



Multifamily Bulky Waste Collection Study

June 2024

If you picnic at Blue Lake or take your kids to the Oregon Zoo, enjoy symphonies at the Schnitz or auto shows at the convention center, put out your trash or drive your car – we’ve already crossed paths.

So, hello. We’re Metro – nice to meet you.

In a metropolitan area as big as Portland, we can do a lot of things better together. Join us to help the region prepare for a happy, healthy future.

Stay in touch with news, stories and things to do.

oregonmetro.gov/news

Follow oregonmetro



Metro Council President

Lynn Peterson

Metro Councilors

Ashton Simpson, District 1

Christine Lewis, District 2

Gerritt Rosenthal, District 3

Juan Carlos González, District 4

Mary Nolan, District 5

Duncan Hwang, District 6

Auditor

Brian Evans

600 NE Grand Ave.

Portland, OR 97232-2736

503-797-1700

TABLE OF CONTENTS

Acknowledgements.....	1
Executive Summary.....	2
SECTION 1: Introduction.....	5
SECTION 2: Analysis and Results of Measures.....	6
SECTION 3: Using Results for Planning.....	15
SECTION 4: Property Manager Interviews Summary.....	18
SECTION 5: Resident Survey.....	21
SECTION 6: Conclusions and Potential Best Practices.....	22
Glossary.....	24
APPENDIX A: Detailed Methodology	
APPENDIX B: Reuse Assessment Methodology	
APPENDIX C: Connection to Existing Work and Study Development	
APPENDIX D: Property Manager Recruitment Email	
APPENDIX E: Resident Outreach Materials and Strategy	
APPENDIX F: Property Manager Interview Questions	
APPENDIX G: Post-study Resident Survey Questions and Results	
APPENDIX H: Flyers Distributed to Residents	
APPENDIX I: Phase 2 Summaries	

ACKNOWLEDGEMENTS

Metro Staff

Casey Mellnik, Associate Solid Waste Planner and project manager
Sara Kirby, Senior Solid Waste Planner
Rachel Chu, Senior Solid Waste Planner
Lauren Ballinger, Associate Solid Waste Planner
Everett Owen, Assistant Solid Waste Planner
Rosalynn Greene, Strategic Initiatives Manager
Thomas Egleston, Policy & Program Development Manager
Sara Seid, Associate Public Affairs Specialist
Janet Edwards, Program Assistant
Joshua Manus, Associate Public Affairs Specialist
Alan Snook, Senior Solid Waste Planner
Warren Johnson, Policy & Compliance Division Director

Thank you to the following people at the City of Gresham:

Nick Isbister, Multifamily Recycling Coordinator
Shannon Martin, Solid Waste & Sustainability Manager

Thank you to the following people and collection companies for partnering on this study, operating the collection routes and collecting data for the study:

Matt Miller, Gresham Sanitary Service
Larry Head, Gresham Sanitary Service
Tod Ronson, Gresham Sanitary Service
Dave Huber, WM
Carlton Paulmier, WM
Jason Wille, WM

Thank you to the following people for supporting the resident outreach:

Anallely Rodriguez, Multifamily Programs Manager, Trash for Peace
Laura Kutner, Founder & Executive Director, Trash for Peace
Alice Rotsztain, Associate Director, Trash for Peace
Alondra Flores Aviña, Environmental Promoter Program Manager, Trash for Peace

Thank you to the following people for lending their expertise to the study:

Anna Kurnizki, Executive Director, Community Warehouse
Stephanie Weber, Program Manager Portland, Community Warehouse
Shayna Hobson, Director of Programs, Community Warehouse

EXECUTIVE SUMMARY

Managing the collection and disposal of unwanted large household items, also called bulky waste, can be challenging and expensive. Bulky waste collection at multifamily properties includes additional complexity for residents and property managers, specifically: how to make the services clear and accessible to residents, where residents should place large household items out for disposal, and who is responsible for the cost of the collection.

Metro and local governments are working together to implement changes and additions to existing bulky waste services for residents living at multifamily properties. The purpose of the Multifamily Bulky Waste Collection Study was to gather data to better understand how much and how often bulky waste material was generated for collection and estimate the cost to operate a regular on-route bulky waste collection service.



Study Overview

The study was conducted in the City of Gresham and included 39 properties and 2,800 apartment homes or units. Data was collected for 16 weeks from October 2023 through January 2024. Each multifamily property received a weekly bulky waste pick-up service from their garbage and recycling collection company franchised by the City of Gresham. For each day the bulky waste routes operated, data was collected and reported by the collection companies. Key data points included material generation, frequency of utilization of the service, and disposal costs. Material characterization and opportunities for reuse were also part of the assessment.

