducing contamination in collected organic materials, and the benefits of using compost and other recycled organic products prompt Washington residents and businesses to take action or change behavior.

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[232] https://ecology.wa.gov/Shoptalk
[233] https://ecology.wa.gov/SaferAlternatives
[234] Health Equity Council, "Environmental Justice Task Force Recommendations for Prioritizing EJ in Washington State Government," Fall 2020 https://healthequity.wa.gov/Portals/9/Doc/Publications/Reports/EJTF%20Report_FINAL(1).pdf, accessed August 11, 2021.
[235] Title VI of the Civil Rights Act procedural checklist: https://www.epa.gov/sites/production/files/2020-02/documents/procedural_safeguards_checklist_for_recipients_2020.01.pdf

Action INFO 5A: Promote and disseminate effective tools and educational messages related to reducing wasted food to the public, other agencies, businesses, and local governments.

Action INFO 5B: Work with composters, and other stakeholders to exchange information on the use and benefits of recycled organic products and provide guidance on purchasing compost. Share messages with local governments as well as Washington State University Extension offices and others to educate farmers, landscapers, and residents.

Action INFO 5C: Work with local governments, collection companies, composters, and other stakeholders to share cooperatively developed educational messages related to reducing contamination in collection organics.

GOAL INFO 6: Effective messaging that promotes reduced consumption, waste reduction, environmentally preferred purchasing, proper recycling, and litter prevention is in place and complements local, regional, and national efforts.

Action INFO 6A: Develop and share information about waste reduction, consumption, and the connection between waste, materials, and climate.

Action INFO 6B: Promote the use and benefits of environmentally responsible products and services for public and private sectors, in coordination with partners. This will include products with credible transparent independent third-party labels, certifications, and disclosures.

Action INFO 6C: Provide outreach and information to the public, local governments and other entities about reducing contamination and implementing best recycling management practices to improve quality of materials.

Action INFO 6D: Conduct a multifaceted litter-prevention campaign using social marketing techniques, targeting most heavily littered materials and plastics connected to marine debris.

Glossary and Acronyms

This glossary is intended to provide definitions for terms and acronyms that may be unfamiliar. Other more common terms in the solid or hazardous waste arenas (such as waste reduction, recycling, solid waste, hazardous waste, etc.) are not included in this glossary, but definitions may be found in the solid and hazardous waste laws, RCW 70A.205.015[236] and RCW 70A.300.010.[237]

AD / Anaerobic Digestion

The process of using bacteria to break down organic wastes in a low oxygen environment, resulting in a biogas rich in methane as well as liquid and solid residues.

Alternatives Assessments

A set of tools that manufacturers, product designers, businesses, governments, and other interested parties can use to make better, more informed decisions about the use of toxic chemicals in their products or processes.

Biochar

A charcoal-like substance produced by the thermal conversion (pyrolysis) of organic matter (including woody debris, agricultural by-products, and manure/bedding) in an oxygen-starved chamber. Biochar serves many purposes including sequestering carbon, improving soil quality and moisture retention, and effectively treating water through filtration.

Biopower and Biofuels

A renewable energy or fuel source made from biomass, including agricultural crops or residues, wood wastes and residues, animal wastes, and other waste materials.

Biomass

Recently living organisms or their metabolic by-products. Biomass is available on a renewable basis (as opposed to fossil fuels, which are derived from long-dead biological material). Biomass can be derived from dedicated energy crops and trees, agricultural food and feed crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants, animal wastes, municipal wastes, and other waste materials.

Chemical Recycling

Any of a broad range of processes, including pyrolysis and gasification, that break down recovered plastics to the molecular level for use in oils, waxes, new polymers and other products. Chemical recycling is sometimes called “advanced recycling.”

[236] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.205.015
[237] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.300.010

Commingled Recycling

Mixing recyclable materials for the purposes of efficient collection. **Commingled recycling** collection systems usually involve a wheeled cart with a lid that ranges from 32–90 gallons in capacity. **Single-stream recycling** is one type of a commingled collection system in which all recyclable materials go in one container at the curb.

Consumption

The use of a resource, product, or material. In the life cycle of a product, consumption typically refers to the stage where something is acquired and used, following the production stage and prior to end of life.

