4 Waste Prevention and Reuse

Contents

Figures and Tables

Chapter 4 Waste Prevention and Reuse

Overview

Waste prevention keeps waste from entering the waste stream in the first place, yielding the greatest environmental gains of any waste management strategy. For example, waste that is prevented—not generated in the first place—does not require downstream management, it cannot become litter, it does not affect the quality of collected materials or become a contaminant in recycling or compost, and it does not require an end market for recycled products.

Beyond reducing downstream waste, waste prevention reduces wastes and impacts that would have otherwise occurred "upstream" during resource extraction, manufacturing, and other life cycle stages before purchase. For most products and packaging, these upstream stages, particularly resource extraction and manufacturing, create the largest life cycle environmental and human health impacts.[1] By addressing waste at its source, waste prevention can:

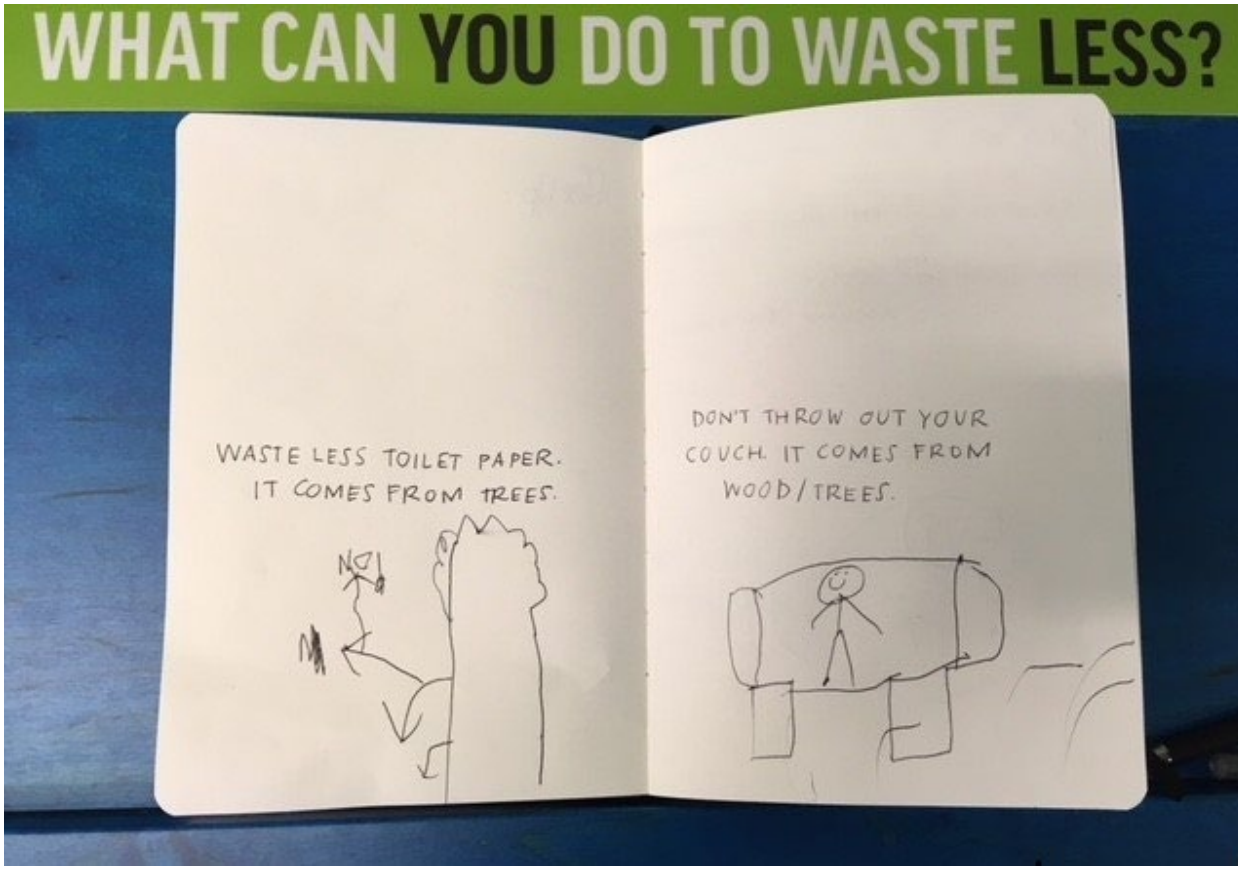
- Enhance the resilience of the solid waste management system by reducing the amount of waste and toxics produced in the first place.
- Support other local environmental priorities like reducing litter, decreasing greenhouse gases and toxins, and preventing stormwater pollution.
- Minimize overall life cycle impacts of materials.

SPU encourages waste prevention by providing customers with useful, reliable, and easy-to-understand information that empowers people to become better informed consumers and promotes more efficient use of products and materials at home and in business and industrial settings. The goal is to change customers' mindset so they see reducing all waste, including

[1] In addition to environmental and health benefits, waste prevention offers economic benefits, though SPU and other leaders in waste prevention are still in the early stages of determining how to identify and measure those benefits. See Chapter 2, *Maximizing and Measuring Impact: Moving Upstream Beyond the Recycling Rate,* for a discussion of measuring upstream benefits

recycling and food and yard waste, as important as reducing garbage. SPU's current waste prevention work focuses on:

- Supporting food rescue efforts that prevent waste by getting edible food to those that need it most
- Promoting informed purchasing and consumption by institutions, businesses, and individuals
- Eliminating unnecessary single-use items
- Funding organizations that emphasize waste prevention in their communities
- Promoting regenerative natural yard care practices that avoid the use of toxic fertilizers, pesticides, and herbicides



A North Transfer Station visitor's suggestion for things you can do to waste less. (Source: SPU Image Library)

This chapter begins with recommendations on prioritizing waste prevention by developing programs and policies rooted in research and data and creating outreach and education campaigns to promote waste prevention. The chapter then covers SPU's current waste prevention efforts, how they are measured, and recommendations for action in the future. The chapter is organized by subject as follows:

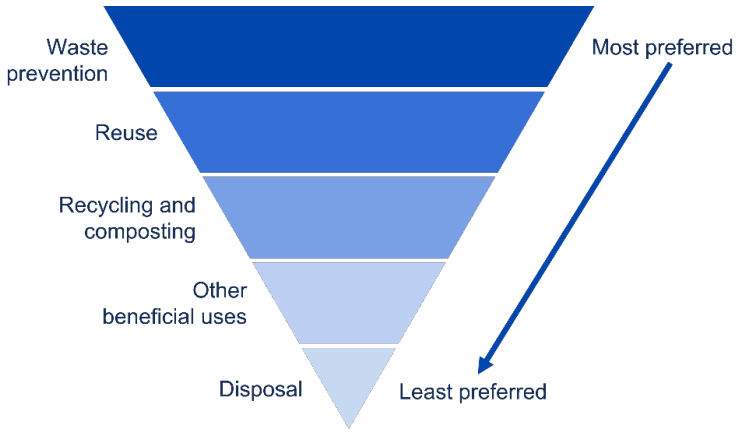
- Prioritizing waste prevention
- Food waste prevention and food rescue
- Product-related waste prevention (excluding extended producer responsibility, or EPR)
- Waste-Free Communities Matching Grant
- Natural yard care
- Green purchasing
- Reuse and repair

For a discussion of EPR, which touches many elements of the material life cycle, see Chapter 5, *Recycling and Composting Policy and Markets*. For a discussion on waste prevention related to construction and demolition debris, including reuse of salvaged building materials, see Chapter 8, *Construction and Demolition Debris*.

Prioritizing Waste Prevention

SPU is increasingly aligning its priorities and programs with waste prevention, which sits at the top of the waste management hierarchy used by both the US Environmental Protection Agency (EPA) and Washington State (Figure 4.1). Reuse falls next on the hierarchy, which involves finding a new user or use for a product that is no longer wanted by the original user for its original use, such as donating unwanted clothing to a thrift shop. While reuse is better than disposal, eliminating clothing waste in the first place provides more environmental benefits.

Figure 4.1 Solid Waste Management Hierarchy



Source: Cascadia Consulting Group for Seattle Public Utilities, aligned with Ecology and EPA hierarchies.

Recommendations

To identify, prioritize, and support implementation of waste prevention-focused programs and policies, SPU should invest in new research and analysis.

Prioritize and support waste prevention with program research, data analysis, and metrics

SPU should conduct new research and analysis to shape and inform new areas of focus, new programs, and new methods and metrics to evaluate program success that incorporate environmental benefits.

In support of this recommendation, SPU is developing a *Waste Prevention Strategic Plan* in 2022–24. SPU's *Waste Prevention Strategic Plan* will continue the work started with the *2022 Solid Waste Plan Update* to define metrics and targets that can track progress of specific waste prevention efforts and measure triple-bottom-line improvements for the environment, the economy, and society. This effort may involve or recommend:

- Developing and implementing surveys to assess Seattle residents' and businesses' current attitudes and actions around waste prevention, particularly for materials with high environmental impacts as identified through waste composition studies and life cycle assessments
- Identifying and regularly monitoring the emergence of products that are hard to recycle or that could have large environmental impacts if not appropriately managed; developing waste prevention strategies to address these products
- Expanding analyses around circular economy, such as the potential environmental and economic impact of sharing, reuse, and repair of durable items if used more broadly citywide
- Considering how to better embed considerations around waste prevention, life cycle environmental impacts, and other Solid Waste Utility goals into future development of new solid waste projects or policies
- Exploring strategies to promote sustainable consumption, such as researching effective framing and message development with a diverse cross-section of Seattle's community
- Identifying and collaborating with potential partners that work on environmental and economic issues in other City departments, including the Office of Economic Development and Office of Sustainability & Environment, and other public agencies, such as King County
- Considering additional changes to waste composition study methodologies to better measure waste prevention; for example, SPU's 2020–2021 residential waste composition study separated edible from non-edible food waste

- Developing a companion tool for SPU's Recycling Potential Assessment model that assesses the potential impacts of waste prevention
- Developing methods to measure citywide participation in waste prevention activities, either overall or broken down by zip code, business sector, or demographic information
- Developing a mechanism to measure and track food waste to support Seattle's commitment to reduce food waste by 50% by 2030 from a 2015 baseline
- Develop citywide methods to quantify the current level of rescued food and the progress made toward increasing the volume and improving the quality needed to address food insecurity
- Developing reliable and robust ways to measure (1) current reuse and repair in its many forms, (2) reuse and repair potential, and (3) the economic, social, and environmental impacts of reuse and repair

SPU anticipates publishing the Waste Prevention Strategic Plan in 2024. Concurrent with this effort, SPU will continue to track and analyze available solid waste data and key trends. See Chapter 3, *Seattle Data and Trends,* for a detailed discussion of the solid waste data sources and historical trends that SPU uses to inform solid waste planning and facilities in Seattle. SPU's prioritization and support for waste prevention programs, while important, will not result in the needed environmental, social, and economic benefits if Seattle residents and businesses are not aware of and motivated to use them. The next recommendation outlines efforts to increase community awareness of waste prevention through coordinated campaigns.