Study Measures

- **Generation:** how much bulky waste is generated per multifamily household or dwelling unit.
- **Frequency of utilization:** how often multifamily properties placed items out for collection.
- **Cost:** average cost per household or unit to provide this study's on-route bulky waste collection at multifamily properties. *Includes costs related to Extended Producer Responsibility (EPR) & special handling considerations.*
- **Material characterization:** identifying the most common materials set out for disposal. *Includes EPR materials & materials requiring special handling.*
- **Reuse:** quantifying the amount of items that have the opportunity to be reused once they are set out for collection.

Results

Generation	
Average generation per multifamily household unit per week	Average generation per multifamily household unit per year
2 – 3 pounds	155 pounds

This amount of bulky waste material generation is similar to one mattress and one large chair each year per household.

Frequency of utilization	
Average number of times properties utilized the service	Larger versus smaller properties
2-3 times per month	Large properties utilized the service more frequently than smaller properties

Like other waste streams, the need for bulky waste collection service varies, with higher-utilization weeks and lower-utilization weeks.

Cost		
Estimated cost for the study to operate weekly	Estimated cost for the study to operate twice a month	Estimated cost for the study to operate once a month
\$4.30 per multifamily household per month	\$2.70 per multifamily household per month	\$2.00 per multifamily household per month

Many factors may impact the cost to provide bulky waste collection service, such as: size of a franchise area, number of multifamily properties and their unit counts, specific collection company operations, routing efficiencies, special materials that may avoid or incur additional disposal costs, and equipment investments.

Material characterization	
Most common large household items set out for disposal at multifamily properties	
Furniture (both upholstered and unupholstered)	Mattresses and box springs

Reuse
Assessing the opportunity for reuse through multifamily bulky waste collection
The reuse opportunity is greatest before items are set out at the point of collection, but there are a small number of items that are gleaned from the collection point, likely by other residents.

This study took place in the fall and winter when the weather in Oregon greatly reduces the opportunity to reuse large items, particularly upholstered materials, during that time.

Using the results

The results specific to how much material is generated, how often it is generated, and the cost estimates can be used by local governments and collection companies to plan for future services in their jurisdictions. Results will be used by Metro to inform policy planning related to bulky waste collection service.

Also included in this study is qualitative information gathered through six interviews with property managers, conversations with the City of Gresham and the two collection companies that participated in the study.

Six property manager interviews – key takeaways

- Managing bulky waste is an ad hoc, expensive and time-intensive task, with collection needed anywhere from weekly to once per month.
- Having a consistent bulky waste collection during the study that residents knew about enabled residents to properly manage their bulky items, reduced conflict, and eased the burden on property managers.
- For future service planning, identifying the right location for bulky waste collection and enclosure design for each property will be helpful to dissuade illegal dumping and promote cleanliness of the property.

Conversations with City of Gresham and two collection companies – key takeaways

- A regionally consistent list of accepted materials will support residents to use the service. Flyers and other educational materials are an opportunity to remind residents what items are or are not considered bulky waste.
- Determining a designated location and clear signage at each property for bulky waste helps ensure residents and collection companies have safe and convenient access to store and collect items. Smaller properties with limited exterior space may face additional challenges.
- Engagement with property managers is important to ensure that the service functions well and is safe and accessible to residents.
- The types of equipment used to collect bulky waste is important when considering EPR covered materials such as TVs and mattresses, which cannot be mixed with other waste materials or lose recycling viability when disposed in compacting trucks.

What is bulky waste?

Bulky waste is a large household item that is unwanted and ready to be discarded by a household and does not fit inside the regular garbage or recycling receptacles. These items have the potential to be thrown away, recycled or reused. This term includes furniture, appliances, electronic devices, outdoor patio and garden items, miscellaneous household items and household vehicle items. This term does not include household hazardous waste, construction and demolition debris, remodeling debris, yard debris, standard recyclable material, gas cylinders, business waste, or any waste that can fit within the standard garbage receptacle.

SECTION 1: INTRODUCTION

Multifamily residents and properties have unique challenges with bulky waste disposal, which are well known by property managers, collection companies, and local governments. The [2030 Regional Waste Plan](#) includes an action that directs to the Metro and local governments to provide regularly occurring bulky waste collection service, with particular emphasis on multifamily communities and lower-income households.

In 2021, as part of the [regional service standard](#), Metro's [administrative rules](#) were updated to address inequities for residents in multifamily properties. The updates established minimum collection standards for garbage and recycling services, including the provision of regularly-occurring bulky waste collection. See Appendix C for additional information on existing work connected to this study.

