5 Recycling and Composting Policy and Markets

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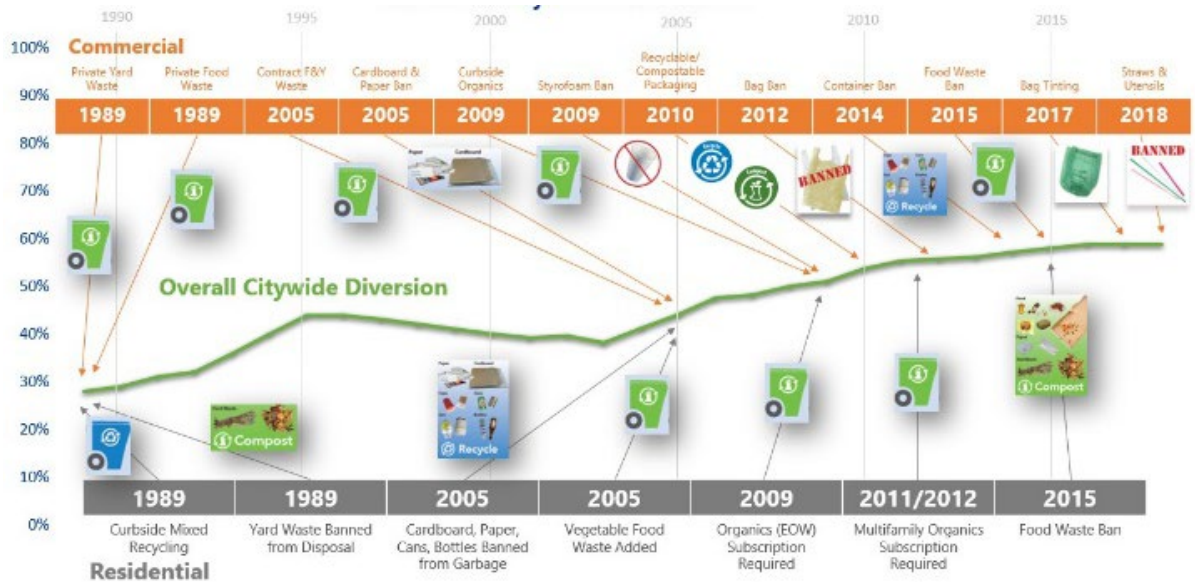
Chapter 5 Recycling and Composting Policy and Markets

Overview

After waste prevention and reuse, the next best option for dealing with discards is to recycle or compost them. Seattle's current rate structure for solid waste services, often referred to as a "pay-as-you-throw" (PAYT) system, promotes recycling and food and yard waste composting by charging less for these services than for garbage. The more materials customers divert into recycle or compost, the lower their cost for overall solid waste services. Recycling and composting preserves natural resources, reduces the amount of waste sent to landfill, decreases greenhouse gas emissions, and saves money. Appendix F, *Economics of Residential Recycling in Seattle*, demonstrates how Seattle's residential recycle and compost programs have decreased household disposal rates, saved ratepayers money, and reduced potential human illnesses and other environmental pollution impacts.



Seattle's commercial and residential services and policies increase diversion and have many other benefits (Source: SPU)

This chapter describes recycling and composting in Seattle within the context of recent international events that have prompted SPU and its partners to take a more holistic view of diversion to minimize its impact and to build more responsible circular recycling and composting systems locally. Strategies highlighted in this chapter, include:

- Improving recycling quality
- Building local recycling and composting markets and infrastructure
- Advocating for voluntary product stewardship measures
- Advancing extended producer responsibility legislation

Benefits of Recycling and Composting

For more information on the financial benefits of recycling and composting to Seattle, please read Appendix E, *Economics of Residential Recycling in Seattle* or read the following articles:

Recycling: A Triple Win[1]

Composting: Seattle's Winning Strategy for Managing Organics[2]

To explain how Seattle Public Utilities (SPU) approaches recycling today, the next sections describe what is accepted for recycling in Seattle—and how commodity markets near and far make it possible for the City to offer one of the nation's most extensive recycling programs.

Related Topics in Other Chapters Include:

- Physical collection, processing infrastructure, and the accompanying contracting mechanisms for disposal, recycling, and composting in Chapter 6, *Solid Waste Handling and Collection and Removal*
- Education, behavior change, and enforcement activities that support implementation of programs, policies, and regulations in Chapter 9, *Outreach, Education, Enforcement, and Compliance*
- Financing, such as rate structures, that supports all solid waste management activities in Chapter 10, *Administration and Financing of the Solid Waste System*
- Seattle's Contamination Reduction and Outreach Plan (CROP), detailing Seattle's efforts to improve recycling quality, appears in Appendix F, *Economics of Residential Recycling in Seattle*

[1] https://resource-recycling.com/recycling/2020/05/14/a-triple-win
[2] https://www.biocycle.net/seattles-winning-strategy-managing-organics

What's Recyclable

State law requires local solid waste management plans to designate which recyclable materials the City collects. In urban areas like Seattle, designated recyclables must be collected from single-family and multifamily residences. Seattle's collection programs designate materials as recyclable through contract negotiations with the processor that sorts materials collected for recycling. When negotiating and designating recyclable materials, Seattle considers factors like processing costs, commodity markets, customer interests, quantities generated, and alternative recycling options. The recycling processing contract prohibits disposal of designated materials. SPU continues to expect all contracted materials to be shipped to processing markets for recycling, regardless of market conditions.

A resident empties materials into recycling carts (Source: SPU Image Library)

Seattle Municipal Code prohibits the disposal of recyclables in residential (SMC 21.36.083) and commercial (SMC 21.36.082) garbage.[3] Recyclables are all materials accepted for collection as listed in the recycling guidelines. SPU's website provides the latest information on currently recyclable materials.[4] SPU's current processing contract will continue to 2024 or 2027, at SPU's discretion. If SPU changes designated materials for recycling, it will consult the Seattle Solid Waste Advisory Committee and notify the Washington State Department of Ecology. Table 5.1 presents the current list of designated recyclable materials.

Table 5.1 Designated Recyclables

CATEGORY	INCLUDES
Glass	Glass bottles and jars
Metal	Tin cans, aluminum cans, pots, pans, foil, and scrap metal less than two feet in any direction and less than 35 pounds

[3] https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT21UT_SUBTITLE_IIISOWA_CH21.36SOWACO_SUBCHAPTER_IISOWACO_21.36.082CORERE

[4] http://www.seattle.gov/utilities/your-services/collection-and-disposal/recycling

CATEGORY	INCLUDES
Organics	Food waste (including food-soiled paper, napkins, and waxed paper), yard waste, wood waste, approved compostable bags, approved single-use compostable food serviceware
Paper	Mixed-waste paper, cardboard, newspaper, poly-coated paper, and aseptic packaging
Plastic	Plastic bottles, jars, tubs, and food containers (excluding expanded polystyrene or Styrofoam), rigid plastics #1-7, planter pots, and five-gallon buckets
Other materials (collected separately)	Foam, batteries, CFLs (compact fluorescent lamps), small and large electronics, used motor and cooking oil

Until 2020, plastic bags were accepted in curbside recycling if they were bagged together. The City had been working with the American Chemistry Council, The Recycling Partnership, Sustainable Packaging Coalition, and Association of Plastic Recyclers on an industry-led effort to increase retail drop-off locations to provide an alternative and convenient option for recycling this material, but this work ended during the COVID-19 pandemic.

Recycling Markets

Recyclables can be a resource used to create new products and packaging. SPU relies on both domestic and global commodity markets to purchase and reprocess Seattle's recyclable material. Seattle's status as an international port and connection to major transportation infrastructure facilitates the sale and transport of its recyclables locally, throughout the U.S., and across the Pacific Ocean for reprocessing into new products and packaging.

When contracting for processing services, SPU specifies end markets for individual commodities to support the highest and best use of these discards. For example, the current processing services contract requires at least 50% of glass collected from recycling streams to be processed back into glass cullet (used to make new glass containers). The contract also requires the processor to create bales of high-grade paper or plastics for regional markets. SPU tracks average monthly market prices for commercial and residential recycled materials. These data date back to 1988 and can be found on SPU's website with other regular solid waste reports.[5] Table 5.2 shows current end markets for contracted recyclables. SPU receives commodity revenues for 100% of the market value of recyclables from Seattle services.

[5] http://www.seattle.gov/utilities/about/reports/solid-waste-reports

Table 5.2 SPU Recycling Tonnages and End Markets (based on facility reporting)

MATERIAL	2020 TONS	2020 MARKETS
Cardboard	15,500	85% Washington, Oregon, and Idaho mills and 15% Asian ports
Glass	24,700	100% Seattle
Metals	2,400	100% Seattle or Washington, Oregon, and Idaho
Non-recyclable	9,900	Landfill
Papers	37,300	70% Washington, Oregon, and Idaho mills and 30% Asian ports
Plastics	4,700	75% United States or Canadian processors
Total	94,900	80% in United States or Canada

Source: Republic Services, Quarterly Recycling Reports to SPU.

New Restrictions Improve Quality Standards and Expose Unintended Consequences of Recycling

Commodity market conditions are a known risk in long-term solid waste planning. That is because both supply and demand for individual commodities can vary for many reasons. These reasons can relate directly to markets or to factors ranging as widely as weather patterns, changing consumer behaviors, or the effects of national policy. SPU attempts to buffer some of this risk by sharing it with the recycling processing contractor, but recent events have highlighted that no one dependent on exporting recyclables is immune to the impacts of seismic shifts in global commodity markets.