Increase community awareness of waste prevention through coordinated outreach

A key component of building a waste prevention ethic in Seattle will be increasing community awareness about the importance of waste prevention and specific actions people can take to prevent waste. Specifically, SPU should:

- Develop and implement waste prevention campaigns to build awareness about the importance of prevention and specific actions people can take to prevent waste. These campaigns may be specific to topics mentioned in this chapter, such as food waste prevention, textiles, or repair. SPU may also implement campaigns with more broadly focused waste prevention messaging, helping the community understand why prevention is important.
- Create shared citywide and potentially regionwide messaging and branding to help customers make the connection between different waste prevention efforts.
- Where feasible, incorporate waste prevention into existing recycling education to further SPU's commitment to leading with prevention.

- SPU will continue to collaborate with agencies, businesses, and community organizations to expand its reach on waste prevention, engaging with:
  - **Industry groups** on promoting the role of waste prevention—in addition to recycling and discards management—in meeting the region's environmental, economic, and social equity goals
  - **Local zero waste organizations, reuse and repair businesses and nonprofit organizations, and charities** that provide and can expand services, repair electronics and other products, accept donations for resale, and participate in product stewardship programs
  - **Circular economy and environmental groups** that promote waste prevention within communities, such as "Buy Nothing" Facebook groups, tool libraries, repair and reuse organizations, and nonprofit groups like Zero Waste Washington
  - **Community-based equity organizations** and organizations serving diverse populations
  - **Other community-based organizations (CBOs)**, such as faith-based, healthcare, and hunger-relief groups

More information on waste prevention outreach and education-related efforts appears in the recommendations for Outreach, Education, and Enforcement in Chapter 9, *Outreach, Education, Enforcement, and Compliance*.

Food Waste Prevention and Food Rescue

Food is the single largest component found in Seattle's residential (29.5%) and commercial (24.5%) garbage waste streams and has a disproportionately large environmental impact.[2][3] And while Seattle is recognized as a leader for requiring food and yard waste collection across all sectors, composting does not reduce the estimated $408 billion spent each year in the U.S. to grow, process, transport, store, and dispose of food that is never eaten.[4] Beyond economic impacts, the production, transportation, and disposal of wasted food is estimated to generate between 4% to 10% of the world's greenhouse gas emissions.[5][6] The social impacts of wasted food are also significant.

[2] Seattle Public Utilities, "Residential Waste Stream Composition Study Final Report," 2014, www.seattle.gov/documents/Departments/SPU/Documents/ResidentialWasteStreamCompositionStudy2014.pdf.
[3] Seattle Public Utilities, "Commercial Waste Stream Composition Study Final Report," 2016, www.seattle.gov/documents/Departments/SPU/Documents/2016CommercialWasteStreamCompositionStudy.pdf.
[4] ReFED, "Roadmap to 2030: Reducing U.S. Food Waste by 50% and the ReFED Insights Engine: At-A-Glance," 2021, refed.com/uploads/refed_roadmap2030-FINAL.pdf.
[5] Ibid,.
[6] Word Wildlife Fund, "Driven to Waste: Global Food Loss on Farms Report Summary," July 2021, https://wwfint.awsassets.panda.org/downloads/driven_to_waste_summary.pdf.

From the United Nations to more locally in our state, governments and businesses have committed to halving food loss and waste by 2030. To address food waste and wasted food in Washington, the 2019 Washington State Legislature passed House Bill (HB) 1114, now codified as RCW 70A.205.715.[7] The law established statewide food waste reduction goals, relative to 2015 levels, including reductions in the amount of edible food wasted. The law also required the Washington State Department of Ecology (Ecology) to develop and adopt a statewide food waste reduction plan, establish food waste baseline data, and annually track progress toward statewide goals. In December 2021, after consultation with the Washington State Department of Agriculture, Washington State Department of Health, stakeholder advisory panels, and the public, Ecology released its plan, Use Food Well Washington.[8]

Love Food, Stop Waste outreach at High Point Health Fair on 2019 (source: ECOSS)

In support of the goal to halve food loss and waste by 2030, Seattle is working to reduce food waste across the city, described in detail in the sections that follow:

- **Residential food waste prevention** that happens at home
- **Commercial food waste prevention** that occurs at businesses and nonprofit organizations such as grocery stores, large commercial kitchens, and food service enterprises
- **Commercial food rescue** of surplus food that businesses or nonprofit organizations donate to food banks and other hunger relief organizations instead of wasting
- **School food rescue** of surplus food from lunchrooms and cafeterias at public schools

[7] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.205.715
[8] https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Waste-reduction-programs/Organic-materials/Food-waste-prevention/Use-Food-Well-Washington-Plan

Love Food, Stop Waste (Residential Campaign)

A significant portion of wasted food in Seattle comes from the residential sector. As such, residential food waste prevention is one of the key strategies Seattle will use to fulfill its commitment to reduce food waste by 50% by 2030. In 2012, EPA Region 10 and the West Coast Climate and Materials Management Forum published a report to provide guidance on developing community food waste prevention programs. They developed this report in partnership with Western cities and states, including Seattle.

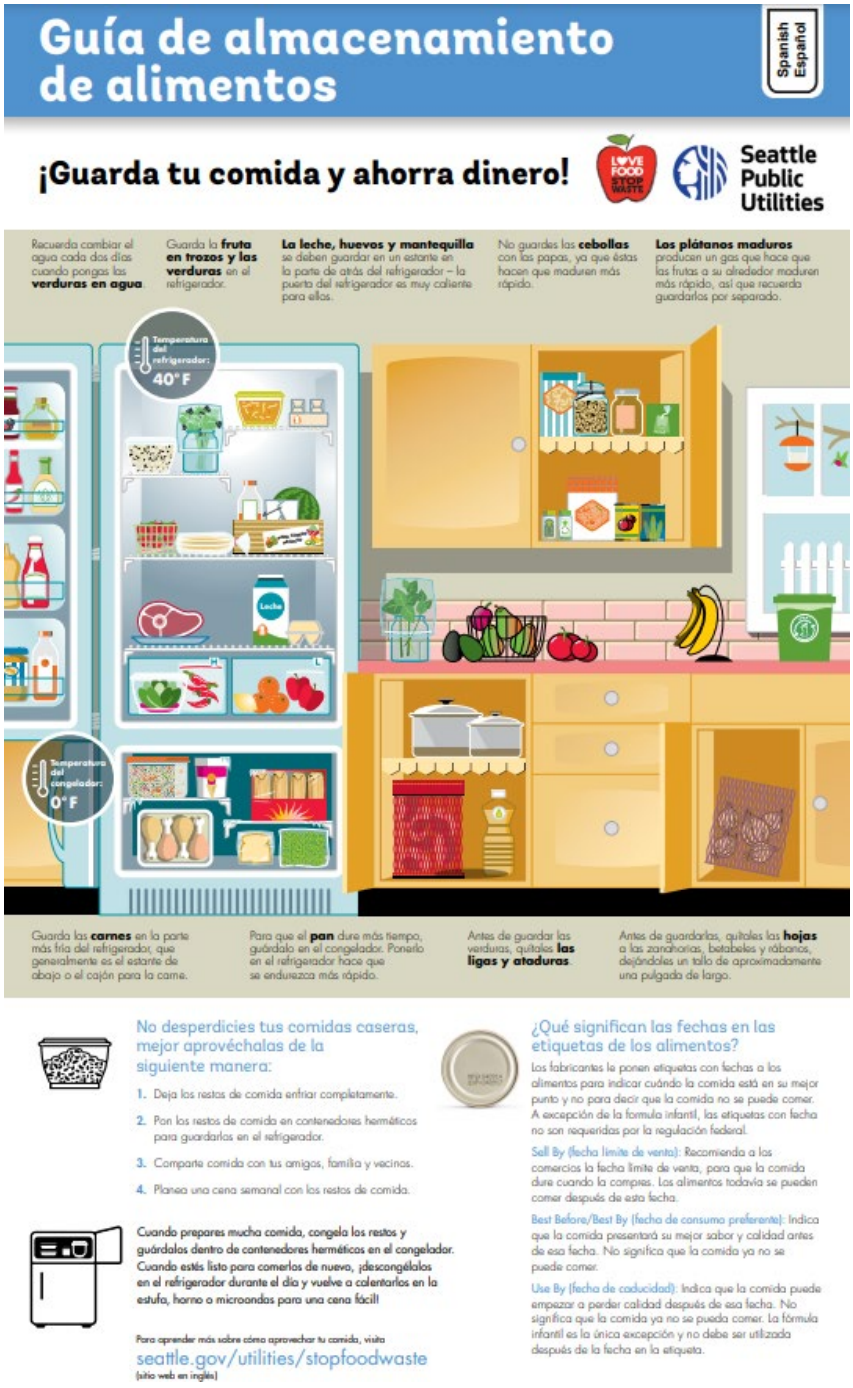
In 2013, SPU conducted a study to find how much of the food waste in Seattle's residential waste stream is edible and preventable. In the study, 119 households separated and weighed their edible and inedible food waste for 13 weeks. Inedible food waste includes bones, shells, peels, and pits. Study results showed that 32% of the food waste was edible, which equates to more than 10,000 tons of edible, and thus preventable, food waste in Seattle's residential waste stream, if extrapolated citywide.[9]

In 2014, SPU received a Coordinated Prevention Grant from Ecology to fund a food waste prevention pilot project. SPU began by conducting a survey of 445 households to establish a baseline understanding of food waste prevention awareness, knowledge, behaviors, barriers, receptiveness, and opportunities in Seattle. Informed by survey results, SPU developed and piloted its messaging, materials, and engagement strategies.

