Compostable Products Advisory Committee – Meeting 5 Agenda Mar. 5, 2024

Meeting Goals

- Review research about organics capture rates from WA studies
- Continue challenge identification
- Begin identifying criteria to generate recommendations to the legislature

Date & Time

- March 5th, 2024 10:00 AM – 12:00 PM, **Zoom**

Meeting Packet

- Agenda
- Research memo: Residential Compostable Material Capture Rates in Seattle and King County

Agenda Overview

Total duration = 120 minutes

Duration	Agenda Item
10 min	Welcome, agenda, & objectives
25 min	Where we've been and where we're headed • Present compostable products definition • Research update

30 min	Research presentation
	• Review modeled organics capture rates for Seattle and King County
	• Discuss:
	  ○ Are these products being recovered?
	  ○ What does it look like between the product types?

45 min	Review and discuss challenges identified
	• Review challenges
	• Criteria discussion in breakout groups:
	  ○ What key considerations should this committee keep in mind when developing recommendations for the legislature?
	  ○ How would you define each of these criteria?

5 min	Public comment
5 min	Closing remarks and preview next steps

Memorandum

To: Compostable Products Advisory Committee

From: Cascadia Consulting Group

Date: March 5, 2024

Subj: Residential Compostable Material Capture Rates in Seattle and King County

Purpose & Methodology

This memo addresses the following research topic detailed in **HB 1033**:

> **(f) Estimates of the percentage of compostable products used in Washington that are disposed of at organic materials management facilities;**

The intent of this memo is to provide the Advisory Committee with estimated residential capture rates for compostable material, including compostable products, food, and yard debris in Seattle and King County. Due to lack of publicly available data on the amount of compostable products sold or distributed in Washington, Cascadia analyzed available waste composition and tonnage data from the City of Seattle and King County to model and estimate how much compostable material is currently being recovered in the residential curbside organics stream and how much more material might be available for recovery. This memo includes preliminary data, and King County and the City of Seattle have not published reports with this information.

Discussion Questions for Consideration

- What does this research tell us about what is working to achieve *"the state's goal of managing organic materials, including food waste, in an environmentally sustainable way that increases food waste diversion and ensure that finished compost is clean and marketable*?*"*
- What does the research tell us about what isn't working to achieve the state's goal?
- Where do we see opportunities and barriers to improve compostable products management in Washington state?

Capture Rate Definition

The compostable material capture rate is the **percentage of compostable material properly separated into the organics stream compared to the total amount of compostable material generated**. It is calculated by dividing the weight of a specific compostable material or set of materials collected in the organics stream by the weight of all those materials across waste streams (including garbage, recycling, and organics). Capture rates can be calculated for compostable material overall as well as for individual materials (such as food or compostable plastic).

Where the standard composting rate measures how much material (including contamination[1]) is collected in the organics stream compared to the total amount of waste generated, capture rates measure how much compostable material is collected in the organics stream compared to the total amount of compostable material generated. In the simplest terms, it describes how good people are at putting the right material in the right collection container. Compared to composting rates, capture rates provide more detailed information about compostable material recovery. By including only compostable materials in the numerator and denominator, capture rates remove the impact of changes in the type of waste generated to focus on how well residents sort compostable materials and keep them out of the garbage and recycling streams.

While composting rates can be calculated solely with tonnage data, waste composition studies are required to estimate capture rates because they are currently the only way to obtain reliable data on the composition of materials going into the garbage, recycling, and organics streams. Understanding the composition of garbage is particularly important to identify compostable materials lost to landfill. Understanding the composition of the inbound recycling and organics streams provides the full picture of capture rates, along with contamination rates.