Bales of crushed aluminum cans (Source: Republic Services)

For years, Seattle's recycling programs have relied on Asian export markets, particularly China, to purchase and process lower quality recyclable materials, especially mixed paper and mixed plastics. But in 2013, China started to implement progressively more restrictive environmental and anti-corruption policies to reduce the amount of waste imported into the country. Such policies included decreasing the amount of non-recyclable material or contaminants allowed in recycling,[6] accompanied by customs inspections, import limits, and eventually, an import ban.

Enforcement of the import ban, called "National Sword" (2017), began in January 2018, upending the global markets for mixed paper and plastics (#3-#7) as other nations in Southeast Asia adopted import and contamination policies like China's. The implementation and enforcement of these policies significantly restricted the end markets available to both SPU and the rest of the world with established recycling programs. Although Seattle was well-positioned to weather such a dramatic shift in markets, many other municipal programs have had to pause or cancel their recycling programs.

Though immensely disruptive, China's import ban has generally resulted in higher quality standards, meaning lower overall thresholds for contamination or garbage in the recycling. The new statewide requirement for each county or city with solid waste management authority to develop a Contamination Reduction and Outreach Plan (Appendix B, *Contamination Reduction & Outreach Plan*) reflects recent emphasis on improving recycling quality.

Simultaneously, the potential for recyclables to become contaminated has increased, with new materials on the market that are not currently accepted in Seattle's recycling. These confusing materials include new flexible plastic packaging and some mixed-material packaging that combines several material types, such as foam, plastic, and metal. With packaging design constantly evolving and often complicating recycling efforts, SPU works with both its recycling and organics processing contractors to:

- Monitor contamination rates
- Enhance product labeling for accuracy and clarity around recyclability
- Engage upstream manufacturers about their products
- Educate customers on proper sorting to mitigate contamination issues
- Maintain strong product quality in the face of more challenging market conditions

Along with spurring stricter quality standards, China's policies have increased awareness of the environmental and human toll on recycling exports to poorer nations with fewer environmental, health, and human rights protections. For instance, contamination from garbage or food and yard waste in recycling may end up as garbage, pollution, or litter if sent

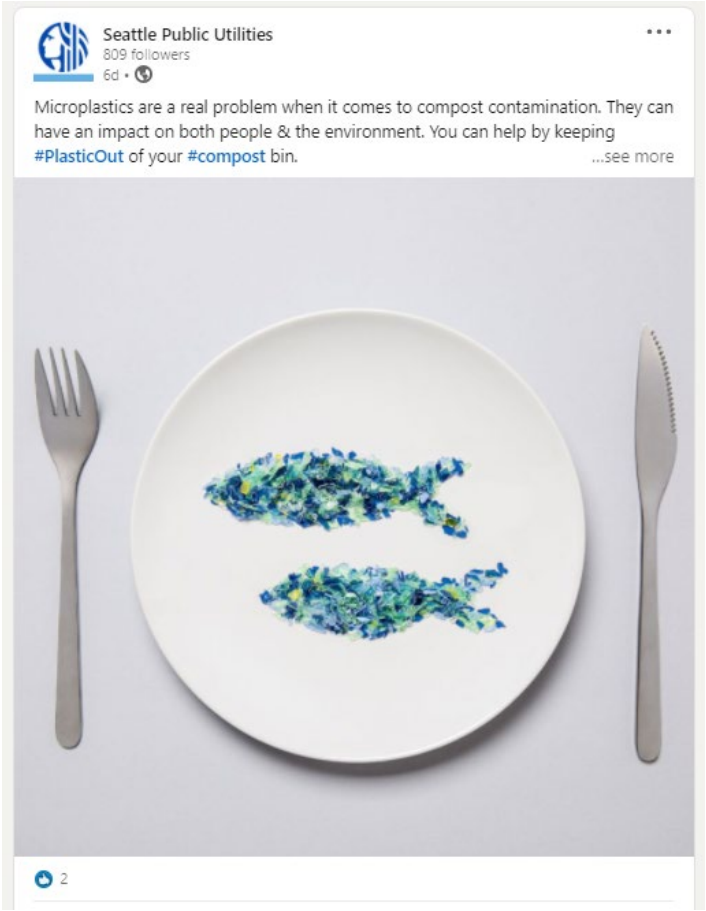
[6] Contamination is any material that is different than main material in a bale. Said material must be removed before the main bale material can be recycled. Plastic mixed into a paper bale would be considered a contaminant.

overseas for processing in countries with fewer environmental protections than the United States.

SPU staff talk with customers about how different materials should be sorted (Source: SPU Image Library)

Managing Low-Grade Mixed Plastics

The fallout from China's policies has helped highlight challenges surrounding recycling of low-value mixed plastics. The lack of markets for low-grade mixed plastics, increased instances of plastics contamination in other recyclable or compostable material, and the introduction of hard-to-recycle packaging materials has challenged the viability of Seattle's recycling programs.



Social media post from SPU on plastics in the compost (Source: SPU's LinkedIn account)

At the same time, increasing concerns are emerging about plastic pollution and litter, including air and water pollution and its impact on communities. Concerns include the persistence of plastic waste in the environment, the toxicity of plastics, plastic waste and microplastics pollution in the ocean, and ingestion of plastic waste by wildlife. SPU continues to consider how to address plastics recycling and end-of-life management. One option for Seattle may be to eliminate materials such as low-grade, low-value, single-use plastic packaging from the recycling stream altogether and replace them with reusable or compostable packaging.

In response to growing environmental management concerns, Southeast Asian countries, including Malaysia, Thailand, and Vietnam, have restricted or entirely stopped importing mixed plastics, following China's lead. In May 2019, 187 countries ratified new international treaty restrictions on mixed and low-grade waste plastics under the Basel Convention. This framework aims to enhance transparency and increase regulation of global trade of plastic waste.

Basel Convention Restrictions on the Transboundary Movement of Mixed and Low-Grade Waste Plastics

A global waste treaty, the Basel Convention limits global trade in hazardous wastes between developed and developing countries. It has been ratified by 187 countries, excluding the U.S. The U.S. is a signatory to the Basel Convention but has not ratified the treaty.

Since 1997, the Seattle-based nonprofit organization, Basel Action Network (BAN) has promoted the Basel Convention's toxic waste trade solutions by using interrelated policy, market solutions, and public engagement strategies.

On May 10, 2019, the 187 countries that have ratified the Basel Convention approved applying the treaty to mixed plastic wastes due to the significant social and environmental impacts of global "trade" in these plastics. This action serves as an indicator of the level of concern for the impacts of mixed plastics exports on human health and the environment in receiving countries.

Responsible Recycling Task Force

King County's Solid Waste Advisory Committee and Metropolitan Solid Waste Management Advisory Committee formed the Responsible Recycling Task Force (RRTF) in April 2018 to respond to recycling market disruption caused by the implementation of China National Sword, which shed light on how materials collected for recycling in the United States were causing harm abroad. The disruption began with China's implementation of increasingly stringent environmental policies to halt the flow of waste materials into the country. Such policies included contamination standards for recycling (limits on the amounts of non-recyclables in the recycling), import limits, and eventually, an import ban on certain recyclable material that severely affected global markets for mixed paper and mixed plastics.

Seattle participated on the RRTF along with representatives from King County, other cities in King County, solid waste haulers, and other stakeholders. The RRTF's goals were to (1) address the short-term and long-term impacts of the global recycling market disruption, (2) learn about the problem, (3) understand polices, programs, and activities that are being implemented elsewhere, and (4) identify opportunities for change. Developing a responsible recycling system is a commitment to ensuring that the recyclable materials collected, transported, and processed do not cause harm to the environment and human health or create social inequities

in the United States and other countries that might have less stringent regulations for safeguarding human health and the environment.

To minimize the impact of the unintended consequences of recycling now and in the future, Seattle and its partners in King County adopted a "responsible recycling" philosophy as an approach to minimize those impacts. Responsible recycling places a premium on recycling practices that avoid harming planet and people.

Responsible Recycling

"Responsible Recycling is a philosophy that ensures we take responsibility for the waste and recyclables we generate so that they are sorted, processed, and if necessary, disposed in a responsible manner. It ensures that our recycled materials do not cause harm here or elsewhere, including other countries. It also motivates producers and consumers to reduce wasteful packaging and products and increase the use of recycled and recyclable materials. Responsible Recycling is not going to be easy. It is not going to be free. It will require significant changes in our recycling systems and infrastructure. However, it is the right thing to do to conserve valuable resources, minimize impacts from global warming, and secure a sustainable future."[7]

The RRTF took a coordinated, collaborative approach to providing guidance on (1) establishing goals to improve recycling systems in King County, (2) recommendations for how to accomplish those goals, and (3) action items to bring back to County and City advisory committees and decision makers. The RRTF identified several challenges to address. In the short term, reduced markets for mixed paper and mixed plastics due to China's import restrictions hindered recycling in King County. Long term challenges included contamination, vulnerable market conditions, and the cost of recycling, which residents and customers often perceive as free.