SPU used lessons learned from the pilot to develop the current *Love Food, Stop Waste* program, which continues to provide information and resources to help Seattle's residents waste less food. SPU is working to ensure equitable engagement in the program through transcreating content and partnering with community organizations to provide in-language, culturally relevant, and effective engagement. Where translation simply changes words into another language, transcreation ensures the meaning is clear and relevant in another culture. Figure 4.2 shows a transcreated Spanish-language residential food storage guide created through this program.

[9] University of Washington Center for Public Health Nutrition, "Food Waste Prevention and Recovery Assessment 2015 Report," prepared for Seattle Public Utilities and City of Seattle's Office of Sustainability and Environment, 2015, www.seattle.gov/Documents/Departments/OSE/Food%20Waste%20Report_FINAL_121815.pdf.

Figure 4.2 Residential Food Storage Guide (Spanish)



Source: [www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/waste-prevention/at-home/stop-food-waste/food-storage.](www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/waste-prevention/at-home/stop-food-waste/food-storage)

Commercial Food Waste Prevention

In 2016, Rethink Food Waste through Economics and Data (ReFED) published a comprehensive analysis of U.S. food waste and solutions, estimating that consumer-facing businesses, such as grocery retailers, restaurants, institutions, and food service businesses, generate approximately 40% of all food waste.[10][11] Consequently, food waste prevention represents the greatest potential for cost savings and environmental benefits for food-related businesses.

Then in 2017, a study by the World Resources Institute across nearly 700 companies and 17 countries found that for every $1 companies invested in reducing food loss and waste, they saved $14 in operating costs.[12][13] In the United Kingdom, industry-supported voluntary agreements under Courtauld Commitment 3 led to over £100 million in business savings from 2013 to 2015.[14] These same agreements led to a reduction of 555,000 tons of carbon dioxide emissions. Changes in manufacturing, packaging, retailing, food service, and date labeling all offer potential to prevent food waste.

Achieving significant food waste prevention across Seattle food businesses and their suppliers will take collective partnership beyond city limits. One way Seattle is leveraging large scale partnerships is through the Pacific Coast Collaborative (PCC).[15] The PCC is a coalition of governments focused on reducing greenhouse gas emissions and creating a vibrant, low carbon economy along the West Coast. PCC jurisdiction partners include British Columbia, Washington, Oregon, California; the cities of Vancouver, Seattle, Portland, San Francisco, Oakland, and Los Angeles; and King and Alameda counties.

The PCC's *Voluntary Agreement to Reduce Wasted Food* calls upon food retailers, manufacturers, and their supply chains to commit to reducing and preventing regional (West Coast) food waste by at least 50% by 2030. By signing onto this agreement, signatories:

- Support and act to achieve the regional goal to reduce wasted food by 50% by 2030
- Annually measure and report food waste reduction data for ongoing analysis
- Take actions to reduce food waste, with an emphasis on prevention-related solutions

[10] ReFED, "A Roadmap to Reduce U.S. Food Waste by 20 Percent," 2016, refed.com/downloads/ReFED_Report_2016.pdf.
[11] https://refed.org/
[12] Hanson and Mitchell, "The Business Case for Reducing Food Loss and Waste," 2017, champions123.org/sites/default/files/2020-08/business-case-for-reducing-food-loss-and-waste.pdf.
[13] https://www.wri.org/
[14] WRAP, "Courtauld Commitment 3: Delivering Action on Waste (Final Report)," 2017, www.wrap.org.uk/content/courtauld-commitment-3-delivering-action-waste.
[15] https://pacificcoastcollaborative.org/food-waste/

Along with these West Coast city, county, and state jurisdictions, Seattle is helping fund the expertise to achieve these ambitious goals. This project brings national and international expertise from ReFED, World Wildlife Fund, and the Waste and Resources Action Program (WRAP).[16][17] It will mirror the approach taken in the United Kingdom, where WRAP effectively cut the UK's food waste by 19% over five years.

So far, Albertsons Companies West Coast divisions, includes Albertsons, Safeway, Vons, and Pavilions; the Kroger Company, encompassing QFC and Fred Meyer; PCC Community Markets; New Seasons Market; Raley's; Sprouts Farmers Markets; Walmart; Food Northwest; and Bob's Red Mill have signed on to this commitment and are beginning to take early actions, such as uploading their data through ReFED's Food Loss and Waste Calculator tool. These signatories represent over 50% of the grocery market share in Washington and 41% across the West Coast. Over time, recruitment will expand to bring in more retailers along with other sectors such as manufacturers, hospitality, and other food-related businesses.

Apples from City Fruit, a Seattle-based organization that harvests urban fruit and reduces food waste (Source: SPU Image Library)

[16] https://www.worldwildlife.org/
[17] https://wrap.org.uk/

In the past, SPU has contracted with organizations, such as Leanpath, to work directly with businesses to reduce waste and measure the results in the commercial sector.[18] SPU will work with retail food businesses under the PCC agreement and develop new methods to measure and aggregate results from this regional approach to prevention. Work is underway to establish a mechanism to measure and track food waste to support commitments under the PCC to reduce food waste by 50% by 2030 from a 2015 baseline.

Food Rescue

SPU is also actively involved in facilitating the rescue of edible food. Food rescue is the process of collecting nutritious, surplus food from retail establishments and donating it to organizations, such as food banks, meal programs, that serve people who need it the most. Rescuing and redistributing volumes of food is complex and expensive: it requires trucks, drivers, cold storage, kitchens, and staff to sort, stock, de-package, and prepare into meals or pantry items.

In 2015, SPU and the Office of Sustainability and Environment provided funding to the University of Washington Center for Public Health Nutrition to conduct in-depth interviews with hunger relief agencies, nonprofits, local governments, and food-generating businesses to identify current challenges and opportunities in commercial food waste prevention and rescue in Seattle.[19] Research recommendations included:

- Taking an integrated systems approach to identifying solutions
- Developing a forum for collaboration with diverse stakeholders
- Exploring opportunities to leverage funding across agencies
- Increasing food donation infrastructure and capacity to receive and store more perishable food

Seattle's 2016 and 2017 waste composition studies indicated that surplus food is available to address local food insecurity. According to these studies, food makes up 43% of all commercial garbage and food and yard waste tons. Although the composition study data do not show how much of this food would have been safe and edible to consume, they suggest that more surplus food is available to address food insecurity.

[18] https://www.leanpath.com/
[19] https://www.washington.edu/research/research-centers/center-for-public-health-nutrition/

Grant-supported project led by City Fruit to rescue fruit from private property fruit trees and donate to local hunger relief agencies, 2018 (Source: Seattle Image Library)

Feeding America estimated before the COVID-19 pandemic that nearly one-quarter of a million King County residents were food insecure, of which over 15% are children.[2021] Hunger relief organizations report especially needing nutrient-dense, perishable foods, such as fresh protein, fruits and vegetables, and dairy. At the same time, ReFED estimates that nearly 80% of food wasted nationally comes from perishable foods.[22] Local hunger relief organizations consistently inform SPU that they have insufficient equipment, such as trucks and cold storage, and staffing to rescue enough food to meet the demand.

Beginning in 2018, SPU and Mary's Place, a local nonprofit organization that provides shelter and services to support women, children, and families, convened cross-sector events, called Food Rescue Innovation Labs, to identify gaps and opportunities in Seattle's food rescue infrastructure and to also understand the human impact of hunger in the community.[23] Stakeholders identified chronic challenges in transportation, cold storage, communications, and donor-recipient relationships. Figure 4.3 presents a graphic summary of topics discussed at the

[20] Feeding America, "Map the Meal Gap 2019: Overall and Child Food Insecurity by County in 2017," Accessed August 25, 2019, public.tableau.com/profile/feeding.america.research#!/vizhome/2017StateWorkbook-Public_15568266651950/CountyDetailDataPublic.
[21] https://www.feedingamerica.org/
[22] ReFED, "A Roadmap to Reduce U.S. Food Waste by 20 Percent," 2016, refed.com/downloads/ReFED_Report_2016.pdf.
[23] https://www.marysplaceseattle.org/

first lab. Based on feedback from the Labs, SPU and Mary's Place also convened three roundtable discussions with transportation and logistics professionals from local hunger relief organizations to explore transportation solutions that might increase food rescue efficiencies. As an outgrowth of the roundtables, SPU funded research by the University of Washington Supply Chain Transportation Logistics Center, which showed that barriers in communication and shared data make it even more difficult to fill infrastructure gaps.[24]

The COVID-19 pandemic, which began to impact the local economy and food rescue infrastructure in March 2020, has further fragmented food rescue operations and reduced nonprofit capacities to try new approaches. At the same time, the number of people experiencing food insecurity continues to grow. In 2021, SPU is working with grocery retailers and their grocery rescue partners to assess rescue operations and identify recommendations such as how to standardize grocery rescue practices across donor employees and hunger relief organization volunteers, increase the reliability of donation pickups, and better measure grocery rescue results, all in service of reducing wasted food.

Figure 4.3 Graphic Notes from the 2018 Food Rescue Innovation Lab

Source: Maketa Wilborn, "Sketch Notes" from the Food Rescue Innovation Lab 2018.

School Food Share

Anyone who has visited a school cafeteria knows that a tremendous amount of edible food is wasted daily. In 2017, SPU helped launch *School Food Share*, a pilot program with Seattle Public Schools (SPS) to collect uneaten, unopened, safe food from lunchrooms and donate it to local hunger relief organizations. Building on successful food rescue programs in other local area

[24] https://www.supply-chain-transportation.uw.edu/

school districts, the pilot sought to explore operational barriers, understand how to prevent uneaten food, and determine how to scale up food rescue if the results were positive.