Methodology

Overview of Research Methods

Due to lack of response and proprietary information concerns from compostable product manufacturers and distributors, the Cascadia research team was not able to compare the estimated number of units (or weight of material) sold or distributed in the state to the number of units or weight of products disposed at compost facilities. However, residential capture rates for compostable products and food from two large jurisdictions

[1] *Seattle uses its waste composition study data to remove contamination from its recycling and composting rate estimates.*

(Seattle and King County) in which residents are allowed to put food and some compostable products in the curbside organics stream can provide a sense of how much of this material is being properly diverted and how much more material might be available for recovery.[2] Statewide waste characterization data was excluded from analysis.[3]

The Cascadia team analyzed available tonnage and waste composition data from SPU and King County to model **the amount of compostable material, including food and compostable products, from the residential sector recovered for composting at organic materials management facilities.** Using data from SPU's **2021-2022 Residential and Commercial Organics Composition Study** and King County's **2022 Organics Characterization Report**, Cascadia estimated capture rates for the following material categories:[4]

- Yard waste
- Food waste
- Single-use food service compostable paper
- Other compostable paper
- Single-use food service compostable plastic (including packaging and utensils)
- Compostable plastic bags
- Other compostable organics

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[2] Seattle residents are allowed to put approved compostable products into the organics stream, while King County residents outside Seattle (and Mill Creek) are directed to only put food, compostable paper, and yard waste into the organics stream.

[3] While Cascadia also has composition and tonnage data from the 2022-2023 statewide organics and recycling characterization study, the team excluded this study from analysis due to data compatibility challenges resulting from the years in which various sector studies were conducted. The garbage stream study was conducted in 2020-2021 at the height of the COVID-19 pandemic, while the organics stream study was conducted in 2022-2023 after waste behaviors had generally reverted to pre-2020 patterns. The temporal mismatch in datasets make analyzing and comparing capture rates with other jurisdictions challenging.

[4] See Appendix A: Seattle Compostable Material Capture Rate Model Data Tables and Material Definitions and Appendix B: King County Compostable Material Capture Rate Model Data Tables and Material Definitions for an explanation of what is included within each material category for both capture rate models.

Limitations and Considerations

The following limitations should be considered when reviewing the data and capture rate estimates:

- While the team had data to calculate capture rates for the residential sector, this represents only a partial estimate of compostable product disposal and recovery as a **majority of compostable products are used and disposed in the commercial sector** waste stream. Due to the open market structure for commercial waste service, jurisdictions lack complete tonnage and composition data required to calculate commercial capture rates, presenting a notable gap in the overall picture of compostable material recovery.
- **Capture rates do not reflect the impact of non-compostable material being placed in the organics stream** and do not address contamination issues, such as compostable product lookalikes. This topic will be discussed in the April research memo summarizing organic materials management facility interviews.
- **Residential curbside organics collection programs vary between Seattle and other jurisdictions in King County** and thus capture rates should not be directly compared. Seattle has banned residents and businesses from putting yard waste in the garbage since 1989 and has banned food scraps and compostable paper in the garbage since 2015. Organics collection service is also mandatory.[5] Seattle's contracts with LENZ Enterprises and Cedar Grove for residential curbside organics processing also allow residents to dispose of food and yard waste as well as both approved compostable paper and plastic packaging in their compost carts. In other jurisdictions in King County, residential curbside organics collection service is voluntary and residents are directed to only dispose of food, yard waste, and compostable paper in their compost carts.[6]
- **King County's estimated capture rates for compostable material do not include data on the residential commingled recycling stream** as this stream was not characterized during the study period. While capture rate calculations require composition and tonnage data across all disposal and recovery streams, the limited amount of compostable material that ends up in the recycling stream as contamination is de minimis and should not materially impact capture rate estimates presented below.

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[5] *Seattle Municipal Code sections **21.36.082** and **21.36.083***

[6] ***How to compost right - King County, Washington***

Findings

Summary

Capture rates for compostable materials in Seattle and King County are shown in Figure 1 and Figure 2 and are described in more detail below. Table 1 and Table 2 in Appendix A: Seattle Compostable Material Capture Rate Model Data Tables and Material Definitions and Appendix B: King County Compostable Material Capture Rate Model Data Tables and Material Definitions show tons of compostable material used in capture rate calculations.