To address these challenges, the RRTF developed the six goals listed below along with 23 specific action items.[8] The Seattle Solid Waste Advisory Committee reviewed and endorsed the identified actions in March 2019 for the RRTF to implement in 2019 and beyond.

- Goal 1: Establish responsible recycling policies
- Goal 2: Develop local recycling infrastructure
- Goal 3: Harmonize recycling program and messaging

[7] King County Responsible Recycling Task Force. Recommendations to Achieve a Responsible Recycling System. January 2019, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-final-recommendations.ashx?la=en.
[8] Ibid.

- Goal 4: Increase demand for recyclable materials
- Goal 5: Create clean and marketable feedstocks
- Goal 6: Improve upstream design

As of this writing, the Responsible Recycling Task Force has taken action on each of these goals. A list of action item deliverables is available on the Responsible Recycling Task Force website.[9] Recommendations in Seattle's *2022 Solid Waste Plan Update (2022 Plan Update)* incorporate many of the 23 uncompleted action items identified by the RRTF and SPU continues to apply the "responsible recycling" philosophy to its work.

Commingled recycling at a material recovery facility in Seattle (Source: SPU Image Library)

[9] https://kingcounty.gov/depts/dnrp/solid-waste/about/advisory-committees/recycling-task-force.aspx

Recommendations

SPU developed two recommendations to improve the quality of and reduce environmental and social impacts of materials that Seattle customers divert to recycling and composting.

Advocate for responsible recycling policies recommended by the Responsible Recycling Task Force

SPU should work to protect the quality and recyclability of collected materials and monitor how the materials are recycled to ensure they are not creating environmental or social harm. In support of the RRTF recommendations, SPU can support responsible recycling in solid waste management processing and disposal contracts by:

- Including requirements in future contracts that protect against creating environmental or social harm from SPU's recycling practices, such as requiring sorting of mixed plastics to resin type before exporting
- Working with King County and others to develop a methodology or practices for documenting the chain of custody from sorting facilities to end markets to monitor adherence to recognized environmental and human health and safety standards
- Exploring opportunities to prioritize domestic processing in contracts
- Supporting monitoring of recycling quality by exploring ways to track and document landfilled residuals from material recovery facilities that sort recyclables, contamination in baled materials, and material characterization study data for material recovery facilities

Continue and expand efforts to reduce the amount of contamination, or non-recyclable material, in the recycling and food and yard waste

SPU should explore, evaluate, and implement expanded strategies to address and reduce contamination in recycling and food and yard waste (composting), such as through education and enforcement approaches and new sorting technology. Specific measures to consider include the following:

- Continue to increase monitoring of materials, tagging contaminated loads, and providing public messaging to waste generators in Seattle
- Continue to promote and participate in regional collaborations to expand contamination reduction efforts
- Continue to participate in and help provide consultant support for King County's RRTF, the King County Organics Recycling Work Group, and similar county-wide, regional programs

- Continue to collaborate through the Washington Organic Recycling Council with statewide industry and government efforts to reduce and manage contamination in organics separated for composting

In support of responsible recycling, SPU should also consider tracking contamination rates in recycling, including in marketed bales produced by recycling sortation processors. SPU may also consider enhancing the transparency of reporting on where Seattle-generated recyclable materials end up, establishing a means to collect data on end markets for recycling (past the first material broker). For detailed information on SPU's specific strategies to improve recycling quality, see Seattle's *Contamination Reduction and Outreach Plan*, which appears in Appendix F, *Economics of Residential Recycling in Seattle*.

Developing Local Recycling Markets

The development of local end markets for materials, recycled content requirements, and advanced technology and facilities will help support responsible recycling and help Seattle build a more circular economy locally. The current recycling market landscape requires development of regional recycling infrastructure and markets. Mixed paper and mixed plastics collected in Seattle have been shipped predominately to Asia for further sorting and processing, but those countries are restricting imports of mixed paper and plastics. Because of these factors, King County's RRTF selected development of local recycling infrastructure as a key goal and identified several actions to support local recycling infrastructure.[10]

> *"Our region should support the development of our local recycling infrastructure to build resiliency, create local jobs, minimize greenhouse gases from transportation and production, and increase the ability to document and measure real recycling."*[11]

[10] King County's Responsible Recycling Task Force, "Recommendations to Achieve a Responsible Recycling System," January 10, 2019, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-final-recommendations.ashx?la=en.
[11] Ibid.

SPU is partnering with King County to implement relevant action items from the RRTF recommendations report, including to:

- Conduct pilot projects and support information sharing to encourage the development of domestic recycling infrastructure and secondary markets for recycled materials
- Create action plans and grant programs to support the development of markets for compost, recycled paper and plastic, and salvaged wood
- Update City and County recycling contracts and codes to prioritize domestic sorting and processing and require documentation of the chain of custody from sorting facilities to legitimate end markets

The next sections describe local efforts to grow the local recycling economy through LinkUp and the Recycling Development Center.

A tour of Seattle's North Transfer Station (Source: SPU Image Library)

LinkUp

SPU coordinates and partners with local governments, regional sorting facilities, national processors, product representatives, and packaging specialists to facilitate innovation in local recycling and composting processing and markets. For example, SPU collaborates with King

County on the LinkUp program to support market and infrastructure development.[12] LinkUp works to expand markets for selected recyclable and reusable materials through research, stakeholder engagement, and policy development. Program goals of LinkUp include:

- **Goal 1.** Enhance and expand markets for recyclable and reusable materials to achieve a sustainable materials management system
- **Goal 2.** Advocate and support development of regional recycling and reuse infrastructure and policy approaches

Examples of recent collaborations include:

- **Responsible management of mixed plastics.** In 2018, SPU and King County convened a one-day *Domestic Processing of Mixed Plastics Summit* through LinkUp to determine current management practices for mixed plastics and the necessary steps to ensure plastics are sorted by resin type prior to export overseas. This summit contributed to local material recovery facilities conducting additional sorting of mixed plastics in regional facilities, increased discussions on the need for a Seattle area plastic recovery facility and/or secondary material recovery facility, and the formation of the RRTF.
- **Support and development of the use of post-consumer recycled (PCR) paper in regionally produced paper products.** SPU and King County co-funded a report titled *Puget Sound's Paper Trail: Seattle & King County Paper Market Assessment*.[13] The report summarizes information for King County and Seattle on existing PCR paper supply, research, and outreach to paper manufacturers and other industry professionals. It characterizes existing paper market demand and conditions and potential approaches for expanding end markets available for PCR paper.
- **Organics market development.** SPU has contributed staff time in King County's Regional Organics Stakeholder process and development of a study that assessed trends and market conditions for food and yard waste and recommended actions to strengthen markets for products made from these recovered materials.[14]
- **Recycling Development Center grants.** SPU has contributed staff time to work funded by Recycling Development Center grants for King County to map processing infrastructure throughout the state and conduct research on establishing a platform to coordinate efforts around equitable business assistance and support for secondary material end markets.

[12] https://kingcounty.gov/depts/dnrp/solid-waste/programs/linkup.aspx
[13] King County LinkUp, "Puget Sound's Paper Trail: Seattle & King County Market Assessment," November 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/linkup/documents/paper-market-assesment-2020.ashx?la=en.
[14] King County LinkUp, "Organic Materials Management in King County," August 2019, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/linkup/documents/organics-materials-market-assessment.ashx?la=en.

Recycling Development Center

SPU also advocates for legislation that supports end market development. SPU advocated for legislation in the 2019 legislative session (House Bill 1543) that established the state Recycling Development Center. The purpose of the Center is to provide or facilitate basic and applied research and development, marketing, and policy analysis to further the development of markets and processing infrastructure for recycled commodities and products.

The initial priority products addressed by the Recycling Development Center are mixed paper and plastics. SPU has participated on the initial Advisory Board and in related activities to develop the Center's initial work plan, review grants applications to the Center, and look for opportunities to amplify or supplement local market development work undertaken in collaboration with King County.

Recommendation

Because the recyclable material that Seattle customers put out for collection is truly recycled only when it becomes a new product, SPU developed the following recommendation related to recycling end markets.

Support market and infrastructure development for recycling

Developing local markets and improving processing infrastructure for post-consumer recyclables supports SPU's goal to decrease its dependency on foreign recycling markets and promote environmentally and socially responsible practices. This strategy addresses barriers that prevent recycled materials from being marketable. Specific activities that support market development include:

- Advancing efforts to establish post-consumer recycled-content legislation that requires manufacturers to make certain products with a designated amount of recycled material
- Supporting research and pilots for new technology, technical assistance, networking, engagement of stakeholders at all stages of the supply chain, education and training, strategy development, and pilot tests
- Creating partnerships with businesses, agencies, and other organizations in the Puget Sound area to help increase the collection and processing of recyclable materials, use of recycled materials in manufacturing and production, and purchase of recycled-content products

SPU may also increase its focus on broad market development for plastics, paper, and organics, such as through supporting the Association of Plastic Recyclers' Recycling Demand Champions program. This program encourages businesses to procure items made with recycled plastics such as pallets and garbage cans. These market development actions are aligned with recommendations in King County's RRTF report to increase demand for recycled material. SPU prioritizes market development efforts for post-consumer recycled content.

Partnering for Change

SPU participates in regional collaboration and stakeholder engagement to accomplish its waste reduction and diversion goals. Partnerships play a central role in growing local recycling markets and infrastructure, improving the recyclability and compostability of products and packaging within municipal solid waste systems, and advancing product stewardship approaches that incentivize producers to design more sustainable, less toxic materials.