A local nonprofit, EarthGen (formerly Washington Green Schools), helped coordinate SPS, SPU, and hunger relief organizations who collect and redistributed the food to individuals and families in need.[25] Three elementary, one middle, and one high school in West Seattle participated in the pilot program. While the pilot was logistically complex, the schools succeeded in donating over seven tons of uneaten, unopened edible food over the two-year period. EarthGen continues to work with SPS to prevent food waste on a larger scale, by leveraging lessons learned from the pilot:

- Having a designated site contact at the school to coordinate with volunteers to pick up the donated food and deliver it to the site where the food will be redistributed
- Creating a clear donation area in the lunchroom with ice packs to keep the food cold if needed
- Providing clear instructions about what foods are accepted for donation
- Providing consistent communication with the site coordinator, food redistributing organizations, and lunchroom staff to manage issues and keep the process running smoothly

Recommendations

SPU makes two recommendations to continue to expand food waste prevention efforts and to boost food rescue efforts.

Expand food waste prevention to reduce the amount of wasted food

For the commercial sector, SPU should leverage Seattle's participation in the PCC to engage food retailers, brand manufacturers, and supply chains, and work to secure industry-wide agreements to measure and reduce food waste. As part of the PCC, participating jurisdictions will have support from "Resource Partners" (contracted nongovernmental organizations) who will provide technical expertise to recruit businesses, establish individual food waste baselines, align measurement and reporting protocols, define business working groups, and lead technical support. This work has potential to expand beyond food retailers and manufacturers to other large food generating sectors like the hospitality sector, schools, and hospitals.

[25] https://earthgenwa.org

For residents, SPU should expand existing Seattle-specific, consumer-facing outreach and education programs, similar to the *Love Food, Stop Waste* campaign, to prevent residential food waste. While one-on-one engagement is an effective tool for behavior change, there is still a need to more broadly market the campaign to raise awareness about food waste, why it matters, and what residents can do to waste less.

SPU should consider how recommendations from Ecology's *Use Food Well Washington* plan might support food waste prevention across both sectors.

Expand efforts to rescue safe, edible food from the waste stream by getting it to those that need it most

SPU should support collaboration among (1) surplus food generators such as retailers and distributors, (2) hunger relief organizations, (3) community partners that can connect food rescue with community well-being such as healthcare providers and faith-based organizations, (4) those experiencing food insecurity, and (5) other public agencies with shared goals such Ecology and the Washington State Department of Health.

Collaborative efforts across these players could:

- Foster donor-recipient practices that increase communication, employee education, quality of donated food, and/or efficiencies of donation logistics
- Measure the amount of food that is successfully distributed to the ultimate consumer (individuals/families experiencing food insecurity) and identifying reasons for loss
- Test equipment such as colored carts and signage that standardize donation procedures and help reduce the need for frequent employee education
- Test methods to extend the life of surplus food when it cannot be immediately redistributed
- Pool resources across the donor-recipient system to share storage, transportation, staff, and knowledge

The next section describes SPU's efforts to promote and facilitate waste prevention for other products through policy solutions and industry engagement.

Product-Related Waste Prevention (Excluding EPR)

This section describes regulations and voluntary programs that Seattle has implemented to promote waste prevention for specific products. These programs and regulations cover materials such as plastic bags and other single-use packaging and products. Seattle designed

these programs to address areas with high potential to reduce litter and waste, address ongoing challenges such as recycling or food and yard waste contamination, and promote diversion. In addition to programs and regulations to manage specific product types, SPU also engages with manufacturers and producers upstream to support waste prevention and diversion goals. For information on programs and regulations specific to EPR, see Chapter 5, *Recycling and Composting Policy and Markets*.

Reducing Consumption of Single-Use Items

Display focused on reducing single-use items at the SPU South Transfer Station (Source: SPU Image Library)

The impacts of overconsumption of single-use items, particularly single-use plastics, have gained local, national, and international attention. Items like single-use plastics persist in the environment, but these materials are used to serve food and drinks that are consumed in a short period of time. Single-use plastic products represent a design mismatch of a long-lasting material being used temporarily, often for just minutes, before being disposed. In addition, some single-use plastic food service containers, such as polyethylene terephthalate (PET) or polypropylene (PP) folding "clamshell" containers commonly used for take-out food, are made of low value, difficult-to-recycle plastics that typically have been baled with other low-value mixed plastics and exported to Asia for sorting and recycling. Although they are currently accepted for recycling if cleaned of food waste, these materials potentially create social harm and pollution overseas where environmental, health, and safety protections to manage materials may be limited. Food contamination of single-use products that are recycled degrades or ruins the recycling. At the same time, that food waste is lost to the compost system, where it would be productively used.

While substituting single-use plastic with compostable materials can partly address these issues, compostable items also have associated costs, environmental impacts, and specific end-

of-life management requirements. The environmentally preferable approach is to prevent and reduce waste by eliminating the use of single-use items made from any type of material whenever possible. That is why SPU seeks to eliminate unnecessary single-use products by replacing them with refillable, reusable, and durable options. SPU advocates for and communicates the following messages for waste prevention of single-use products for each of the following audiences.

- **Residents:** Bring your own durable bags, water bottles, travel mugs, straws, utensils, and food containers
- **Food service businesses:**
  - Encourage customers to use reusables, such as by offering discounts for customers who bring their own mugs or by participating in reusable cup and take-out container programs when available
  - Provide durable plates, glasses, utensils, and straws for dine-in customers
  - Provide single-use straws, utensils, and condiments only on request, through self-serve stations or dispensers

The below sections provide further information on SPU's activities to curb use of single-use products and packaging through ordinances and other programs.

Single-Use Food Service Packaging Ordinances

Seattle's food service packaging and other packaging-related efforts have multiple purposes. In addition to waste prevention and diversion, single-use food service packaging ordinances support measures to improve the quality of the recycling and food and yard waste streams and to reduce litter, which benefits stormwater quality. The primary elements of several single-use packaging ordinances are described below.

Expanded Polystyrene Food Service Packaging and Products

By enacting Ordinance 122751, Seattle City Council prohibited food service businesses from selling or providing food, for consumption on or off premises, in expanded polystyrene (EPS) food service products, commonly called "Styrofoam," in 2008, effective January 1, 2009.[26] The ban applies to EPS foam food containers, plates, clamshells, hot and cold beverage cups, meat and vegetable trays, egg cartons, and other products made of EPS foam and used for selling or providing food for consumption on or off the premises. Beginning July 1, 2021, the ban also applied to packaging for raw meat and raw seafood. This ban applies to items packaged or filled

[26] http://clerk.seattle.gov/search/ordinances/122751

at the food service business and does not apply to products packaged off premises or to supplies purchased by customers, such as packets of EPS foam cups purchased for use at home.

While compliance with the ordinance has been high, some Seattle food service businesses have been confused because restaurant supply stores within Seattle are allowed to sell these items to businesses who are located outside of Seattle. State legislation, Senate Bill (SB) 5022, passed in the 2021 legislative session and will ban statewide the sale of many EPS food service products, which will minimize this problem in the future. Beginning June 1, 2024, the sale and distribution of the following EPS foam products will be prohibited in the state: food containers, plates, clamshell-style containers, and hot and cold beverage cups. Seattle's ban on additional EPS food serviceware remains in place. In addition, SB 5022 bans the sale of EPS loose-fill packaging products (also referred to as packing peanuts) as of June 1, 2023, and bans some portable cold storage containers beginning June 1, 2024.

What is food serviceware?

Food serviceware includes containers, plates, "clamshells," serving trays, meat and vegetable trays, hot and cold beverage cups, wrappers, straws, and utensils.

Disposable Food Service Packaging Prohibited

Seattle's Ordinance 122751 also prohibited food service businesses from selling or providing food, for consumption on or off premises, in or with disposable plastic food serviceware, effective July 1, 2010. Acceptable alternatives must be compostable or recyclable. The City Council refined these requirements in 2010, enacting Ordinance 123307. Revisions included changing the definition of disposable food serviceware to apply to all forms of non-compostable and non-recyclable food serviceware meant for one-time use and providing a process for the Director of SPU to establish rules providing for temporary one-year waivers. These temporary waivers are reviewed annually and expire if not extended through a revised SPU Director's Rule.[27] By ordinance, SPU can provide temporary one-year waivers under two circumstances:

1. Where commonly used recycling and composting technology cannot process the food serviceware
2. Where suitable alternative products that meet performance and food health and safety standards are not available

[27] SPU is governed by ordinances in Title 21 and Title 22 of the Seattle Municipal Code. The General Manager/CEO of SPU further adopts policies and rules, also called "Director's Rules," that can include temporary waivers for ordinances under certain circumstances. http://www.seattle.gov/utilities/about/policies

Straws and utensils, as well as a small number of other types of food service packaging such as metal-faced paper wrap, previously received annual temporary waivers from this ordinance requirement. The temporary waivers for straws and utensils expired in July 2018, making Seattle the first major city in the U.S. to ban non-compostable plastic straws. As a result, food service businesses can no longer provide non-compostable straws and utensils. A waiver remains for non-compostable bendable plastic straws on request if needed by customers due to physical or medical conditions. SPU promotes and encourages businesses to keep a supply of bendable plastic straws in stock to meet the needs of their customers with disabilities. Figure 4.4 shows an example of SPU educational materials sent to Seattle businesses about Seattle's straw and utensil requirements.

Figure 4.4 Information on Straw and Utensil Requirements Sent to Seattle Businesses

Source: Seattle Public Utilities.

Based on these ordinances, single-use food service packaging, when provided for dine-in consumption, must be compostable.[28] Food-contaminated packaging is not recyclable and—as customers have no reasonable means to separate food from single-use packaging when dining-in—any single-use packaging must be compostable, not recyclable. This helps capture leftover food for composting instead of disposal and works to reduce food-contaminated materials in the recycling stream. In addition, compostable packaging can be managed locally, unlike the

[28] http://www.seattle.gov/utilities/about/policies

low-value, hard-to-recycle plastic packaging that has been historically shipped overseas for sorting and processing.