Figure 1. Seattle Residential Compostable Material Capture Rates by Material Type Found in Each Collection Stream

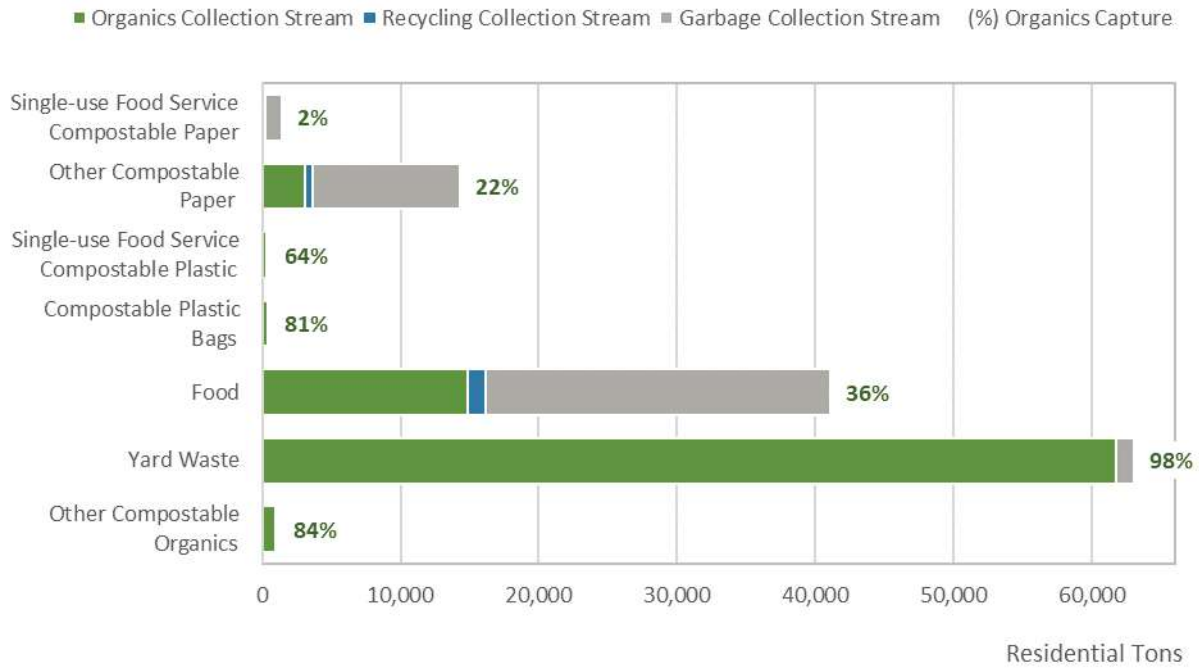
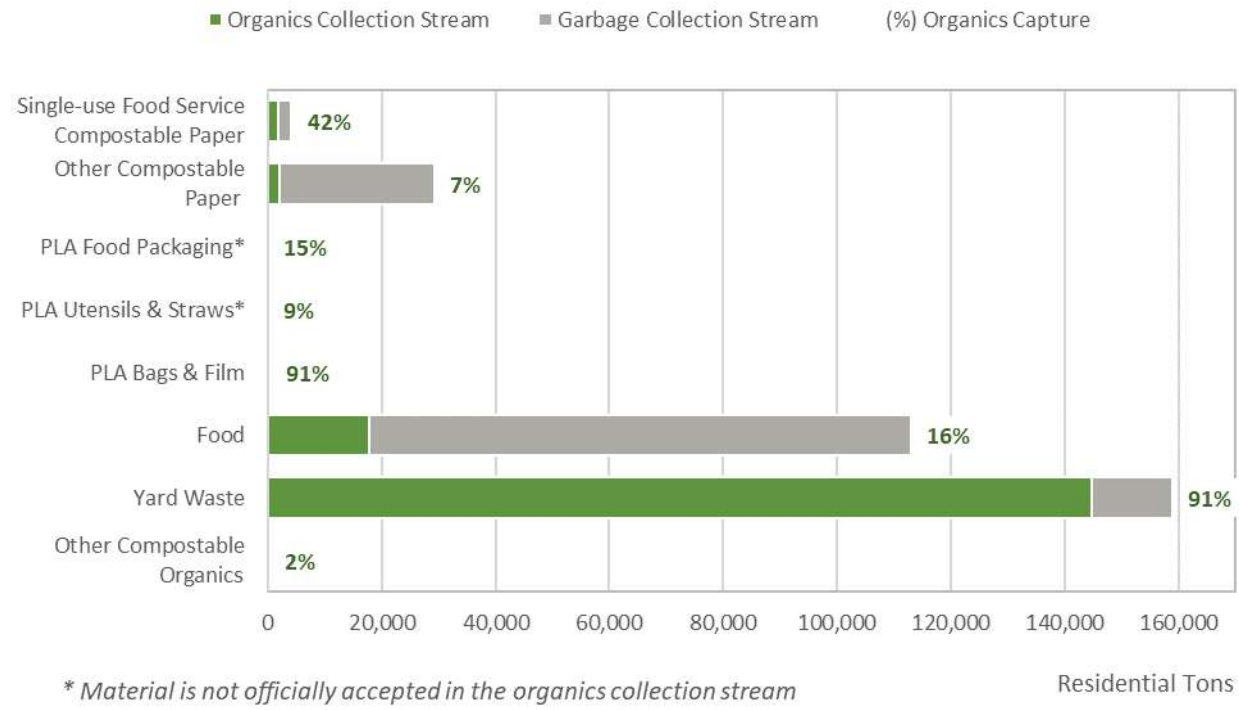