Industry Organizations

SPU engages in dialogue and collaboration with many trade and industry organizations to improve the recycling or composting of products. While SPU collaborates with a wide range of organizations, the following three examples are particularly notable:

- **The Packaging Consortium (PAC)** has a goal to help the packaging industry transition toward "a world without packaging waste." SPU advises and assesses new packaging design and supports development of reports and fact sheets that highlight new packaging innovation as part of its participation in PAC's Packaging Innovation Gateway project. The project's goal is to find practical solutions to packaging recycling and composting challenges.
- **The Sustainable Packaging Coalition (SPC)** works with industry to make packaging more sustainable and aims to catalyze actionable improvements to packaging systems. SPC members are predominately packaging brands and businesses, but government agencies, including SPU, are active participants. SPU has advised on and benefited from many SPC projects, including the How-to-Recycle and How-to-Compost label systems, the Design for Recycled Content Guide, The Essentials of Sustainable Packaging training, Applying Systems Thinking to Recycling (ASTRX), and the Composting Collaborative. One of the action items identified by the RRTF in 2018 is to "engage with the Sustainable Packaging Coalition and their How2Recycle programs to help educate brands and packaging designers on

recyclability of packaging, the use of recycled materials in packaging, and designing packaging that is less toxic and more recyclable (e.g., no PVC plastic)."[15]

- **The Biodegradable Products Institute (BPI)** verifies that compostable products and packaging will break down in professionally managed facilities without negative impacts on the quality of compost. BPI provides a certification for products that meet compostability standards. SPU frequently communicates with BPI on compostable products and policy.

SPU also participates in various industry leadership committees, such as those studying end-of-life solutions for multi-laminate flexible packaging, such as chip bags, which are a flexible combination of plastic and metal. Most recently, Seattle became a founding Activator and active participant of the US Plastics Pact (The Pact). The Pact aims to unify diverse public-private stakeholders across the plastics value chain to rethink the way plastics are designed, used, and reused to create a circular economy for plastic in the United States. The Pact has created a road map for addressing problematic plastics and creating policies that will help reduce contamination, including extended producer responsibility.

The **U.S. Plastics Pact** is a collaborative, solutions-driven consortium to unify diverse public-private stakeholders across the plastics value chain to create a path forward for a circular economy for plastic in the United States. The road map for action on plastics addresses four targets:

1. Define a list of packaging that is to be designated as problematic or unnecessary by 2021 and take measures to eliminate them by 2025
2. 100% of plastic packaging will be reusable, recyclable, or compostable by 2025
3. Undertake ambitious actions to effectively recycle or compost 50% of plastic packaging by 2025
4. By 2025, the average recycled content or responsibly sourced bio-based content in plastic packaging will be 30%[16]

Product Stewardship Organizations

SPU also partners with organizations on product stewardship and extended producer responsibility (EPR) programs. SPU is a founding member and active participant of the Product Stewardship Institute (PSI). PSI membership includes agencies from 47 states and over 200 local governments, as well as over 100 partners from industry and non-governmental organizations.

[15] King County's Responsible Recycling Task Force, "Recommendations to Achieve a Responsible Recycling System," January 10, 2019, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-final-recommendations.ashx?la=en.
[16] U.S. Plastics Pact, "Take Action," accessed October 2021, https://usplasticspact.org/take-action.

PSI works to develop and promote legislation and voluntary initiatives establishing producer responsibility systems.

SPU is also a partner of the Northwest Product Stewardship Council (NWPSC), a coalition of government organizations in Washington and Oregon. NWPSC consists of a 15-member Steering Committee that works with Associate Members to promote product stewardship programs and policies. NWPSC sets regional goals for managing materials through product stewardship approaches. Seattle serves on the NWPSC steering committee. NWPSC activities include:

- Supporting passage of legislation to manage packaging, plastics, and other materials that are toxic, hard-to-handle, or prevalent and would be more effectively and equitably managed through stewardship programs
- Developing educational materials to inform other agencies and stakeholders about product stewardship
- Supporting and participating in local, regional, or national dialogues with producers seeking product stewardship programs for select materials
- Supporting program pilots, launches, and growth of existing product stewardship and take-back programs, which are described in more detail in the next sections

The next section expands on how SPU works with its partners to advance product stewardship and extended producer responsibility.

Voluntary Product Stewardship

Product stewardship strategies often include elements of waste prevention, reuse, and recycling. Product stewardship, which may take the form of either a legislated or voluntary approach, engages producers of packaging and products to reduce waste and toxicity of their products by improving design and labeling and by taking responsibility for the end-of-life management of their products. A prominent example of a voluntary product stewardship program is Call2Recycle, which collects and processes cell phones and rechargeable batteries. Voluntary product stewardship in Seattle includes retailer take-back of plastic bags, batteries, and other items as well as the Take it Back Network.

The Take it Back Network is a partnership between local government agencies (including SPU and the King County Solid Waste Division), retailers, repair shops, charitable organizations, and recyclers to provide safe and cost-effective recycle options for certain electronic

products not yet covered by, or interim to, EPR systems.[17] Currently, the regional Take It Back Network includes recyclers that typically charge a fee to accept and responsibly recycle certain electronics not yet covered by stewardship legislation. Take It Back Network recyclers accept electronics such as computer and television peripherals and other consumer electronics.

Extended Producer Responsibility

The legislated form of product stewardship is called extended producer responsibility, or EPR. The Organisation for Economic Co-operation and Development (OECD) explains that EPR "is a concept where manufacturers and importers of products should bear a significant degree of responsibility for the environmental impacts of their products throughout the product life-cycle, including upstream impacts inherent in the selection of materials for the products, impacts from manufacturers' production process itself, and downstream impacts from the use and disposal of the products."[18]

In an EPR system, producers become responsible for the costs to manage end-of-life recycling of their products. When the external costs of end-of-life management are internalized, they become part of the costs of doing business, just like research, development, administration, marketing, and other costs that are reflected in the price of a product. Through their EPR programs, producers can incorporate efficiencies into their product design and production systems to reduce these costs while providing effective collection and proper end-of-life product management.

Depending on the product, EPR can offer recycling options beyond what SPU can provide. For instance, a state-wide EPR system can offer wide-spread and convenient drop-off options for paint and pharmaceuticals at retail and pharmacy locations, which would be very difficult for SPU to establish and finance. Seattle often supports local and state efforts to implement and expand EPR programs.

EPR programs typically include requirements for producers to promote the collection program and provide education regarding proper handling of materials covered by a given program. EPR programs support recycling and proper disposal of covered products by removing end-of-life costs for the consumer and providing reasonably convenient collection locations and services. These types of programs aim to place responsibility for life cycle environmental impacts on

[17] King County, "Take it Back Network," Accessed October 2021, https://kingcounty.gov/depts/dnrp/solid-waste/programs/take-it-back.aspx.
[18] Organisation for Economic Co-operation and Development, "Fact Sheet: Extended Producer Responsibility," Accessed November 2021, https://www.oecd.org/env/waste/factsheetextendedproducerresponsibility.htm.

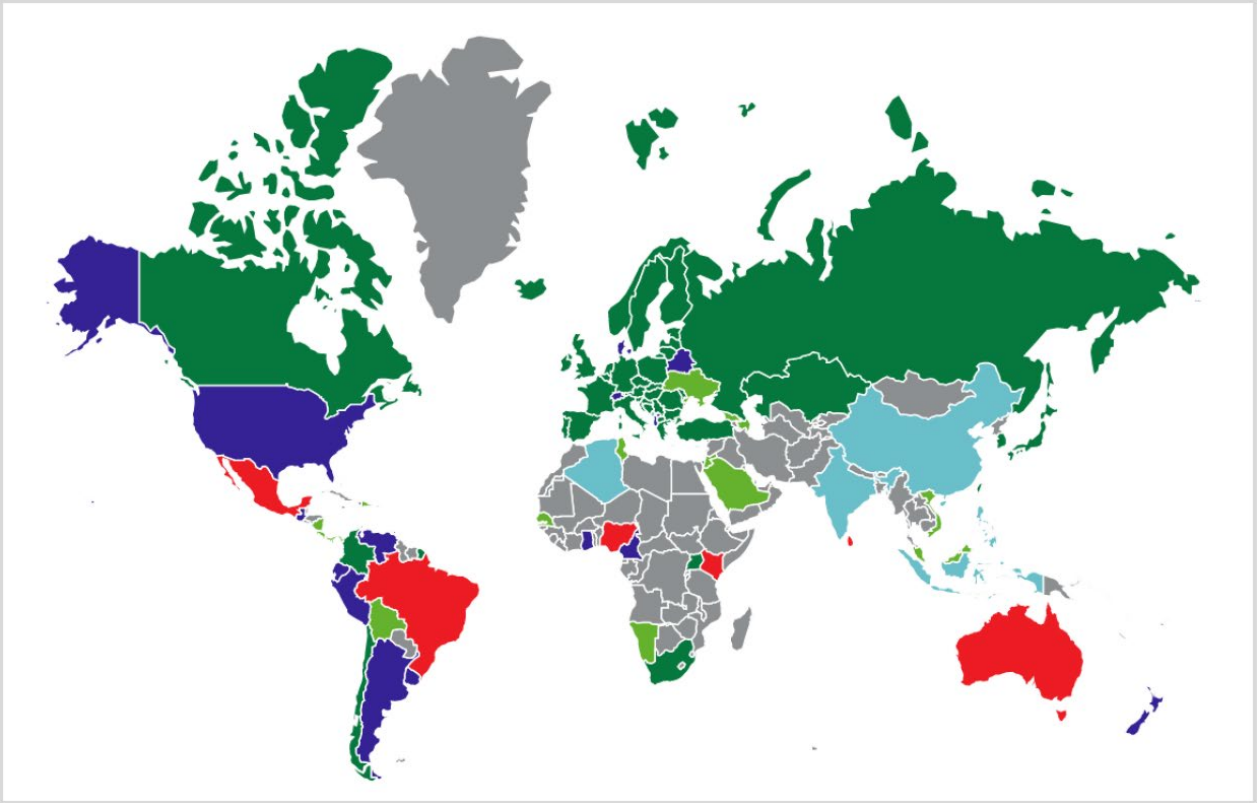
designers, producers, marketers, and retailers of products. In this way, EPR supports the resiliency of the recycling system for covered products by providing a dedicated and sustainable funding source to provide convenient access to end-of-life management options that small towns and rural areas might otherwise lack.