Since Seattle enacted these ordinances in 2010, the number of compostable products available to restaurants and other food service businesses on the market has increased significantly. Promoting, facilitating, and educating food service businesses and the public about these changes has helped food service businesses shift from disposable serviceware to recyclable, or especially, compostable serviceware. However, these ordinances alone do not do enough to prevent waste, and there continues to be confusion about what items are compostable, due to "look-alike" non-compostable plastic serviceware.

To help address this, SPU advocated for passage of HB 1569 in the 2019 Washington State legislative session. Enacted into law as RCW 70A.455, HB 1569 established requirements for certifying, labeling, and tinting compostable products (including compostable bags) and took effective July 1, 2021.[29] HB 1569 also banned the use of confusing terms on any products such as "biodegradable." The purpose of the law was to enable businesses and residents to better distinguish truly compostable products from non-compostable products whose producers engage in "greenwashing."

Manufacturers who violate the requirements are subject to civil penalties. The Washington State Attorney General's office and cities and counties have concurrent authority to enforce the requirements. SPU and the Washington State Attorney General's office are discussing enforcement coordination. Passage of HB 1569 has spurred the Biodegradable Products Institute, which certifies compostable packaging, to convene stakeholders nationally, including SPU, to develop industry standards for tinting and labeling of compostable packaging.[30]

Tracking compostable or recyclable single-use food service packaging can be challenging, as it is difficult to obtain data from food service businesses on the types of food packaging used. SPU conducts inspections and tracks outreach visits to estimate progress. It is also challenging to identify the effects of outreach related to food packaging regulation in the commercial sector. The amount of diverted packaging material is not separately measured but appears in aggregated reports from collectors and the City's compost processor covering all composted materials.

In 2019, SPU worked with a team from University of Washington's Evans School of Public Policy & Governance to conduct a survey to assess the level of compliance of food service businesses with the requirement that straws and utensils must be durable or compostable and cannot be made of single-use plastic. The survey of 70 food service businesses found that 78% were fully

[29] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.455
[30] https://bpiworld.org/

compliant for straws and 68% were fully compliant for utensils.[31] This survey provided a "spot-check" and potential baseline. SPU will monitor progress through ongoing surveying.

While Seattle's ordinances have been effective at reducing disposable packaging and shifting to recyclable or compostable packaging, many food service businesses still provide single-use items to customers, regardless of whether they want or need those items. To address this problem, Seattle advocated for SB 5022, which passed the Washington State Legislature in the 2021 legislative session. SB 5022 requires, beginning January 1, 2022, that food service businesses only provide customers with single-use straws, utensils, condiment packaging, and beverage cup lids if the customer affirms they want those items, with some exceptions. This state law complements Seattle's current requirements. SPU will include these state requirements in its ongoing outreach and coordinate with Ecology to implement the state law locally.

Plastic Carryout Bag Ordinance and Legislation

The use of single-use bags in Seattle creates costs and impacts, including waste, litter, marine debris, and greenhouse gas emissions. To reduce these costs and impacts, the Seattle City Council passed Ordinance 123775, which went into effect in 2012.[32] This ordinance bans retailers from providing single-use plastic and biodegradable carryout bags and places a fee on paper carryout bags. Bags used for take-out food, thicker reusable plastic bags (at least 2.25 millimeters thick), plastic and compostable bags for non-retail and selected retail purposes (such as newspapers, dry cleaning, and prescription medications) are exempt from the ordinance.

Under the ordinance, large paper carryout bags must contain at least 40% post-consumer recycled content and retailers must collect a pass-through charge of $0.05 per bag. The retailer keeps the $0.05 charge to offset the cost of the bags. Retail establishments may not collect a pass-through charge from anyone with a voucher or an electronic benefits card issued under the City's Women, Infants and Children (WIC) or Temporary Assistance to Needy Families (TANF) programs; the Washington State Food Assistance Program; or the federal Supplemental Nutrition Assistance Program (SNAP, also known as Basic Food).

[31] Abe Smith-Groening, Beth Lemon, Lauren Ballinger, and Liesl Olson, "Assessing Seattle's Progress toward Reducing Single-Use Plastic Straw and Utensil Consumption," prepared for Seattle Public Utilities, 2019, www.seattle.gov/Documents/Departments/SPU/Documents/Plastic_Straw_Utensil_Consumption_2019.pdf.
[32] https://library.municode.com/wa/seattle/ordinances/municipal_code?nodeId=520374

In 2016, the Seattle City Council approved Ordinance 125165, making several revisions to Seattle's bag regulations.[33] Revisions included requiring that compostable bags be labeled and tinted either green or brown, disallowing the distribution of non-compostable plastic bags that are tinted green or brown, and requiring an annual report on the bag ordinances to City Council. The ordinance also banned the use of confusing descriptions on bags such as "biodegradable," "degradable," "decomposable," or other labels that imply that the bag will break down, fragment, biodegrade, or decompose in a landfill or other environments. These ordinances are codified in Seattle Municipal Code 21.36.100.[34]

Seattle's plastic bag ordinance has successfully reduced the number of plastic carryout bags distributed in the city. An estimated 85% of Seattle retailers complied with the ordinance in 2018, based on surveys of retailers. These surveys showed a lower compliance rate among international grocery and produce stores, estimated at 60% in 2018. SPU found that lack of awareness of the ordinance and language barriers pose the top two challenges to compliance.

Bag ordinance outreach materials are now available in 18 languages: English, Amharic, Arabic, Chinese, Hindi, Indonesian, Japanese, Korean, Khmer, Laotian, Oromo, Russian, Somali, Spanish, Tagalog, Thai, Tigrinya, and Vietnamese. This information is also available in transcreated form in Chinese, Spanish and Vietnamese. Figure 4.5 shows an example of a transcreated flyer where SPU adapted both the words and format.

[33] https://library.municode.com/wa/seattle/ordinances/municipal_code?nodeId=795352
[34] https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT21UT_SUBTITLE_IIISOWA_CH21.36SOWACO_SUBCHAPTER_IISOWACO_21.36.100SIEPLREPACABA

Figure 4.5 Examples of Transcreated Flyers

Source: Seattle Public Utilities.

Despite successes, plastic bags continue to be a leading contaminant at compost facilities. Plastic bags also pose problems at material recovery facilities for recycling, where they become entangled in equipment, leading to incorrect sorting of recyclable materials, contamination, equipment malfunctions, increased expenses, and dangerous conditions for workers who must cut entangled plastic bags from recycling equipment by hand.

Recycling facility workers cut plastic wrap and bags from sorting screens (Source: SPU 2019 Report on Seattle Bag Ban Compliance)

Since the plastic bag ban went into effect in 2012, plastic bags have primarily entered Seattle's waste stream in three ways: from Seattle restaurants exempt from the ban, non-compliant retailers in Seattle, and businesses outside the City that Seattle residents visit.

Seattle's plastic bag ordinance has served as a model for other cities, and many of its requirements have influenced state legislation. In the 2020 legislative session, the Washington State Legislature passed SB 5323, enacting a statewide ban on thin carryout plastic bags and other requirements that became effective October 1, 2021. The law, codified as RCW 70A.530, preempts and makes many improvements to Seattle's ordinance and addresses the three primary ways plastic carryout bags have continued to enter Seattle's waste stream:[35]

1. Restaurants are not exempt and may no longer provide thin single-use plastic carryout bags
2. Businesses outside of Seattle may no longer distribute thin single-use plastics carryout bags
3. As these bags are prohibited statewide, suppliers and distributors will understand not to sell them within the state, which could reduce non-compliance among Seattle businesses

Additional improvements include:

- Certified compostable bags are allowed and must be tinted green or brown
- Bag fee increased to $0.08 and also applies to thicker 2.25-millimeter plastic bags

[35] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.530

- Thicker plastic bags must have 20% post-consumer recycled content

SPU has coordinated with Ecology and other stakeholders to create outreach materials like Seattle's existing materials that are updated for the state law and can be used in Seattle and throughout the state. These materials have been translated into 17 languages. SPU will continue to conduct outreach and coordinate with Ecology to implement the state law locally.

Reducing Single-Use Items with Businesses

SPU recognizes policies such as packaging requirements can increase costs to businesses and their customers, particularly small and minority-owned businesses that have less ability to absorb additional costs. Because of this, SPU provides businesses with technical assistance, including recommendations for cost savings, such as providing compostable food service packaging, straws, and condiments only on request. SPU works with food service businesses in the following ways to provide ongoing outreach and engagement on product-specific waste prevention requirements and to promote the use of durable, reusable food serviceware instead of single-use options:

- Concerned individuals call the green business hotline when they encounter businesses that are not in compliance with the bag ban or the single-use food service packaging ordinances. A member of the inspection team or the outreach team will then visit the business to provide education and support the switch to compliant packaging.
- SPU provides sector-specific education to businesses affected by packaging ordinances, such as proactive outreach to the retail and grocery sectors on single-use plastic bag requirements.
- SPU provides tailored in-language outreach and assistance to food service businesses to support compliance with local requirements.
- Outreach staff attend events throughout the year to provide education to businesses about local requirements.

Upstream Industry Engagement

In addition to using ordinances and customer education, SPU engages with manufacturers, product suppliers, and industry groups on non-legislative product and packaging initiatives that prevent waste or enhance recyclability or compostability of products. These engagements have various purposes and include:

- Informing and improving SPU programs, outreach, and policies
- Sharing lessons learned in Seattle with product designers, manufacturers, distributors, industry groups, and others to assist them in making improvements that benefit local systems
- Evaluating compliance of the manufacturer or supplier's products with Seattle ordinances and providing information on the steps, if needed, to become compliant
- Advocating that these manufacturers and product suppliers engage in waste prevention strategies for their products; provide reusable options; improve labeling; and make their products easy and safe to reuse, recycle, or compost
- Developing a shared understanding of effective voluntary actions and informing the need for legislative actions when appropriate, such as for product stewardship and extended producer responsibility

Examples of SPU engagement to date include discussions with Seattle-based companies Amazon and Starbucks to reduce and reuse packaging, minimize environmental impacts of packaging, and increase use of post-consumer recycled content. SPU also engages with compostable product manufacturers.