Figure 2. King County Residential Compostable Material Capture Rates by Material Type Found in Each Collection Stream



Compostable Products Capture Rates

There are opportunities to **increase residential capture rates** for nearly all compostable materials, including **food** and **compostable paper and plastic products**.

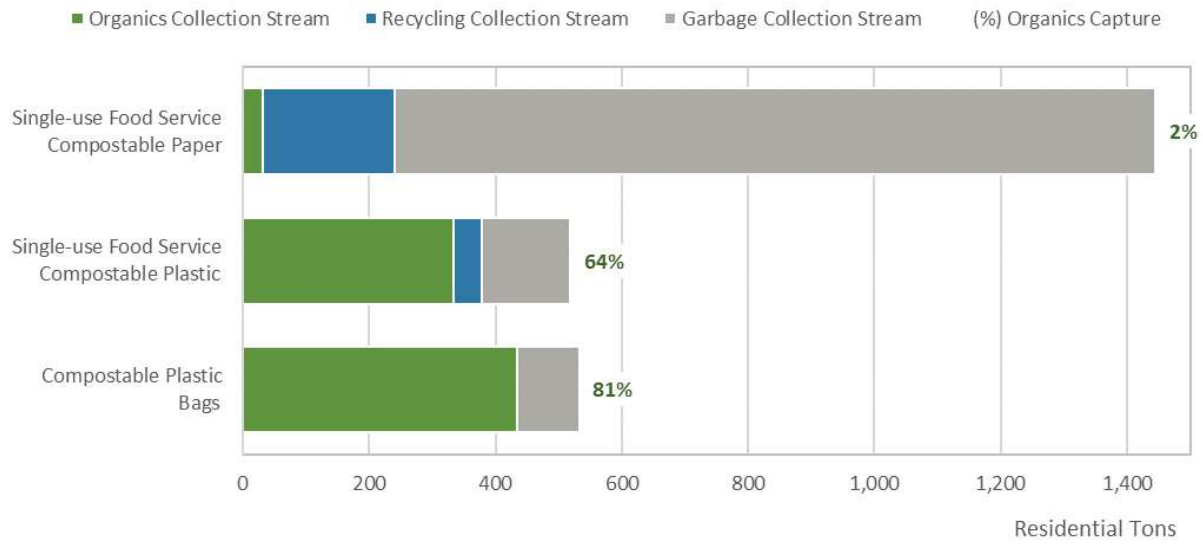
SEATTLE

- In Seattle, **36% of food waste** is captured in the residential organics stream. Capturing more food waste is the primary justification for allowing or requiring the use of compostable products.
- Only **2% of single-use food service compostable paper** is captured in the residential organics stream. The vast majority of these products are going to landfill, and some portion becomes contamination in the recycling stream.
- **Other compostable paper** (which includes napkins paper towels, waxed paper, tissues, and other papers soiled with food during use) is categorized separately and comprises a greater proportion of compostable material generation. It also has a

higher capture rate **(22%)** than single-use food service compostable paper products.[7]

- Capture rates for compostable plastic products are higher, with **64% of single-use compostable plastic food service products** and **81% of compostable plastic bags** captured in the residential organics stream, which are likely used in home kitchens to collect food waste (Figure 3).