EPR legislation is the key tool that requires producers to fund and manage products at the end of a product's useful life. For products incompatible with curbside recycling, drop-off locations are provided. For some products, such as packaging, EPR collection includes a combination of curbside collection with drop-off or depot collection for materials that are problematic in commingled curbside and processing programs.

The role of EPR, or product stewardship systems, continues to expand in Washington State and worldwide. Outside of the United States, EPR is widely used to address packaging and paper products (Figure 5.1). Within the United States, over 120 producer responsibility laws have been enacted to cover a wide range of toxic, hard to handle, or problematic products (Figure 5.2). Recycling market challenges and increasing consumer awareness of the environmental impacts of plastics has increased public interest in and legislative proposals for packaging and paper product EPR.

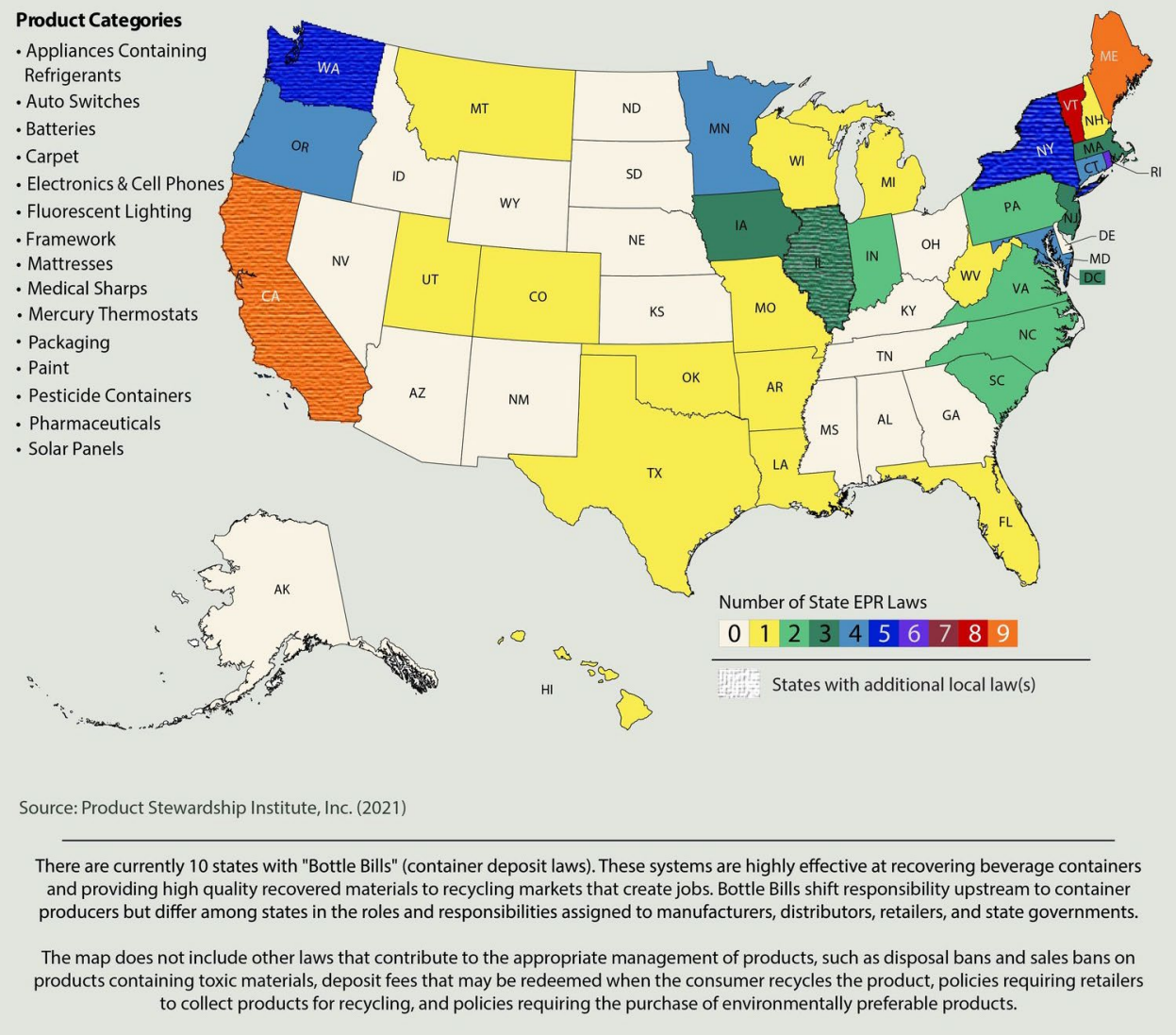
Locally, Washington has statewide EPR programs that cover certain electronics (E-Cycle Washington), lights containing mercury (LightRecycle), pharmaceuticals (Safe Med Project), and paint (PaintCare). Washington has also passed EPR legislation for solar panels. In 2019, the state legislature passed a bill to study (but not yet implement) EPR for plastic packaging. In 2020, SPU contributed to policy approaches included in the federal *Break Free from Plastics Act*. More recently, SPU advocated for legislation to establish a comprehensive producer responsibility system for all plastic packaging (House Bill 1118/Senate Bill 5022). State or national EPR legislation would coordinate materials collected at a state, regional, or national scale, while helping to minimize contamination and maximize reuse and responsible recycling.

Figure 5.1 Countries with Packaging EPR in 2021



Source: https://www.loraxcompliance.com/ (used with permission)

Figure 5.2 U.S. States with EPR Laws



Source: Product Stewardship Institute, Inc. (2021)

There are currently 10 states with "Bottle Bills" (container deposit laws). These systems are highly effective at recovering beverage containers and providing high quality recovered materials to recycling markets that create jobs. Bottle Bills shift responsibility upstream to container producers but differ among states in the roles and responsibilities assigned to manufacturers, distributors, retailers, and state governments.

The map does not include other laws that contribute to the appropriate management of products, such as disposal bans and sales bans on products containing toxic materials, deposit fees that may be redeemed when the consumer recycles the product, policies requiring retailers to collect products for recycling, and policies requiring the purchase of environmentally preferable products.

Source: Product Stewardship Institute, www.productstewardship.us/page/State_EPR_Laws_Map *(used with permission)*

Following are descriptions of current and planned EPR programs that cover material generated by Seattle residents and businesses.

Computers, Monitors, Laptops, and TVs

E-Cycle Washington is an extended producer responsibility program. The statewide E-Cycle Washington program began in 2009 following passage of legislation in 2006.[19] The program provides free recycling of computers and laptops, monitors, tablets, e-readers, portable DVD players, and televisions from the following groups: residents, small businesses, small government agencies, schools, and school districts. There are over 30 drop-off sites available to residents and small businesses in Seattle alone. Recycling with E-Cycle Washington is free, but the program does not accept as many items for recycling as some Take It Back Network electronics recyclers.

Approximately 1,718 tons of electronics were collected within Seattle in 2019 for recycling, and many additional tons were salvaged by E-Cycle Washington collectors for refurbishment, resale, and reuse.[20] Between 2009 and 2020, the stewardship program spent about 16.4 million dollars to collect and manage electronics in Seattle. Without the E-Cycle Washington program, residents and small businesses of Seattle would have had to pay directly to ensure safe and environmentally sound management of these electronics.

Mercury-Containing Lights

LightRecycle Washington, a legislated stewardship program, provides collection sites throughout Washington where the public can drop off for free their unwanted mercury-containing lights, including compact fluorescents lights (CFLs) and high-intensity discharge (HID) lamps. Over 40 of these sites advertise collection of mercury-containing lights within Seattle, including Second Use Building Materials, hardware and lighting stores, and the City's two household hazardous waste collection facilities. Eight other private sites participate in the program but do not advertise that they accept mercury lights. In 2019, the program estimates that Seattle sites collected nearly 133,000 lights, totaling about 31 tons.[21]

LightRecycle Washington receives its funding from an environmental handling charge that is added to the purchase price of every mercury-containing light sold at retail in Washington

[19] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Our-recycling-programs/Electronics-E-Cycle
[20] SPU, "2019 Waste Prevention & Recycling Report," October 2020, http://www.seattle.gov/Documents/Departments/SPU/Documents/Recycling_Rate_Report_2019.pdf.
[21] Ibid.