U.S. Plastics Pact

SPU is a Founding Activator and active participant in the U.S. Plastics Pact. The first of four targets of the U.S. Plastics Pact is to "define a list of packaging that is to be designated as problematic or unnecessary by 2021 and take measures to eliminate them by 2025." Other Pact targets address the reusability of packaging. In 2019, SPU also became a partner to develop and pilot standards for reuse systems for reusable cups, take-out containers, and other packaging. SPU also participates in the National Reuse Network and Government Reuse Forum, both hosted by the NGO Upstream Solutions. Our active participation in these initiatives benefits our work on single-use packaging, as well as other areas of prevention and reuse.

In addition to engaging local companies, SPU engages producers and suppliers who are based outside of Seattle and sell goods to customers operating in the city. SPU also engages on non-packaging-related products, such as with Call2Recycle on its voluntary stewardship program for rechargeable batteries.[36] In addition, engagement with industry groups such as the Sustainable Packaging Coalition and organizations such as the New Plastics Economy Initiative, Ocean Plastics Leadership Network, and the National Reuse Network, provides exceptional opportunities to collaborate on a national and international scale and to advocate for reuse and international brand packaging improvements.[37][38][39]

Actions by the City and other jurisdictions, along with consumer demand, can catalyze significant actions by brand owners and manufacturers. For example, to eliminate plastic straws from its stores, Starbucks has shifted to a new "sippy cup" lid design that is both easier to recycle than straws and eliminates the need for a single-use plastic straw, which should reduce plastic straw litter from Starbucks' beverages. This program represents an important step in enhancing the recyclability of single-use products. However, SPU will continue to advocate for the use of durable travel mugs and coffee cups for in-store consumption, and returnable or reusable cups and takeout containers as a means of preventing waste and reducing the associated upstream environmental impacts by food service businesses.

Recommendation

SPU recommends continuing efforts to switch from single-use products in favor of durable and reusable alternatives.

Reduce single-use items and promote durable or reusable alternatives

SPU should continue implementing policies, programs, and collaborative efforts to reduce the use of single-use items, focusing on single-use food serviceware and other single-use plastics. In parallel, SPU should expand regional approaches for waste prevention education, such as "BYO" (bring your own) campaigns, promotion of durables, and reduction of plastic packaging and plastics pollution from single-use plastics. Example approaches include:

[36] https://www.call2recycle.org/
[37] https://sustainablepackaging.org/
[38] https://www.newplasticseconomy.org/
[39] https://opln.org/

- Considering an ordinance to require restaurants to serve dine-in food with durable (instead of single-use) plates, cups, and cutlery. The ordinance could also require the food service establishment to charge a fee on single-use cups. A similar ordinance went into effect in early 2019 in the City of Berkeley, California, which includes a $0.25 fee on every single-use cup. [40]
- Expanding and collaborating on education campaigns to promote the use of durable and reusable products and discourage the use of single-use products. Promote BYO campaigns such as BYO bags (including for take-out food), coffee mugs, other drink cups, and water bottles. For waste prevention messages focused on buying sturdier and better-made consumer goods with longer useful lives, SPU should consider that these products typically cost more and may not be accessible to residents with lower incomes.
- Researching and addressing regulatory barriers to using refillable containers and bottles at food service businesses.
- Promoting and encouraging new business models and community-based programs that provide systems that support the use of refillable or durable cups and containers as an alternative to single-use food and beverage packaging and serviceware. Examples include:
  - Returnable, reusable, and refillable take-out container systems, including all system elements such as standardized cups and containers, collection systems, commercial wash facilities, and transport systems for redistribution to participating retailers
  - Reusable and returnable bottle and beverage container programs
  - Implementation of and access to water refill stations
- Exploring partnerships with the retail sector to encourage reuse, sharing, and zero waste consumer packaging alternatives.
- Exploring methods to address reduction of other single-use and plastic packaging products through both producer and consumer engagement.

In addition to engaging with industry, SPU also funds community-initiated and community-led projects that promote and facilitate waste prevention, described in the next section.

[40] City of Berkeley, "Berkeley Single Use Foodware and Litter Reduction Ordinance," Accessed September 25, 2019, www.cityofberkeley.info/Public_Works/Zero_Waste/Berkeley_Single_Use_Foodware_and_Litter_Reduction_Ordinance.aspx.

Waste-Free Communities Matching Grant

In 2008, SPU established the Waste Prevention and Recycling Matching Grant to fund community-initiated and community-led projects that prevent waste generation and increase reuse, recycling, and composting. Supporting community-driven waste prevention efforts strongly aligns with SPU's equity goals. Matching grants increase customer value by leveraging community funding to achieve larger results. Grants focused on waste prevention can also increase affordability by helping the community save money and providing access to free and low-cost resources.

In 2008–2009, SPU awarded $200,000 to 17 projects focused on food rescue, school composting and recycling, commercial waste prevention, materials reuse, multifamily composting and recycling, and onsite composting. The grant projects engaged nearly 10,000 residents and businesses and diverted over 1,900 tons of waste.

In 2010–2013, grant funds were refocused to help K-12 schools in Seattle comply with new food waste requirements. SPU awarded funds to implement food waste collection programs in 27 public and 14 private schools, reaching more than 10,000 students. The compost programs divert more than 200 tons of food waste from the garbage annually.

When the program relaunched in 2018 after a four-year dormancy period, SPU changed the name to the Waste-Free Communities Matching Grant program and refocused the program specifically on waste prevention. This grant program is an effective method for SPU to fund community-driven programs that help the community and promote a waste prevention culture. Projects receiving grant funding must meet one of the following requirements in addition to preventing waste:

- **Be innovative:** test or expand on new approaches or technologies, such as developing apps or bringing repair workshops to Seattle
- **Engage one or more of the following communities:** communities of color, immigrants, refugees, low-income, people with disabilities, seniors, young adults, youth, children, and/or small businesses
- **Help communities in need:** for example, increase affordability by providing free or low-cost resources or job training to low-income communities or individuals experiencing homelessness

SPU uses a variety of strategies to increase equitable access, participation, and outcomes in the grant program. These efforts include collecting community feedback on grant program design,

conducting in-language promotion of the grant program, encouraging in-language and video applications, and including community members on the grant review committee.

In 2018–2021, SPU awarded $313,419 to 25 projects focused on single-use plastics reduction, food rescue, onsite anaerobic digestion, repair workshops, upcycling textiles, youth education, reducing diaper waste, school waste prevention, the sharing economy, and building deconstruction. In addition to promoting sustainability, many of the funded projects focused on providing community benefits such as helping low-income, immigrant, and refugee community members, building job skills, and strengthening youth leadership.

SPU measures the performance of the grant program on a project-by-project basis. Some projects, including food rescue and onsite anaerobic digestion, track tons of food diverted from the waste stream. Other projects track number of items repaired or reused. Education-focused projects track number of people engaged. SPU also collects information from projects on community benefits, such as number of jobs created.

Waste-Free Communities Grantee Spotlight: Refuge Artisan Initiative (RAI)

2019 grantee RAI works to transform the lives of refugee and immigrant women by providing sustainable employment. RAI provides its artisans with free training and equipment to upcycle donated fabric waste into store-quality home goods. With support from SPU's Waste-Free Communities Matching Grant, RAI began selling its upcycled products in local stores.

Recommendation

To maximize opportunities for waste prevention, SPU should consider how to build up the many community-driven waste prevention efforts already occurring across the city.

Expand support for community organizations working to prevent waste

Tapping into and strengthening these existing community leadership efforts will create a stronger foundation for building a waste prevention ethic in Seattle. In addition to continuing the Waste-Free Communities Matching Grant program, Seattle could make a significant impact by:

- Increasing grant funds to $200,000 a year to fund additional efforts
- Identifying ways to increase the sustainability of community efforts beyond initial grant funds, such as program marketing and promotion, free grant writing workshops, free business analyst consultations, and gap funding

In addition to offering grants, this recommendation would also seek opportunities to expand partnerships with community organizations, nongovernmental organizations, businesses, industry groups, and other agencies working in the area of waste prevention to establish waste prevention models, pilots, businesses, and opportunities in the city. The process would begin cataloging existing entities in the city and convening a "waste prevention summit" to gather input and discuss opportunities.

The next section describes SPU's efforts to promote waste prevention to landscapers, residents, and businesses by managing food and yard waste onsite and using natural yard care practices.

Natural Yard Care

Food and yard waste make up a significant portion of the overall waste stream. However, when these wastes are disposed of in the landfill, they decompose anaerobically and produce methane gas. Conversely, when food and yard waste are composted or used directly onsite (typically as mulch), they often become powerful tools to improve soil health, sequester carbon in the soil, and increase soil water storage. Compost and mulch can help us both fight climate change and be more resilient to it.

SPU currently encourages residents to manage their food and yard waste in three ways: 1) deposit materials in the food and yard waste cart for offsite composting, 2) compost onsite, such as backyard composting, and 3) use the materials in place, such as placing fallen leaves on garden beds as mulch and leaving grass clippings to decompose on the lawn after mulch

mowing. These last two items are the primary examples of waste prevention activities related to natural yard care.

Waste prevention includes reducing not solely the quantity of waste but also the impact it has on the environment. To reduce the environmental impacts of landscaping, SPU promotes natural yard care methods, including using alternatives to chemical fertilizers and pesticides. Natural yard care practices including backyard composting, grasscycling by leaving grass clippings to decompose on the lawn after mulch mowing, and mulching of yard waste have both financial and environmental benefits. Natural yard care reduces resident and business costs for landscaping inputs such as pesticides, fertilizers, mulch, soil amendments, and water for irrigation.

Composting and compost use also have global environmental benefits including reducing greenhouse gas emissions, reducing the production and use of synthetic fertilizers made from petroleum products, and increasing carbon capture and sequestration in soils. Finally, compost use has local environmental benefits through improving soil and plant health, reducing irrigation water demand during the peak summer period, and reducing stormwater runoff by soaking up rain onsite.