Figure 3. Seattle Compostable Paper and Plastic Products Capture Rates



KING COUNTY

- In King County, only **16% of food waste** is captured in the residential organics stream.
- **42% of single-use food service compostable paper** is captured in the residential organics stream.
- **Other compostable paper** (which includes paper soiled with food that was not used to serve food such as napkins, paper towels, coffee filters, and tissue) comprises a greater proportion of compostable material generation but has a lower capture rate **(7%)** than single-use food service compostable paper products.[8]
- Capture rates for non-bag compostable plastic products are lower, with **15% of compostable plastic food packaging** and **9% of compostable plastic utensils**

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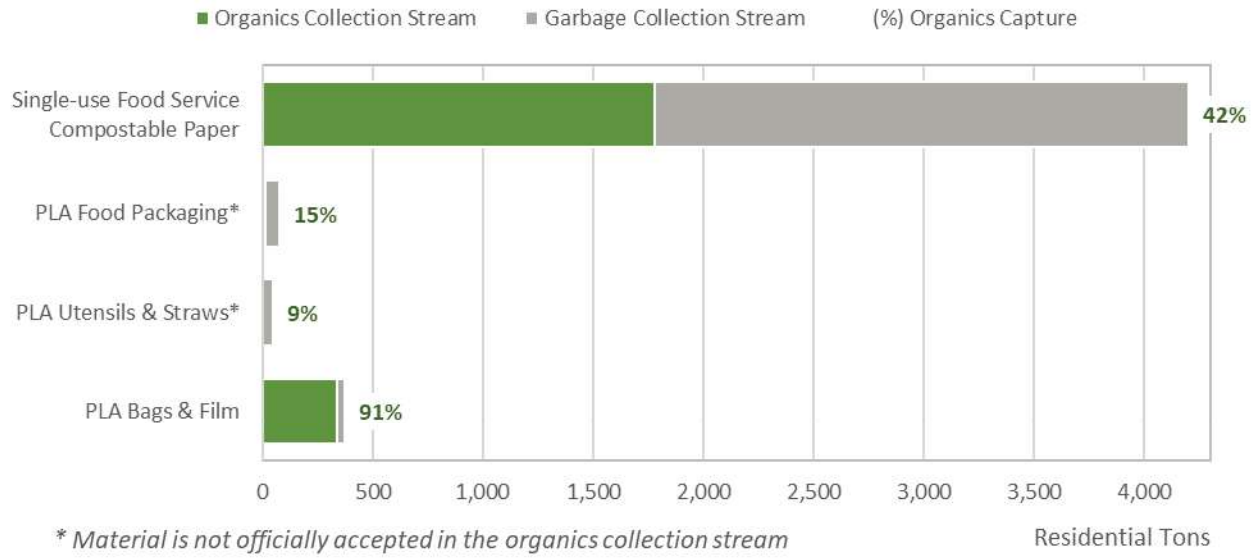
[7] See Appendix A: Seattle Compostable Material Capture Rate Model Data Tables and Material Definitions for an explanation of what is included within each material category.
[8] See Appendix B: King County Compostable Material Capture Rate Model Data Tables and Material Definitions for an explanation of what is included within each material category.

and straws captured in the residential organics stream.[9] While these rates are relatively low, residents are still disposing of some compostable plastics in the organic stream despite them not being officially accepted. Compostable plastic bags are captured at similar rates to Seattle (**91%**), and these bags are expressly allowed in the organics stream per King County and waste hauler educational materials (Figure 4).

The difference between capture rates for non-bag compostable plastic products in each jurisdiction could be partially attributed to the fact that curbside organics service is voluntary in the rest of King County and residents are not directed to put these materials in their compost carts. This was noted as a point of inconsistency and confusion during the organics materials management facility interviews.[10]

Figure 4. King County Compostable Paper and Plastic Products Capture Rates



[9] Because of study design and data collection differences, the King County data breaks out compostable plastic packaging separately from compostable plastic utensils and straws, while the Seattle data combines these two materials into single-use compostable plastic food service products.