CBEI / Consumption-Based Emissions Inventory

An estimation of all of the greenhouse gas emissions associated with producing, transporting, using, and disposing of goods and services consumed by a jurisdiction in a given time period, wherever in the world those emissions are produced. Consumption-based emissions occur in other states or nations and are not included in the sector-based emissions inventory.

Corrective Action

A process to guide the cleanup of unauthorized releases at dangerous waste management facilities.

Dangerous Waste

Washington state law uses the term dangerous waste while federal law uses the term hazardous waste. Washington's definition of dangerous waste includes some wastes that are not included in the federal definition (for example, solid corrosive dangerous waste or listed PCB waste).

Dangerous Waste Regulations

These regulate dangerous waste in Washington state under WAC 173-303. They are based on the federal Resource Conservation and Recovery Act (RCRA). The Department of Ecology implements and enforces these regulations.

Disparities

Negative differences that do not imply unfairness; different than **inequities**, which are avoidable differences that result from a lack of fairness or justice.

Diversion

Waste diverted from landfills, which includes materials reused and burned for energy in addition to those that are recycled.

E-Cycle Washington

Washington's extended producer responsibility program for computers, monitors, laptops, tablet computers, televisions, portable DVD players, and e-readers.

End-of-Life

The point at which a product or material is no longer useful to the person possessing it and is discarded for disposal or recycling.

EJ / Environmental Justice

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, rules, and policies. Environmental justice includes addressing disproportionate environmental and health impacts in all laws, rules, and policies with environmental impacts by prioritizing vulnerable populations and overburdened communities, the equitable distribution of resources and benefits, and eliminating harm.

EPA / Environmental Protection Agency

The federal agency that leads the nation's environmental science, research, education, and assessment efforts. Created in 1970, EPA's mission is to protect human health and the environment.

EPP / Environmentally Preferable Purchasing

Also known as green or sustainable purchasing, this is the procurement of products or services that have lesser or reduced negative effect or increased positive to human health and the environment when compared with competing products or services that serve the same purpose. The comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, durability, operation, maintenance, or disposal. This term includes low or non-toxic, durable, reusable, recyclable, and recycled (including compost) products or services, as well as those that conserve energy or natural resources.

EPR / Extended Producer Responsibility

Also used interchangeably with the term **Product Stewardship**. EPR is a mandatory type of product stewardship that includes, at a minimum, the requirement that the manufacturer's responsibility for its product extends to post-consumer management of that product and its packaging.

Equality

Refers to everyone having the same treatment without accounting for differing needs or circumstances.

Equity

Equity has a focus on eliminating barriers that have prevented the full participation of historically and currently oppressed groups. Equity is distinct from equality.

Feedstock

Materials needed to produce a product in a manufacturing or other process, including recycling, composting, and other waste-processing activities. Feedstocks can be virgin raw (new) materials or secondary (recovered or recycled) materials from the same or another process.

Green Chemistry

The invention, design, and application of chemical products and processes to reduce or to eliminate the use and generation of hazardous substances.

Hazardous Waste

A waste with any of the following properties that make it dangerous or potentially harmful to human health or the environment: ignitable, corrosive, reactive, or toxic. Hazardous waste takes many physical forms and may be solid, semi-solid, liquid, or even contained gases. Washington state uses the term **dangerous waste** to include some wastes that are not in the federal definition of hazardous waste (for example, solid corrosive dangerous waste or listed PCB waste).

Hazardous Substances

Hazardous waste and materials, including toxic chemicals.

Highest and Best Use

The use of a material which maximizes energy and natural resource savings while minimizing environmental emissions, risk, and damage to human health and the environment.

HHW / Household Hazardous Waste

Household products that contain corrosive, toxic, ignitable, or reactive ingredients. This includes any waste that exhibits the properties of dangerous waste, but is exempt from the Washington State Dangerous Waste Regulations because it is generated by households.

HWTR / Hazardous Waste and Toxics Reduction

The Hazardous Waste and Toxics Reduction Program of the Washington State Department of Ecology.

Independent Third-Party Certifications

Third-party certification means an independent organization has reviewed the claims made for a product or process and independently determined compliance with specific standards.

Inequity

An avoidable lack of fairness or justice. Inequity describes differences that result from a lack of access to opportunities and resources.