A 2008 evaluation of SPU's natural yard care programs found significant economic, social, and environmental benefits.[41] SPU now primarily supports grasscycling and other natural yard care practices through its Garden Hotline, the Master Composter Sustainability Steward volunteer outreach program, and web- and print-based resources and information for landscape professionals. Despite reduced spending and modest outreach in recent years, SPU anticipates that residents using natural yard care techniques will continue to reduce household yard and hazardous wastes. SPU can generate estimates for backyard composting, mulching, and grasscycling from data on the number of participating households. SPU conducts a survey every five years on how residents manage their food and yard waste at home. The most recent survey was completed in 2018.[42] The sections below describe Seattle's education for landscape professionals, outreach to residents and businesses, and support for backyard composting.

[41] Morris and Bagby, "Measuring Environmental Value for Natural Lawn and Garden Care Practices," *The International Journal of Life Cycle Assessment,* May 2008, Volume 13, Issue 3, pp 226–234. (link.springer.com/article/10.1065%2Flca2007.07.350)
[42] Seattle Public Utilities, "2018 Home Organics Waste Management Survey Report," 2018, www.seattle.gov/Documents/Departments/SPU/Documents/Home_Organics_Survey_2018.pdf.

What is Soil Carbon Sequestration?

Soil carbon sequestration is the process of removing carbon dioxide from the atmosphere and storing it in terrestrial ecosystems. Agriculture and deforestation, particularly in the last several decades, have depleted soil carbon stocks. Conserving and restoring degraded soils help return carbon to soil, thereby reducing greenhouse gas concentrations in the atmosphere. Conversely, landfilling food and yard waste produces methane and nitrous oxides, greenhouse gases that have approximately 23 and 300 times the warming potential of carbon dioxide (CO_2) respectively. Emissions associated with composting food and yard waste are significantly lower than landfilling them.

Using compost and natural yard care practices help sequester carbon and decrease greenhouse gasses in four primary ways:

1. Compost use and natural yard care techniques create healthy soil, which helps plants grow bigger and faster, which pulls more CO_2 from the atmosphere and puts it into the soil
2. Natural yard care avoids the use of chemical fertilizers, which require a lot of energy to produce
3. Composting food and yard waste avoids the methane and nitrous oxide emissions associated with landfilling these materials
4. Using compost adds carbon directly to the soil, where the carbon can be stored instead of released into the atmosphere

Sustainable Landscaping Professional Education

Beginning in 1994, SPU led the Green Gardening program to educate landscape professionals on pesticide reduction, onsite yard waste management, composting, and other resource conservation practices. The Hazardous Waste Management Program in King County primarily funded this program. Although the Hazardous Waste Management Program refocused efforts and defunded the program in 2017, SPU continues to collaborate with other departments and agencies to provide professional education with multi-resource benefits such as yard waste prevention, pesticide and fertilizer reduction, potable water conservation, and improved soil health and surface water quality. For instance, SPU co-leads an annual professional education seminar with Seattle Parks and Recreation and works with King County Noxious Weed Program and SPU's Water and Drainage lines of business to promote landscape management practices that protect the environment and human health.

SPU also maintains extensive multilingual, web-based training resources on sustainable landscaping through its Sustainable Landscaping Professional Development program. This program offers training and resources to help landscape professionals create landscapes that produce less solid and hazardous waste, reuse yard wastes onsite, conserve water, reduce runoff and pollution, and enhance public health. As part of the Sustainable Landscaping Professional Development program, SPU actively collaborates on the national Sustainable Sites (SITES®) standards and project certification program (the site and landscape equivalent of LEED green building), as well as the Washington ecoPRO Certified Sustainable Landscape Professional program for landscape professionals to certify and promote sustainable landscape installations and practices amongst a professional audience.[43][44]

Garden Hotline and Master Composter/Sustainability Stewards

Since 1986, SPU has taught and promoted food and yard waste reduction and recycling practices through the Garden Hotline, Master Composter/Sustainability Steward volunteers, and various natural yard care outreach and events. These efforts reach approximately 16,000 members of the public every year and shift resident and businesses practices toward food and yard waste reuse in landscapes through grasscycling, mulching, and composting. Reusing food and yard waste through grasscycling, mulching, and compost application plays a critical role in building soil health for climate-resilient urban landscapes, stormwater management, water conservation, and sustainable regional agriculture.

The Garden Hotline and the Master Composter/Sustainability Stewards Volunteer Program also provide education on safer alternatives to toxic landscape chemicals, a form of waste prevention related to reducing toxics in products. These multilingual, community-based programs have achieved notable success in collaboration and partnership with other local community-based organizations and multiple jurisdictions and agencies, locally, regionally, and nationally.

SPU manages both the Garden Hotline and the Master Composter/Sustainability Stewards volunteer program, which are staffed through a contract with the community-based organization Tilth Alliance. Because some of these projects help pollution prevention in

[43] https://www.sustainablesites.org/
[44] https://ecoprocertified.org/

addition to promoting reuse and composting, the Hazardous Waste Management Program in King County partly funds them.[45]

The Garden Hotline responds to calls and email from residents about yard care and landscaping, as well as teaches classes and holds events. In addition, SPU offers natural yard care videos, publications, and hands-on training for home gardeners and landscape professionals.

The Master Composter/Sustainability Stewards is a volunteer training program with a community outreach requirement. Each Master Composter/Sustainability Steward participates in 30 hours of classroom learning (online in 2020 and 2021, combined with outdoor hands-on learning) followed by 35 hours of volunteer outreach, which could include projects such as giving composting classes at schools and civic associations, helping schools and community gardens set up a compost system, and teaching Seattle residents about waste prevention at in-person and online events.

Master Composter Sustainability Steward program volunteers help residents build worm bins, recycle food and yard waste, build healthy urban soils, and support thriving landscapes, 2019 (Source: David McDonald)

SPU will continue to collect and track participation, such as the number of calls to the Garden Hotline and the number of volunteers and professionals that SPU has provided training to on natural yard care.

[45] http://www.tilthalliance.org/

Backyard Composting

Backyard composting and compost use education, which are focus areas of the Master Composter/Sustainability Steward and Garden Hotline programs, help residents understand the importance of keeping contaminants, or non-compostable material, out of the curbside food and yard waste cart, and the value of compost to nourish soils.

Backyard composting is the process by which community members compost their food and yard waste on their own, thereby keeping these materials out of the commercially collected food and yard waste stream. This practice is generally called backyard composting but can and does occur at locations beyond backyards such as community gardens, schools, places of worship, and various businesses. Backyard composting by Seattle households peaked between 2000 and 2005 and then began declining when Seattle began collecting food waste in residential yard waste carts starting in 2005. In March 2009, as part of the rollout of new collection contracts, SPU expanded the program to require all single-family accounts to have food and yard waste carts. At the same time, SPU added meat and dairy products to the list of products allowed in curbside food and yard waste carts.

A young boy sits atop a school garden compost heap in the Fremont neighborhood, 2021 (Source: Kate Kurtz)

SPU further encouraged residential use of curbside food waste collection service to meet Seattle's 60% recycling goal. As a result of these changes, the number of households participating in backyard composting continued to decline, and SPU ended subsidized sales of backyard compost bins in 2011.

In 2010, 30% of households surveyed reported participating in backyard composting. Backyard composting decreased to 23% in 2018 according to the 2018 Home Organics Survey. The next survey on residential waste prevention, which will gauge current backyard composting practices in addition to other waste prevention practices, is planned for 2022.

Green Purchasing

SPU engages in some efforts to promote waste prevention in the City's own operations through participation in and support for City green purchasing initiatives. Green purchasing approaches reduce the environmental impacts of products and materials purchased by the City. City procurement policies incorporate requirements based on Seattle Municipal Code to buy products that contain recycled content, are less toxic, and are reusable or recyclable. Green purchasing policies and ordinances are available online.[46] The Department of Finance and Administrative Services (FAS) administers these policies with input from other City departments, including SPU.

Environmentally Preferable Purchasing

FAS worked with a cross-departmental citywide team to update the City green purchasing policy, which is slated to be completed in 2022. SPU's Solid Waste Utility staff position to advise on green purchasing was eliminated in 2015, but SPU continues to participate in the Department of Finance and Administrative Services-led efforts to update the environmentally preferable purchasing policy and ordinance.

Green purchasing policies, particularly those that promote waste prevention, support SPU's strategic approach of solving problems at the source and leading by example in its operations. Waste prevention procurement policies include using bulk purchasing and other packaging reduction methods, minimizing use of office paper, and discouraging the use of bottled water at City meetings and events.

Where waste cannot be prevented, green purchasing policies focus on selecting products that are durable, reusable, recyclable, compostable, or include recycled content, with additional elements to support market development. The market development elements of green purchasing, such as post-consumer recycled-content requirements, are increasingly important with changes in global recycling market conditions. Buying products made with recycled content helps close the recycling loop by building market demand for materials that SPU collects in its recycling stream. Examples of key products where requiring post-consumer

[46] http://www.seattle.gov/purchasing-and-contracting/purchasing/green-purchasing

recycled content would support local recycling markets or create demand for key recyclable materials include:

- Paper products
- Landscape products, such as compost, on City projects and landscaped areas
- Plastic bags purchased by City agencies and programs such as Parks and Recreation and SPU's Clear Alleys Program
- Plastic garbage, recycling, and food and yard waste collection carts

SPU currently offers input for related policies but does not administer, monitor, or measure the City's green purchasing activities.

E-Stewards Digital Equity Partner Commitment

In 2017, FAS, with input from Seattle Information Technology (IT) and SPU, signed the e-Stewards Enterprise Agreement. Under this agreement, Seattle IT committed to engaging its Digital Equity program to source refurbished equipment from e-Stewards certified recyclers and refurbishers wherever practical and to deploy this equipment through an organized training program, which includes training on the responsible use and end-of-life management of the equipment. This program has not been able to launch successfully due to insufficient donations of appropriate equipment from participating businesses. The e-Stewards program is in the process of continuing to develop necessary business partners.

Recommendation

This recommendation expands waste prevention within the City's own operations, throughout all departments.