[10] A summary of organic material management facility interviews with additional details will be presented at the April Advisory Committee meeting.

Appendix A: Seattle Compostable Material Capture Rate Model Data Tables and Material Definitions

Table 1. Seattle Residential Compostable Material Tonnage and Capture Rates by Material Type (2021-2022)

Material Type	Garbage	Recycling	Organics	Total Generation	Capture Rate
Single-use Food Service Compostable Paper	1,205	208	32	1,445	**2%**
Other Compostable Paper	10,642	515	3,120	14,278	**22%**
Single-use Food Service Compostable Plastic	140	46	333	518	**64%**
Compostable Plastic Bags	98	1	434	533	**81%**
Food	24,876	1,293	14,906	41,075	**36%**
Yard Waste	1,465	53	62,712	64,230	**98%**
Other Compostable Organics	167	27	996	1,190	**84%**
OVERALL	**38,426**	**2,116**	**81,537**	**122,079**	**67%**

Seattle Capture Rate Model Compostable Material Category Definitions

Material category definitions below were developed specifically for modeling compostable material capture rates and were derived by cross-walking material categories across Seattle's residential garbage, recycling, and organics studies. Because of these adjustments, material categories do not align exactly with those from the **2021-2022 Residential and Commercial Organics Composition Study**.

Compostable Paper Products Categories

1. **Single-use food service compostable paper:** Pizza boxes, pizza box inserts, paper plates, bowls, and cups, including wax-coated paper plates, bowls and cups and items labeled "compostable." Excludes items with visible plastic coating or lining unless the item is clearly labeled compostable. BPI and/or CMA-labeled compostable paper clamshells and waxed cups. Includes paper or paper packaging soiled with food that was used in a "single-use food service" capacity. Examples include paper plates, compostable paper cups (no plastic coating), pizza boxes, french-fry containers, fast food wraps, and hot bar boxes from grocery stores that are not lined in plastic. Does not include napkins or paper towels.

2. **Other compostable paper:** Paper towels, waxed paper, tissues, and other papers that were soiled with food during use. Long shreds (at least 8 ½ inches long and ¼ inch wide) in a clear plastic bag, tied off. Does not include confetti or crosscut shreds. Includes paper soiled with food that was not used to serve food. Examples include napkins, paper towels, coffee filters, and tissue.

Compostable Plastic Products Categories

3. **Single-use Food service compostable plastic:** Includes forks, spoons, knives, and straws labeled "compostable." Includes clamshells, cups, cup lids, plates, bowls, salad trays, and other food service packaging labeled "compostable." BPI or CMA-labeled food service ware, tan-colored compostable meat trays, and BPI or CMA-labeled kitchen compost bags currently on accepted list. Includes compostable food plastic containers and food packaging that are marked with the words "compostable" or "#7 PLA" in the plastic code.

4. **Compostable plastic bags:** Film "plastic" bags made of materials such as corn starch or soy and are certified compostable (e.g., BioBag, EcoSafe). Bags

appropriately labelled compostable (e.g., by BPI, CMA, or CG), that should be approved by Cedar Grove.

Food and Yard Waste Categories

5. **Food:** includes the following:

    a. Edible food scraps – packaged: The components of food that, in a particular food supply chain, are intended to be consumed by humans, and is enclosed in plastic, paper, glass, or other packaging. Includes food that is enclosed in any type of packaging, regardless of whether it is in its original packaging. Excludes fats, oils, and grease. The components of fruits and vegetables that, in a particular food supply chain, are intended to be consumed by humans. Includes edible vegetative food that is enclosed in plastic, paper, glass, or other packaging, regardless of whether it is in its original packaging. Examples include packaged salad, packaged frozen vegetables, and bags of coffee beans. Non-vegetative food, such as breads, meats, pastas, dairy products, etc. The components of food that, in a particular food supply chain, are intended to be consumed by humans. Includes edible food that is enclosed in plastic, paper, glass, or other packaging, regardless of whether it is in its original packaging.