State. This funding mechanism is not sustainable due to the rapid replacement of CFLs by new lighting technology; however, CFLs will continue to need proper management and funding to cover those costs for many years in the future. An EPR program applied to all lighting products would alleviate system finance instabilities created when technology changes, such as when lighting manufacturers shifted to LED lighting from fluorescent lighting.

Medication

Safe Medication Return is a unified, statewide EPR program that gives Washington residents free, convenient, and environmentally responsible options to dispose of unwanted medication. RCW 69.48 established Washington's Safe Medication Return program (also known as the Drug Take-Back program) in 2020.[22] Drug manufacturers fund the program at no cost to consumers. The program accepts prescription medications, over-the-counter medications, controlled substances, and pet medications.

MED-Project, the state's approved program operator, manages the Safe Medication Return Program.[23] The Department of Health oversees the establishment of the program, monitors on-going operations, manages enforcement when compliance issues arise, and evaluates program effectiveness.

Because of this program, Seattle residents can safely and at no cost dispose of medicines they no longer need at approximately 39 drop-off collection locations throughout the city. The program also provides a mail-back option, which increases accessibility of safe disposal of medication for those who are home-bound or otherwise unable to use drop-off locations.

Oil and Latex Paint

SPU joined with other local governments, non-governmental organizations, and industry to introduce and support passage of House Bill 1652 Concerning Paint Stewardship in 2019. With House Bill 1652, codified as RCW 70A.515, the Washington State Legislature enacted a statewide EPR program for architectural paint (both latex and oil-based) that began April 2021.[24]

The program, administered by PaintCare, establishes free and convenient paint drop-off collection sites statewide for both residents and businesses.[25] The legislation requires drop-off

[22] https://app.leg.wa.gov/RCW/default.aspx?cite=69.48
[23] https://med-project.org/
[24] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.515&full=true
[25] https://www.paintcare.org/states/washington/

locations for every 30,000 in population in urban areas that are "distributed to provide convenient and reasonably equitable access for residents in each area." Based on this requirement, Seattle expects to receive at least 25 sites and King County expects to receive a total of about 50 sites, although PaintCare has typically established far more sites than the required minimums in other states with legislation like Washington's. When PaintCare launched April 1, 2021, it had 12 sites in Seattle and was in the process of opening eight more.

Solar Panels

In 2017, SPU and Seattle City Light worked for passage of the nation's first producer responsibility law for photovoltaic modules (commonly known as solar panels), which the Washington State Legislature passed (House Bill 5939) and codified as Revised Code of Washington 70A510.[26] This law requires solar panel manufacturers to fund and establish a stewardship program for the take-back and proper management of solar panels that were produced after July 2017 and used in Washington. They must provide collection locations in all regions of the state.

In 2019, Seattle City Light helped develop a proposal to expand the legislation to cover modules in large "solar farms," which were inadvertently excluded from the 2017 law. Subsequent legislation has delayed full implementation of the program to 2025. The program will provide free, convenient, and environmentally responsible solar panel recycling options for the public.

Laying the Groundwork for Statewide Packaging EPR and a Container Deposit System

As of June 2019, the U.S. is the only member country of the OECD that currently does not have industry-funded EPR for packaging.[27] EPR programs have been a primary tool in Europe and Canada for addressing packaging waste, including programs in France, Germany, Belgium, British Columbia, and Ontario. Studying these programs provides insight into how Washington State might implement a similar program. Together with its partners, SPU has worked over the past few years to better understand how to advance, design, and implement a comprehensive, statewide stewardship policy approach in Washington. The following sections describe recent

[26] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.510&full=true
[27] Product Stewardship Institute, "Letter to Washington Senate Committee on Environment, Energy, & Technology," Dated January 31, 2019, http://productstewardship.net/sites/default/files/Docs/packaging/support-plastic-packaging-stewardship-psi-2019-01-31.pdf.

studies examining packaging EPR and beverage container stewardship policies, or Container Deposit Systems.

Plastic Packaging Study

In 2019, the Washington State Legislature passed a law advocated by SPU and others requiring the Department of Ecology to hire an independent contractor to assess current disposal and management of plastics packaging, evaluate industry-led or product stewardship options for managing this material, and provide recommendations to the for managing plastic packaging in the state.[28] The Plastic Packaging Study included extensive research and stakeholder consultation and resulted in five reports and 10 recommendations provided to the Washington State Legislature in autumn 2020.[29] The recommendations were intended to meet the goals set in the law of reducing plastic packaging and achieving 100% reusable, recyclable, or compostable packaging in all goods sold in Washington, with at least 25% post-consumer recycled content, by January 1, 2025. The recommendations appear under the four categories below:

Primary Recommendations

1. Extended producer responsibility policy framework for all consumer packaging and paper
2. Deposit return system (DRS) for all beverage containers
3. Recycled content requirements for all plastic packaging

Interim Recommendations

4. Producer registry and packaging reporting
5. Recycled content requirements for plastic beverage containers

Complementary Recommendations

6. Recycled content requirements for trash bags
7. Ban on problematic and unnecessary plastic packaging
8. Standard for customer opt-in for foodservice packaging and accessories

Recommendations for Agency Action

9. Strengthen data collection on final destinations of materials sent for reprocessing
10. Support development and adoption of reusable packaging systems

[28] RCW Chapter 70A.520 https://app.leg.wa.gov/RCW/default.aspx?cite=70A.520.
[29] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Waste-reduction-programs/Plastics/Plastics-study

In 2021, the Department of Ecology consulted with stakeholders such as SPU about the recommendations and worked on developing legislative proposals for the 2022 session to advance on the state's ambitious goals for plastic packaging.

Extended Producer Responsibility Policy Framework and Implementation Model

As a follow-up to recommendations made by King County's RRTF, SPU, and King County conducted a study of EPR systems for packaging called the "Extended Producer Responsibility Policy Framework and Implementation Model: Residential Recycling of Packaging and Paper Products in Washington State" (EPR Policy Framework and Implementation Model). Published March 2020, the EPR Policy Framework and Implementation Model explores an "EPR Policy Framework" that would be required in state law to support the implementation of a statewide EPR system for packaging and paper products from residents. [30] The study presents a conceptual model of how an EPR policy framework could be implemented across Washington State that would:

- Establish a sustainable financing source
- Create a harmonized list of materials that are collected and recycled
- Create a harmonized outreach and messaging program
- Result in reduced contamination
- Provide access to packaging and product designers to help facilitate the recycling of products and packaging
- Provide opportunities for research and development of new or enhanced domestic markets for the recyclable commodities collected in Washington State

The main elements of the EPR Policy Framework are described below.

[30] King County Responsible Recycling Task Force, "Extended Producer Responsibility Policy Framework and Implementation Model: Residential Recycling of Packaging and Paper Products in Washington State," March 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-EPR-policy-framework.ashx?la=en.

EPR Policy Framework Elements[31]

A mandated EPR policy should consider these elements, at a minimum:

- Producers of packaging and paper products are required to fund and coordinate the recycling of materials from the residential sector, including collection, transportation, sorting, and marketing.
- Producers are authorized to form a "Producer Responsibility Organization" (PRO) to manage the responsibilities established in the policy.
- Stewardship plans are developed with mandatory public consultation.
- Eco-modulated fees are used to drive changes in packaging design.
- A statewide uniform list of materials must be collected/recycled.
- Residents across the state must have convenient, equitable access to recycling collection service.
- Producers must achieve material-specific recycling rate requirements by specific timelines.
- Producers must use post-consumer recycled materials in products/ packaging to stimulate demand for materials.
- Required documentation and verified end markets for materials.
- A legislated "regulatory authority" that has authority to monitor compliance and enforce legal requirements.

Building on the work done to develop the EPR Policy Framework and Implementation Model, the NWPSC, of which SPU is a member, formed a packaging policy committee in 2020 to further refine a policy framework for EPR for packaging and paper products in Washington that meets the needs of local governments and advances best practices in effective EPR policies for packaging and products.

[31] King County Responsible Recycling Task Force, "Extended Producer Responsibility Policy Framework and Implementation Model: Residential Recycling of Packaging and Paper Products in Washington State," March 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-EPR-policy-framework.ashx?la=en.

Container Deposit Study

Published in phases throughout 2020, the Container Deposit Study built upon the EPR framework and model developed in the EPR Policy Framework and Implementation Model report. [32] Together, these studies were designed to understand how the program and policy elements could be applied to EPR in Washington State to address issues of sustainable financing, consistency of programming and messaging, economies of scale, and contamination reduction.

Container deposit systems, also commonly referred to as DRS, have proven to be very effective at achieving high redemption rates for the aluminum, glass, and plastic containers covered in the system. DRS can be a system for beverage container stewardship separate from, complimentary to, or included within an EPR system.