Expand support of the City's sustainable and green purchasing policies

SPU should support efforts to update and implement the green purchasing policy within City of Seattle offices and operations. Specifically, SPU should:

- Provide advisory input to FAS as it updates the green purchasing ordinance and related procurement activities with regards to waste prevention, recycled content, compost, toxics reduction, and other topics
- Encourage City procurement that supports developing markets for materials recycled locally, such as recycled content paper and compost/mulch to promote a more circular economy
- Develop guidelines for food service packaging and products purchased for City meetings and events and promote the use of durable and reusable products where possible
- Promote the existing Executive Order that disallows use of bottled water at City meetings and events
- Encourage FAS to reestablish an advisory "green team" and then allocate Solid Waste Utility staff to participate on the team
- Determine additional internal City policies and strategies to prevent waste, such as development of an Executive Order to reduce single-use plastics use in City offices and facilities
- Engage other City departments to incorporate waste prevention into their related work on economic growth, human health connection, procurement, and sustainability
- Continue to coordinate with FAS, Seattle IT, and e-Stewards through e-Stewards Enterprise License Agreement to ensure City electronics are responsibly reused and recycled
- Participate in e-Stewards Digital Equity program to deploy used equipment through a responsible training program that incorporates responsible end-of-life management of equipment

The next section describes SPU's efforts to promote and facilitate reuse and repair to keep products out of the solid waste system.

Reuse and Repair

Reuse is the second most preferred action within the waste hierarchy, after waste prevention and before recycling (discussed next in Chapter 5, *Recycling and Composting Policy and*

Markets). Reuse is generally defined as the "use of a product more than once in its same form for the same or similar purpose."[47] The Reuse Institute has expanded the definition of reuse to mean "to extend the life of a product, package, or resource by either using it more than once with little to no processing (same or new function), repairing it so it can be used longer, and/or sharing, renting, selling, or donating it to/with another party."[48] Extending the life of a consumer product through these methods also avoids or slows the replacement of that product; reduces the need to purchase new items; and reduces the associated cost of waste disposed through curbside collection and bulky item pickups.

Reuse can reduce environmental impacts across a product's life cycle. SPU promotes and facilitates reuse in several ways, both directly and indirectly. The next sections briefly describe SPU's activities around clothing reuse, recycling and reuse at Seattle's transfer stations, and measuring reuse and repair.

Threadcycle (Reusing and Recycling Clothes)

Textile production, distribution, and consumption is a growing contributor to solid waste streams and a major contributor to global greenhouse gas emissions. Textile waste includes apparel (such as clothing and footwear) and non-apparel items (such as home and hospitality linens and healthcare and industrial textiles). Apparel is one of the largest categories in U.S. textile waste at 13 million tons in 2018.[49] The rise of "fast fashion," a term used to describe the fashion industry's ever-accelerating pace of releasing new styles at low cost, is a driver of increased clothing waste. According to the Ellen MacArthur Foundation, "half of fast fashion produced is disposed of in less than a year. In the U.S., clothes are only worn for around a quarter of the global average."[50] McKinsey & Company found that the average consumer bought 60% more items of clothing in 2014 than in 2000 but kept each garment half as long.[51] Waste prevention for textiles is important not only because of the proliferation of "fast fashion" trends and resulting impacts, but also because true recycling of textiles is still in the early stages of development. Currently, most recycled textiles are downcycled into lower value uses such as

[47] CalRecycle, "Glossary of Waste Prevention Terms," Accessed September 25, 2019, www.calrecycle.ca.gov/reducewaste/define#Reuse.
[48] Reuse International, "Resources," Accessed September 25, 2019, www.reuseinstitute.org/resources.
[49] U.S. EPA, "Advancing Sustainable Materials Management: 2018 Tables and Figures," 2020, www.epa.gov/sites/default/files/2021-01/documents/2018_tables_and_figures_dec_2020_fnl_508.pdf.
[50] Ellen MacArthur Foundation, "A New Textile Economy," 2017,www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report.pdf.
[51] McKinsey & Company, "Style That's Sustainable: A New Fast-Fashion Formula," 2016, www.mckinsey.com/business-functions/sustainability/our-insights/style-thats-sustainable-a-new-fast-fashion-formula.

industrial wiping rags or shredded textile insulation. As little as 1% of recycled textiles may be turned into new garments.[52]

Repairing holes in sock to extend their life and prevent waste (Source: Adobe Stock Inc.)

In response to these trends, from 2015 through 2017, Seattle and King County created *Threadcycle*, a public information campaign to reduce local textile waste. Many consumers already knew they could extend the life of their unwanted clothes by donating them to thrift stores. *Threadcycle* encouraged consumers to also donate damaged textiles so that they could be recycled into industrial products instead of going to the landfill. "Threadcycling" started to become a local term for keeping clothing and textiles in use. However, while thrift store partners reported successes, the growing public awareness alone did not appear to reduce the volumes of textiles going into the garbage in King County. The success of this strategy also relied on strong global export markets to accept used U.S. textiles that were not already available domestically. The consumer campaign also did not address increasing over-production, consumer purchasing habits, rapid disposal, and accelerating climate impacts.

Textiles have a large carbon footprint. According to the 2020 "Fashion on Climate" report, the global fashion industry produced around 2.1 billion metric tons of greenhouse gas (GHG) emissions in 2018, equaling 4% of the global total. And according to the report's authors, "If no further action is taken over the next decade beyond measures already in place, the industry's GHG emissions will likely rise to around 2.7 billion [metric tons] a year by 2030, reflecting an annual volume growth rate of 2.7%."[53]

[52] Ellen MacArthur Foundation, "A New Textile Economy," 2017, www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report.pdf.
[53] McKinsey & Company and Global Fashion Agenda, "Fashion on Climate," 2020,www.mckinsey.com/industries/retail/our-insights/fashion-on-climate.

Given these issues, Seattle and King County decided to shift focus upstream to identify opportunities for manufacturers, retailers, and the public sector instead of relying solely on consumer behaviors to reduce textile waste. Adding to the Seattle/King County research, organizations such as the Ellen MacArthur Foundation, Global Fashion Agenda, and others have called for the introduction of circular business models to minimize pre- and post-consumer waste, consumer education, policies to encourage sustainable consumption, and multi-stakeholder collaboration.

Reuse at Transfer Stations

In 2017, SPU opened the Recycling and Reuse Building at its remodeled North Transfer Station. SPU currently contracts with Seattle Goodwill to collect reusable items in this building. They accept items in good condition such as clothing and linens, electronics, small furniture, and household goods for resale at Goodwill retail locations. Waste reduction activities related to charity thrift shops like Goodwill both keep items from the landfill and can provide job training and other support services for low-income individuals and families. SPU collects diversion data from the companies collecting useable household goods from the vehicles entering the North Transfer Station.

Goodwill donation site as pictured during facility tour, 2018 (Source: SPU Image Library)

Since 2011, SPU also offers bicycle collection for reuse at both the North and South Transfer Stations through a partnership program between Recology, one of Seattle's solid waste collection contractors, and Bike Works, a local nonprofit that promotes bicycles as a vehicle for change to empower youth and build resilient communities. Since 2011, transfer station customers have been bringing old bicycles to a dedicated collection container. Bike Works volunteers then sort and repair collected bikes for reuse, resale, or donation. SPU collects data on the number of bicycles collected at both the North and South Transfer Stations. So far, the program has collected over 288 tons, or roughly 29,000 bicycles.

Recommendations

SPU recommends exploring and expanding market opportunities for reuse and repair and boosting textile waste prevention.

Explore and expand market opportunities for reused material and repair services

To achieve a measurable drop in per-capita consumption, in this strategy SPU should expand its role in promoting and facilitating reuse and repair options for Seattle residents. Example strategies for exploring and expanding market opportunities for reused material and repair services include:

- Connecting SPU programming to other City departmental initiatives (such as use of durable food serviceware, electronics reuse and repair, waste prevention campaigns, and waste-free grants) and developing information resources that promote awareness of and easy access to reuse and repair services.
- Strengthening existing partnerships and building new ones to maximize reuse opportunities in the city. Examples include:
  - Promoting existing reuse businesses, charities, programs, and community-based efforts.
  - Working with existing reuse businesses to understand barriers and opportunities for creating a stronger network of reuse opportunities.
  - Engaging with community-based organizations that are already fostering a reuse and repair ethic and support consumer actions to reuse and repair goods. Determine how best to support and expand this work.
  - Fostering engagement over time with customers that would focus SPU's work on the local consumer experience and how to provide benefits that increase human connection and prosperity.

  - Working with economic development agencies, community-based organizations, and national nongovernmental organizations (NGO) and foundations to identify new local economic opportunities related to reuse and repair, including job training development opportunities.
- Developing policies that enable reuse. Work with repair industry groups to support Right to Repair legislation to ensure product manufacturers do not hinder the ability for others to repair products.
- Identifying impacts on consumption, disposal, larger environmental issues, and human prosperity. Determine which indicators can be useful metrics and how to measure progress.

Promote and support waste prevention for textiles and monitor emerging textiles recycling technologies

SPU should promote and support waste prevention strategies for textiles in while continuing to monitor emerging technologies for textiles recycling. Example strategies for textiles waste prevention include:

- Expanding beyond current thrift collaboration to support sharing, repairing, reusing, and refashioning textiles with more stakeholders such as public agencies, nonprofits, academia, brands, retailers, and businesses that are directly engaged in extending the useful life of apparel. Collaboration could include expanding overall awareness of the issues and potential solutions, creating shared language and credible metrics, investigating policies that enable reuse, supporting business models to keep clothes in use.
- Monitoring national and international proposals for taxes, extended producer responsibility plans (described in more detail in Chapter 5, *Recycling and Composting Policy and Markets*), sustainability action plans, and incentives to reuse, repair, and recycle used clothing.
- Developing and running a consumer campaign in collaboration with other partners to raise awareness about the costs of wasted clothing and the opportunities to extend the life of clothes.
- Monitoring national and international progress on textile recycling technologies that do not downcycle clothing by turning used clothing into wiping rags or insulation, for example.
- Exploring how true textile recycling, or recycling used clothing into another clothing product, could be implemented in the Puget Sound region as available technology progresses.
- Looking for economic development and job creation opportunities for textile repair and upcycling.