LQG / Large Quantity Generator

A facility that generates 2,200 pounds or more (or more than 2.2 pounds of certain types of wastes) of dangerous waste per month.

LightRecycle Washington

Washington's extended producer responsibility program for mercury-containing lights, including fluorescent tubes, compact fluorescent lights, and high-intensity discharge lights.

Life Cycle

Consecutive and interlinked stages of a product or service system, from the extraction of resources to the final disposal.

LCA / Life Cycle Assessment (or Analysis)

A systematic process to assess the environmental aspects and potential environmental impacts associated with products, processes, or services, through production, usage, and disposal.

LSWFA /Local Solid Waste Financial Assistance

Ecology grants that help local governments develop and implement their hazardous and solid waste management plans and provide solid waste enforcement. These grants are awarded once each biennium.

Marine Debris

Man-made waste that has been accidently or intentionally released into a storm drain, lake, ocean, or other waterway. Marine debris is often classified as land based or ocean based; estimates are that up to 80 percent of marine debris comes from land-based sources.

Materials

The substance or substances of which a thing is made or composed. The full range of materials that come from and return to the Earth such as wood, minerals, fuels, chemicals, agricultural plants and animals, soil, and rock.

Materials Management

A systemic approach to using and reusing materials more productively over their entire life cycle. Materials management is focused on knowing and reducing the life cycle impacts across the supply chain; using less material inputs (reduce, reuse, recycle); and using less toxic and more renewable materials.

MRF / Material Recovery Facility

A facility that collects, compacts, repackages, sorts, or processes for transport recyclable materials collected from curbside and other programs, for marketing to secondary processors, recyclers, or end-users.

MQG / Medium Quantity Generators

A facility that generates between 220 pounds and 2,200 pounds of dangerous waste per month.

MRW / Moderate-Risk Waste

The combined hazardous waste stream made up of small quantity generator (SQG) waste and household hazardous waste (HHW). This term is unique to Washington state.

Organics (Organic Materials)

Substances and products of biological origin that have the potential to be returned to the soil, turned into biofuels, biopower, or other products. Organic materials include landscaping and yard waste, food waste, manures, crop residues, wood, soiled/low-grade paper, and biosolids.

Overburdened

Used to describe communities and populations that experience disproportionate environmental harms and risks due to exposures, greater vulnerability to environmental hazards, or cumulative impacts from multiple stressors.

PaintCare

Washington's extended producer responsibility program for architectural paints, primers, stains, sealers, and clear coatings such as shellac and varnish.

P2 / Pollution Prevention

The use of processes or practices that reduce or eliminate the use of hazardous substances and the generation of wastes at the source.

PBTs / Persistent Bioaccumulative Toxics

Persistent, bioaccumulative toxics (PBTs) are a distinct group of chemicals that threaten the health of people and the environment. They remain in the environment for a long time without breaking down (persistent); build up in the bodies of people and animals (bioaccumulate); and have toxic effects on people, wildlife, and fish (toxic). Examples of PBTs include methylmercury, PCBs, DDT, and dioxin.

PCBs / Polychlorinated Biphenyls

PCBs are a group of 209 manmade compounds. Historically, PCBs were mostly used in electrical equipment, but there were other uses of PCBs such as plasticizers, wax and pesticide extenders, and lubricants. PCBs build up in the environment and are known to cause cancer in animals. Although federal law has banned the manufacture of PCBs since 1977 and restricted some uses of PCBs, there is still inadvertent production of PCBs during manufacturing or, in certain cases, they may be intentionally added below regulated levels.

PPG / Public Participation Grant

Ecology grants that provide funding to citizen groups and not-for-profit public interest organizations to provide public involvement in monitoring the cleanup of contaminated sites and prevent pollution by reducing or eliminating waste at the source.

Product

Something made or created by human or mechanical effort or by a natural process.

Product Stewardship

A system where those who produce, sell, use, or dispose of a product assume responsibility for the product's environmental, health, social, and economic costs throughout the product's life cycle. The producer has the greatest ability to minimize adverse impacts, but other stakeholders share responsibility. Product stewardship can be either voluntary or required by law. **Extended producer responsibility** is a form of mandatory product stewardship.