    b. Edible food scraps – non-packaged: The components of food that, in a particular food supply chain, are intended to be consumed by humans, and is not enclosed in plastic, paper, glass, or other packaging. Excludes fats, oils, and grease. The components of fruits and vegetables that, in a particular food supply chain, are intended to be consumed by humans. Includes edible vegetative food that is not enclosed in plastic, paper, glass, or other packaging. Examples include loose vegetables and fruits. Non-vegetative food, such as breads, meats, pastas, dairy products, etc. The components of food that, in a particular food supply chain, are intended to be consumed by humans. Includes edible food that is not enclosed in plastic, paper, glass, or other packaging. The edible portion of food that comes from a plant but does not appear to have grown on the customer's property. Examples include vegetables and fruits. Includes fruits and vegetables in the original or other container when the container weight is less than 10% of the total weight. Food that comes from a plant growing on or cleared from the customer's property. Examples will include fruits and vegetables disposed of in the set-out because of falling or pruning from trees and gardens. The edible portion of non-dairy food that comes from an animal. Examples include eggs and eggs in shell, fresh meat, cooked meat, and meat scraps. Includes meat in the original or

another container when the container weight is less than 10% of the total weight. Does not include dairy products such as cheese and milk. Any food that cannot be put in the above categories BUT deemed edible. Examples include food items that are a combination of the above categories, as well as unused tea packets, grains, crackers, bread, cereal, dairy, soda, beer, bottled water, and juice. Also includes many prepared foods like burritos, lasagna, and sandwiches. Includes edible food in the original or another container when the container weight is less than 10% of the total weight.

c. Non-edible food scraps: The non-edible portions of food material. Examples include fruit peels, vegetable peelings and potato skins, pits, cores, juiced oranges, eggshells, bones, gristle and meat trimmings, fish skins, and seafood shells. Excludes fats, oils, and grease. The non-edible portions of food material. Examples include fruit peels, vegetable peelings and potato skins, pits, cores, juiced oranges. Includes non-edible food whether it is packaged or non-packaged. The non-edible portions of food material. Examples include eggshells, bones, gristle and meat trimmings, fish skins, and seafood shells. Includes non-edible food whether it is packaged or non-packaged. The non-edible portions of food that comes from plants. Examples include fruit peels, vegetable peelings and potato skins, pits, cores, juiced oranges. The non-edible portions of non-dairy food that comes from an animal. Examples include egg shells, bones, gristle and meat trimmings, fish skins, and seafood shells. Any food that cannot be put in the above categories AND deemed non-edible. Examples include food items that are a combination of the above categories, as well as coffee grounds or used tea packets. Includes non-edible food in the original or another container when the container weight is less than 10% of the total weight.

6. **Yard waste:** Non-woody plant materials from a yard or garden area, including grass clippings, leaves, weeds, and garden wastes. Cut prunings, 2" or less in diameter, from bushes, shrubs, and trees. Grass, leaves, small herbaceous plants, inedible garden fruits and vegetables (e.g. pumpkins, pest-ridden apples, etc.), evergreen needles. Prunings that are up to 2 inches in diameter at their largest point. Stumps of trees and shrubs, with any adhering soil Other natural woods, such as logs and branches in excess of four inches in diameter (four inches is the limit used for defining prunings as yard wastes). Leaves, grass clippings, garden wastes, and brush up to four inches in diameter.

Other Compostables Category

7. **Other compostable organics**: Wooden chopsticks, popsicle sticks, toothpicks, and coffee stirrers. Toothpicks, chop sticks, untreated wood (including dimensional lumber), and indoor florals. Includes pruning's larger than 2 inches. Other compostable organic materials, not included in other categories, such as popsicle sticks, chopsticks, and toothpicks.