Beverage container flow through a DRS System (Source: King County Solid Waste Division) [33]

The Container Deposit Study assessed the effects of implementing a DRS for beverage containers in Washington State as well as the impacts of an EPR system for packaging and

[32] King County Solid Waste Division, "Container Deposit Study: Executive Summary" December 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-container-study-executive.ashx?la=en.
King County Solid Waste Division, "Deposit Study: Phase I: Inventory of Existing Container Programs," December 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-container-study-phase-1.ashx?la=en.
King County Solid Waste Division, "Deposit Study: Phase II: A Beverage Container Deposit System for Washington - Qualitative Research and Recommendations," December 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-container-study-phase-2.ashx?la=en.
King County Solid Waste Division, "Container Deposit Study: Phase III: Costs and Benefits of Residential Packaging and Paper Product Recycling in Washington State," December 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-container-study-phase-3.ashx?la=en.
[33] King County Solid Waste Division, "Executive Summary – Container Deposit Study: Analysis of Residential Packaging and Paper Product Recycling in Washington State," December 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-container-study-executive.ashx?la=en.

paper products. It includes an overview of future system scenarios, including EPR, DRS, and EPR combined with DRS modeled against the current system. Key findings include:

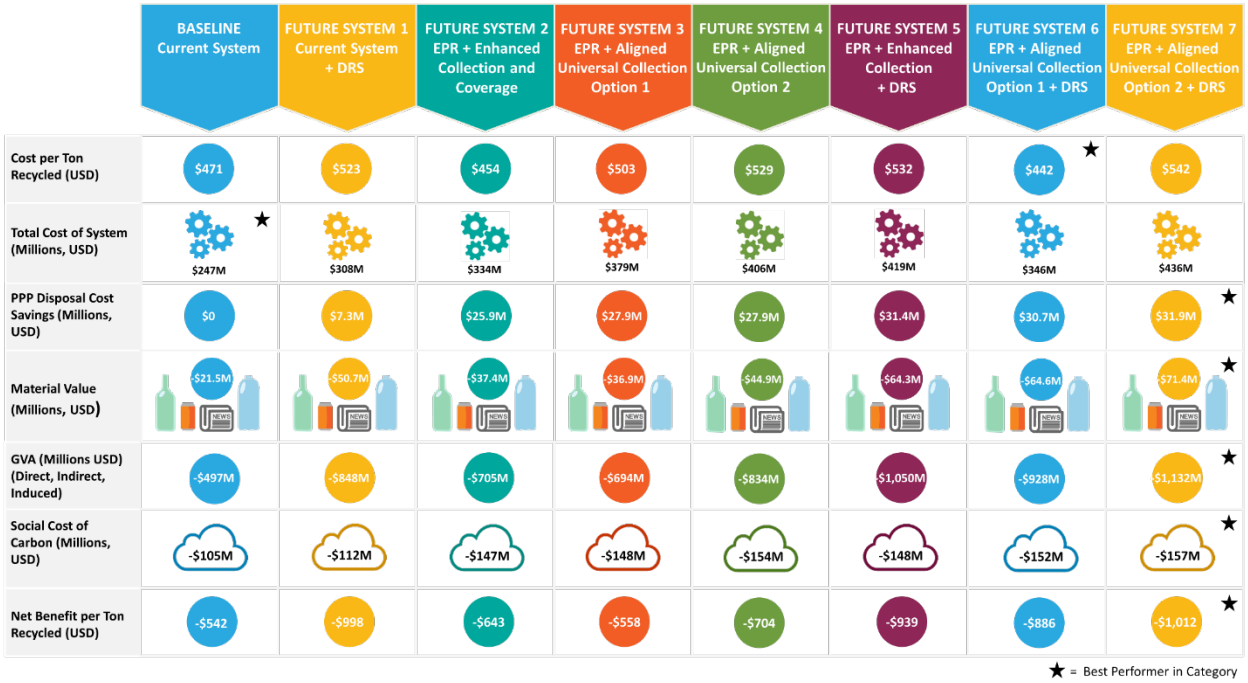
- All future systems modeled with EPR and DRS, separately or together, result in better net benefits than the current system, including contributions to the local economy and the social costs of carbon emissions due to climate change impacts.
- All systems result in an increase in the amount of material captured and recycled at no additional cost to the ratepayer.
- EPR in Washington would save between $90 to $121 per household per year, create between 1,650 and 2,600 new, local jobs in the state, and reduce the amount of packaging and paper products going to landfill by 20%.
- This additional recycling would reduce greenhouse gas emissions by between 565,000 and 650,000 tons of CO2 equivalent, equal to removing between 120,000 to 138,000 vehicles from the road each year.

The results of analysis in the Container Deposit Study demonstrated that a policy for EPR for packaging and paper products, whether including a container DRS or not, would lead to better outcomes and higher net benefits compared to the current system of residential recycling in the state. And like the findings of the EPR Policy Framework and Implementation Model, results of the Container Deposit Study have informed the work of the Northwest Product Stewardship Council packaging policy committee.

Extended Producer Responsibility for Packaging and Paper Products

SPU and King County also reviewed and provided input on "Extended Producer Responsibility for Packaging and Paper Products: Policies, Practices, and Performance," published in 2020 by the Product Stewardship Institute.[34] The Product Stewardship Institute's report outlines how EPR programs in four Canadian provinces have increased packaging recovery and recycling, reduced contamination, and developed markets for difficult to recycle materials. It includes a detailed case study of the packaging EPR program in British Columbia.

[34] Product Stewardship Institute, "Extended Producer Responsibility for Packaging and Paper Products: Policies, Practices, and Performance," March 2020, https://cdn.ymaws.com/www.productstewardship.us/resource/resmgr/1/PSI_EPR_for_PPP.pdf.



Overview of environmental and social benefits of alternative systems to manage packaging (Source: King County Solid Waste Division)[35]

This study adds to the growing research available to inform the development of EPR systems in Washington and around the world.

Draft Proposal for Extended Producer Responsibility for Packaging and Paper Products

The findings from each of the studies presented in this section have helped inform a draft policy proposal for EPR for packaging and paper products developed by the NWPSC, including representations from SPU. This draft proposal was incorporated into two bills introduced in the 2021 Legislative Session, House Bill 1118 and Senate Bill 5022. An amended version of Senate Bill 5022, also called the 2021 Plastics Law, was adopted without the EPR element, and it is anticipated that House Bill 1118 will be reintroduced in the 2022 legislative session or replaced with a new revised bill that includes EPR for packaging and paper products.

[35] King County Solid Waste Division, "Executive Summary – Container Deposit Study: Analysis of Residential Packaging and Paper Product Recycling in Washington State," December 2020, https://kingcounty.gov/~/media/depts/dnrp/solid-waste/about/planning/documents/task-force-container-study-executive.ashx?la=en.

Recommendations

SPU developed two recommendations to expand producer involvement in recycling waste from the products they manufacture and sell to Seattle consumers.

Continue to explore and implement product stewardship policies and programs that require producers, manufacturers, and/or retailers to take back and recycle the products they sell

SPU should evaluate, propose, and support opportunities to establish producer involvement in end-of-life materials management through product stewardship. SPU will continue to monitor emerging problematic products and identify stewardship strategies to address them. Problematic products include those associated with broader environmental issues, such as plastic pollution and toxics. In proposed product stewardship programs and legislation, SPU will advocate for equity such as through strong convenience standards that consider all community members.

Expanded EPR policies considered in this recommendation include statewide programs for:

- **All packaging materials,** based on findings and recommendations from a dedicated study.
- **Plastic packaging only**, modeled after House Bill 1204 of the 2019 legislative session. This bill did not pass, but its companion bill in the Senate, Senate Bill 5397 (codified as RCW 70A.520), passed as a study bill. Results of the study and recommendations were submitted to the Legislature in autumn 2020. The primary policy recommendation was to implement EPR for all packaging, not just plastic. As a result of the study and recommendations, it is likely that EPR for all packaging materials, not just plastics, is the more effective and viable approach to support in Washington.
- **Batteries**, specifically single-use and rechargeable batteries weighing up to five kilograms (11 pounds) each. Addressing larger rechargeable batteries used for solar and electric vehicles should be considered.
- **Carpet** from residential and commercial generators.
- **Beverage containers**, through a container deposit system that could be considered in conjunction with, or as an alternative to, stewardship options for all packaging.
- **Electronic peripherals**, such as cell phones, keyboards, or computer mice, added to the existing E-cycle Washington program. The current program covers only televisions, computers, laptops, monitors, tablets, and e-readers.
- **Mattresses**, which have existing EPR programs in other states.

Other future potential stewardship programs to consider include the following: all household hazardous waste, all lighting products, cigarettes and vaping devices, furniture, gas cylinders, textiles, sharps, smoke and fire alarms, fishing and aquaculture gear, and other products.

SPU may also consider and evaluate a *local* EPR program for plastic wrap and bags under three conditions: (1) voluntary, industry-led efforts to address this material are inadequate to meet SPU's goals; (2) plastic wrap and bag management is found to benefit from regulation; or (3) state-level EPR for plastic packaging or all packaging are not successfully implemented. For a local EPR program for plastic wrap and bags, SPU should consider all non-compostable plastic bags and product wrap made of two types of plastics (LDPE or HDPE), including materials used for e-commerce, retail sales, or packaging. Producers of products packaged in plastic wrap or bags and companies that provide plastic wrap and bags to customers in Seattle would be required to finance and provide responsible collection and recycling system for those materials within the city, from all sectors. SPU should consider requirements for retail take-back for plastic wrap and bags, if implemented.