RCRA / Resource Conservation and Recovery Act

The federal law passed in 1976 that set standards for managing hazardous wastes and encouraging recycling over disposal. RCRA also includes the federal standards for solid waste landfills.

Recovery

Material that is diverted from the solid waste stream for the intended purpose of recycling, composting, burning source-separated materials for energy, anaerobic digestion, land application, and other beneficial uses.

Residual Contamination

Disposed materials culled from or leftover from the solid waste sorting and packaging process. This includes non-recyclable contaminants, non-program material, out-throws, and incorrectly sorted recyclable material.

Reuse

The use of a product or component of municipal solid waste in its original form more than once.

Sham Recycling

The collection of materials under false or illegal claims for the perceived purpose of recycling where the materials are instead disposed or indefinitely stockpiled rather than legitimately recycled.

Single-Stream Recycling

A type of a **commingled recycling** system in which all recyclable materials go in one container at the curb for the purposes of efficient collection. Recyclable materials are typically collected in a wheeled cart with a lid that ranges from 32–90 gallons in capacity.

SQG / Small Quantity Generator

A business, organization, industrial facility, or other type of establishment that creates 220 pounds or less of dangerous waste per month. The term **conditionally exempt small quantity generator** (CESQG) can also be used. Dangerous waste generated by an SQG is exempt from the dangerous waste regulations if certain conditions are met.

Solid Waste

As written in statute, solid waste means “all putrescible and nonputrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, and recyclable materials.”

SWM / Solid Waste Management

The Solid Waste Management program of the Washington State Department of Ecology. Formerly known as the Waste 2 Resources Program and the Solid Waste & Financial Assistance Program.

Source Reduction

Eliminating waste before it's created by designing, manufacturing, purchasing, or using materials in ways that reduce the amount or toxicity of what is thrown away. Often used similarly to **waste reduction** and **waste prevention**.

SMM / Sustainable Materials Management

The use and reuse of materials in the most productive and sustainable way across their entire life cycle. SMM conserves resources, reduces waste, reduces toxic chemicals, slows climate change, minimizes the environmental impacts of the materials we use throughout the material life cycle, and assures we have sufficient resources to meet today's needs and those of the future.

Sustainability

Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Toxic Chemicals

Any substance that may be harmful to the environment or hazardous to human health if inhaled, ingested, or absorbed through the skin.

TSCA / Toxic Substances Control Act

The Toxic Substances Control Act of 1976 provides EPA with the authority to require reporting, recordkeeping and testing requirements, and restrictions relating to chemical substances and/ or mixtures. TSCA addresses the production, importation, use, and disposal of specific chemicals. Certain substances are generally excluded from TSCA, including food, drugs, cosmetics, and pesticides.

TSD / Treatment, Storage, or Disposal Facility

A facility that has authorization from Ecology to conduct dangerous waste management treatment, storage, or disposal activities.

Underserved

Communities or areas that receive limited solid or hazardous waste services. This often includes rural areas, multifamily housing, small businesses, public spaces, as well as communities of color, low-income populations, and places with other environmental justice considerations.

WTE / Waste-to-Energy

Energy recovery from waste is the conversion of waste materials into useable heat, electricity, or fuel through a variety of processes, including combustion, as well as gasification, pyrolysis, and anaerobic digestion.

WRRED / Waste Reduction and Recycling Education Grants

Ecology grants that provide funding to local governments and non-profit organizations for local or statewide education programs about litter control, waste reduction, recycling and composting.

Waste Management Hierarchy
Priority methods for managing solid and hazardous waste established in Chapters 70A.205 RCW[238] (solid waste) and 70A.300 RCW[239] (hazardous waste). While the hierarchy differs slightly between the two laws, both place reducing waste as the highest priority, followed by recycling and safe disposal.

Waste Prevention

To reduce the amount of solid waste generated or resources used, without increasing toxicity, in the design, manufacture, purchase, or use of products or packaging. "Pure" waste prevention does not include recycling or composting. Often used similarly to **source reduction** and **waste reduction**.

Waste Reduction

Reducing the amount or toxicity of waste generated or reusing materials. Often used similarly to **source reduction** and **waste prevention**.

[238] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.205
[239] https://app.leg.wa.gov/RCW/default.aspx?cite=70.105