Appendix B: King County Compostable Material Capture Rate Model Data Tables and Material Definitions

Table 2. King County Residential Compostable Material Tonnage and Capture Rates by Material Type (2021-2022)

Material Type	Garbage	Recycling	Organics	Total Generation	Capture Rate
Single-use Food Service Compostable Paper	2,423	-	1,780	4,203	**42%**
Other Compostable Paper	27,084	-	2,115	29,199	**7%**
PLA Food Packaging	65	-	12	77	**15%**
PLA Utensils and Straws	42	-	4	46	**9%**
PLA Bags and Film	35	-	337	372	**91%**

Material Type	Garbage	Recycling	Organics	Total Generation	Capture Rate
Food	95,044	-	17,897	112,941	**16%**
Yard Waste	14,328	-	144,643	158,971	**91%**
Other Compostable Organics	183	-	4	187	**2%**
OVERALL	**139,203**	**-**	**166,792**	**305,995**	**55%**

King County Capture Rate Model Compostable Material Category Definitions

Compostable Paper Products Categories

1. **Single-use food service compostable paper**: Includes paper or paper packaging soiled with food that was used in a "single-use food service" capacity. Examples include paper plates, compostable paper cups (no plastic coating), pizza boxes, french-fry containers, fast food wraps, and hot bar boxes from grocery stores that are not lined in plastic. Does not include napkins or paper towels.
2. **Other compostable paper**: Includes paper soiled with food that was not used to serve food. Examples include napkins, paper towels, coffee filters, and tissue.

Compostable Plastic Products Categories

3. **PLA (#7) food packaging:** Includes compostable food plastic containers and food packaging that are marked with the words "compostable" or "#7 PLA" in the plastic code. Includes materials from food service providers (e.g., restaurants, food trucks, food vendors), grocery stores, and other retailers. Examples include takeout containers, produce packaging, meat/produce trays IF compostable. Does not include utensils and straws.

4. **PLA (#7) utensils and straws:** Includes utensils (e.g., cups/lids, bowls, clamshells, plates, trays, cutlery) or drinking straws marked with the words “compostable” or “#7 PLA” in the plastic identifier.

5. **PLA bags and film:** Includes compostable plastic items, such as film “plastic” bags made of materials such as corn starch or soy designed to compost (e.g., BioBag, EcoSafe).

Food and Yard Waste Categories

6. **Food:** includes the following:

    a. Fruits & Vegetables, Edible: The edible portion of food that comes from a plant but does not appear to have grown on the customer’s property. Examples include vegetables and fruits. Includes fruits and vegetables in the original or other container when the container weight is less than 10% of the total weight.

    b. Fruits & Vegetables, Non-edible: The non-edible portions of food that come from plants. Examples include fruit peels, vegetable peelings and potato skins, pits, cores, juiced oranges.

    c. Homegrown Fruits & Vegetables: Food that comes from a plant growing on or cleared from the customer’s property. Examples will include fruits and vegetables disposed of in the set-out because of falling or pruning from trees and gardens.

    d. Meat, Edible: The edible portion of non-dairy food that comes from an animal. Examples include eggs and eggs in shell, fresh meat, cooked meat, and meat scraps. Includes meat in the original or another container when the container weight is less than 10% of the total weight. Does not include dairy products such as cheese and milk.

    e. Meat, Non-edible: The non-edible portions of non-dairy food that comes from an animal. Examples include eggshells, bones, gristle and meat trimmings, fish skins, and seafood shells.

    f. Other Food Waste, Edible: Any food that cannot be put in the above categories BUT deemed edible. Examples include food items that are a combination of the above categories, as well as unused tea packets, grains, crackers, bread, cereal, dairy, soda, beer, bottled water, and juice. Also includes many prepared foods like burritos, lasagna, and sandwiches. Includes edible food in the original or another container when the container weight is less than 10% of the total weight.

g. Other Food Waste, Non-edible: Any food that cannot be put in the above categories AND deemed non-edible. Examples include food items that are a combination of the above categories, as well as coffee grounds or used tea packets. Includes non-edible food in the original or another container when the container weight is less than 10% of the total weight.

7. **Yard waste:** includes the following:

    a. Stumps: Stumps of trees and shrubs, with any adhering soil.

    b. Large Prunings: Other natural woods, such as logs and branches in excess of four inches in diameter (four inches is the limit used for defining prunings as yard wastes).

    c. Yard Wastes: Leaves, grass clippings, garden wastes, and brush up to four inches in diameter.

Other Compostables Category

8. **Other compostable organics**: Other compostable organic materials, not included in other categories, such as popsicle sticks, chopsticks, and toothpicks.