Continue to support and expand industry-led, voluntary retail take-back of plastic wrap and bags

This recommendation is intended to improve, expand, and promote voluntary retail take-back of plastic wrap and bags through industry-led collaboration. In January 2020, SPU removed plastic wrap and bags from the list of materials accepted for residential recycling. Work to develop a take-back-to-retail collection system was delayed due to the COVID-19 pandemic. Though the State's ban on single-use plastic bags will eliminate many single-use carryout plastic bags, it allows for the use of plastic carryout bags that are 2.25 millimeters or more thick and many other plastic bags that could be recycled if not reused. In addition, retail take-back programs take many other forms of plastic wrap, such as product overwrap for toilet paper. The industry-led collaboration would establish markets, collection and transportation infrastructure, incentives, and responsible recycling. This voluntary program would be in place only until plastic bags and wrap are included in an EPR system for all packaging.

In this strategy, SPU should provide outreach and education to the commercial sector (specifically brand retailers, brand grocers, and local grocers) to support industry-led collection and retail take-back for plastic wrap and bags. Existing SPU commercial outreach and education will promote various collection options.

Composting

In Seattle, composting is the predominant method of recycling organics to divert food and yard waste from landfills. Composting organic materials, such as yard and food waste, recycles them into a beneficial soil amendment and imitates the natural processes of decay and regeneration. Composted organic materials are critical for long-term resiliency in this region because of their many environmental benefits.

Diverting organic material from landfills to composting reduces environmental impacts associated with landfilling this material, and it creates compost, a powerful tool for regenerating depleted soils. The emissions reduction potential of diverting Washington's food scraps from landfills through composting for just one year is equal to approximately 1.8% of Washington's 2050 greenhouse gas emissions reduction goal.[36]

Two individuals deposit food waste into a food and yard waste cart (Source: SPU Image Library)

The end-product from composting has significant environmental benefits. Compost supports restoration of soil health, stormwater management, biofiltration, erosion control, water conservation, and soil carbon sequestration. Moreover, compost supports healthy plant growth in urban landscapes and agricultural sites alike. One other benefit of using recovered organic products like compost is greenhouse gas reduction and climate adaptation through soil carbon sequestration, which is the process of removing carbon dioxide from the atmosphere and restoring it to depleted soil reserves.

[36] McKenna Morrigan, "Reducing Greenhouse Gas Emission Emissions through Recycling and Composting in California, Oregon, and Washington," The Evans School Review Vol 1, Num 1, Spring 2011, https://depts.washington.edu/esreview/wordpress/wp-content/uploads/2012/12/ESR-2011-Research-Reducing-Greenhouse-Gas-Emissions-Through-Recycling-and-Composting.pdf.

Activities such as agriculture and other development have degraded the quality of soil and the amount of carbon stored in soil. Applying compost and other carbon-based soil amendments while adopting soil conservation practices can restore carbon to soil, helping to reduce greenhouse gas emissions, support mitigation of climate change, and promote resiliency of the environment including drought and erosion resistance. To gain these broader environmental benefits, it is critical to ensure compost is good quality, free of chemical or physical contaminants, and widely used. Seattle promotes efforts to compost organic waste and create programs that encourage the use of compost.

What's Compostable

SPU has encouraged composting for more than three decades. Since 2012, food and yard waste service has been required for all residential buildings with one to four units, and since 2015, one can no longer put food and compostable paper, including food-soiled pizza boxes, paper napkins, and paper towels, in the garbage. Yard debris such as leaves, grass, and plant trimmings have not been allowed in the garbage since 1988.[37]

Food and yard waste (or compost) collection service is required for nearly every home and business in Seattle. It is an important part of sorting waste that helps the environment and cuts down on costs. Appendix F, *Economics of Residential Recycling in Seattle*, provides detailed discussion of how Seattle's residential compost programs have decreased household disposal rates, saved ratepayers money, and reduced potential human illnesses and other environmental pollution impacts.

Yard waste may include leaves, branches, plants, and approved compostable food packaging. The most common food-related items for composting in the food and yard waste carts are meat, fish, poultry, and bones; dairy products, such as yogurt, cottage cheese; vegetable and fruit trimmings; eggshells, bread, pasta, and coffee grounds; and food-soiled paper and cardboard like pizza boxes, paper coffee filters napkins, paper towels, brown paper bags and paper plates.

[37] Seattle Municipal Code prohibits the disposal of food scraps, compostable paper, yard waste, and recyclables in residential (SMC 21.36.083) and commercial (SMC 21.36.082) garbage.

Food waste discarded into compost cart (Source: SPU Image Library)

Businesses that generate food waste or compostable paper must subscribe to a composting service or self-haul their food waste to a transfer station for processing. For sector-specific details about compost collection, including limited free collection offered by Seattle's contracted waste haulers, see Chapter 6, *Solid Waste Handling Collection and Removal*.

To encourage the use of compost made from locally processed food scraps and yard waste, Seattle offers free Compost Giveaway Events. In 2021, SPU held eight events, distributing 364 cubic yards of compost for use in gardens and vegetable patches. At these free events, customers bring a container and shovel to receive up to a half yard of bulk compost, helping complete the loop from compost cart to garden and promoting the benefits of using compost.

Recommendations

SPU developed four recommendations related to organics. Two recommendations focus on increasing food waste and compostable paper collected for composting while one focuses on expanding the market for finished compost products to close the loop. The final recommendation in this chapter examines options to divert materials that are currently unrecoverable.

Require all single-use food service packaging to be compostable and harmonize acceptance standards for compostable products

Seattle Municipal Code (SMC) currently requires food service businesses to use recyclable or compostable materials for single-use food service packaging. However, single-use food service packaging that is recyclable in theory is often not recycled in practice because it is soiled with food, not clean enough for the recycling system, difficult to sort at the processing facility, or low in market value. Switching to all compostable food service products could reduce contamination in both organics and recycling streams and ensure a pathway for diversion for single-use food service products.

SPU could revise SMC 21.36.086 to require food service businesses to provide only compostable food service packaging. Potential benefits of this approach include:

- Capturing food service packaging and related food waste for diversion through composting
- Simplifying packaging options to reduce confusion among food service businesses and customers on which products are approved for distribution and accepted for composting
- Reducing contamination in materials collected for recycling and for composting since confusion is reduced
- Minimizing the generation of (1) recyclable plastic food service packaging, which has limited recyclability in practice, (2) material that is contaminated, and (3) material that may contain food waste that is not properly diverted

To be successful, this strategy requires updating and harmonizing lists of single-use compostable products that are accepted and can be processed by contracted organics processors and further reducing customer confusion about which container they should use to dispose of food service products.

Continue to refine and develop strategies to keep more food waste and compostable paper out of the garbage

SPU should continue to refine and develop strategies focused on recovering food waste and compostable paper (both through edible food rescue and increasing diversion of compostable material from the landfill), particularly from sectors where capture rates are lagging.

Continue to support market development for compost products

As municipal organics recycling (primarily composting) expands throughout Washington, local composting facilities require growing markets for finished products to close the loop. SPU can support compost market development by promoting compost uses for stormwater management, soil-building after land development, sustainable agriculture, and climate mitigation and adaptation uses. SPU could support these end uses for compost by:

- Conducting research on soil carbon sequestration and soil health impacts of compost and end products from anaerobic digestion and other organics processing technologies. Research could include quantifying potential greenhouse gas reduction benefits from use of compost and other organics processing products to the geography covered by the Pacific Coast Collaborative, described in Chapter 4, *Waste Prevention and Reuse*. This effort is aligned with commitments made through Seattle's membership in the Pacific Coast Collaborative. Outcomes from this research could drive new investments and support soil health initiatives, local and state policy development, and composting and other organics recovery technologies.
- Promoting the use of SITES® or other sustainable landscaping standards around the region and requiring them for City projects. Sustainable site and landscape design, construction, and maintenance practices yield multiple benefits, including onsite organics reuse (source reduction through mulching and grasscycling or mulch mowing), increased organics diversion to offsite composting, water conservation, or stormwater management, and public health benefits from increased green space and reduced climate impacts.
- Continuing partnerships with other government agencies and professional groups. Opportunities include expanding professional education on topics like compost use for stormwater applications and identifying partnerships to support compost use on both public and private property. SPU can work collaboratively throughout King County and Washington State to expand compost use in sustainable agriculture for soil health, and climate mitigation and resiliency purposes. Key collaborators would be King County Department of Natural Resources, the King Conservation District, Washington State University, University of Washington, Washington State Department of Agriculture, and Washington State Conservation Commission.

Assess options for diaper and pet waste recovery

In the future, SPU should assess next steps for diaper and pet waste diversion from landfill. Diaper and pet waste composting was a recommendation included in the *2011 Solid Waste Plan Revision*, although implementation (previously recommended for 2020) has been postponed. For the *2022 Plan Update*, this strategy is recommended for the long-term (more than five years from now), unless conditions warrant implementing it sooner. SPU is considering two approaches for diaper and pet waste recovery:

- **Large commercial generators only.** One option for diaper and pet waste recovery is to focus on large commercial generators first, such as childcare facilities, adult care and nursing facilities, dog parks, and daycare and boarding for pets. In this option, SPU should consider introducing onsite collection for the largest generators of diapers and pet waste.
- **Residential collection.** In this option, SPU should identify and evaluate options that would allow for safe collection of pet waste and diapers.