In apartments, condominiums and other multifamily housing, the property manager is typically the account holder and is the person responsible for paying the collection company for the bill. This presents barriers for residents such as:

- Limited access to directly schedule and pay for a bulky waste pickup service with the collection company.
- Difficulty coordinating with property managers to schedule a pickup, including resistance from the property manager to coordinate the service, and, in some cases, language barriers.
- Concerns around the unknown cost associated with the pickup. Rates are inconsistent across the region and often the final cost is not known until after service is provided.
- Concerns from property managers that items placed out for scheduled pick up become a nuisance, with additional items being illegally dumped as a pile forms. This adds to the unknown cost that may need to be borne by the property, sometimes passed on to residents, and can be unsafe and visually unappealing.

Metro and local governments are working collaboratively to improve existing multifamily services and implement changes and additions to the existing bulky waste service. The goal of this work is for multifamily residents to have bulky waste collection service at their property that is accessible, convenient, consistent and occurs regularly. On-route or regularly occurring multifamily bulky waste collection service is uncommon in greater Portland. To support the development of enhanced services for multifamily residents, this

Definition of Multifamily Properties

Apartment and condominium buildings with five or more units; may also include mixed-use buildings, retirement communities and mobile home parks. This report focuses on multifamily sites with shared garbage and recycling collection service.



study gathered qualitative and quantitative data to help inform policy options that can be considered by cities, counties, and Metro.

Outcomes of this study include data results as well as planning values for policy and program planning and additional results to better understand the bulky waste collection stream.

Potential best practices for future planning were developed from interviews with six property managers, the City of Gresham (the host jurisdiction for the study), and two collection companies plus a resident survey with 14 respondents.



SECTION 2: ANALYSIS AND RESULTS OF MEASURES

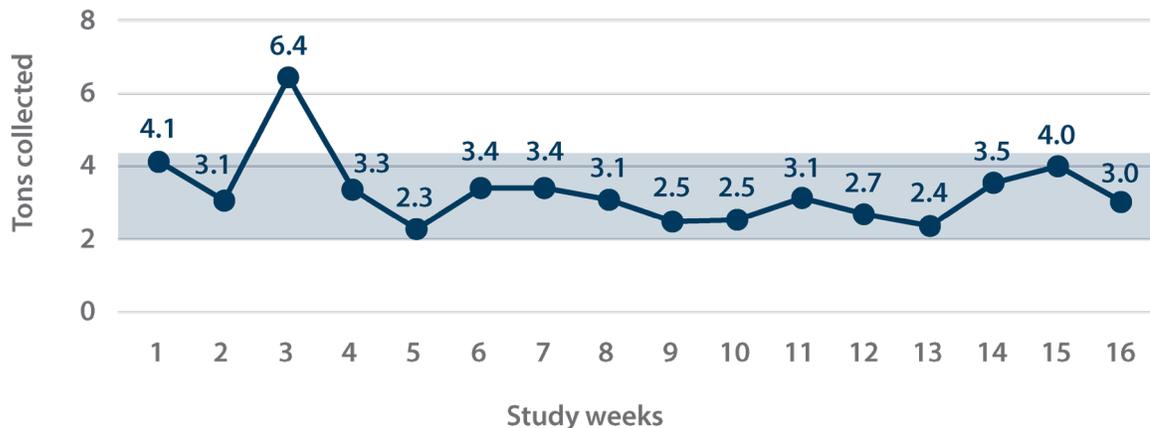
Generation

About the measure

This study measured generation in terms of the weight of bulky waste collected from each route. Counts or weights of bulky items were not collected on the route because it was important that routes were run as they would be on a typical pickup in order to estimate cost of the service. Since service is shared by residents living in multifamily housing, it is challenging to determine the number of households setting out materials at a particular property. For that reason, generation was averaged each week across all the properties and housing units included in the study.

Over the 16 weeks of the study, collection companies collected a total of 53 tons of bulky waste. On average, 2 to 4 tons of bulky waste were collected per week. This amount remained consistent throughout the study. The only exception occurred in week three, when generation was over 6 tons. The increase in generation in week three may reflect a peak awareness of service provided during the study at the largest properties.

Total bulky waste generation during the study



If the amount of bulky waste generated in the study is spread across the approximately 2,800 dwelling units served by the study, the average generation per unit is estimated at 1.5 to 3 pounds per week.

Put in terms of individual residents, over the course of a year, 3 pounds per unit per week would translate to about 155 pounds per unit, roughly equivalent to one mattress and one large chair per year.

Frequency of utilization

About the measure
The frequency of utilization of the service measures how often properties set out materials for collection during the study. It is expressed in terms of the number of weeks properties participated of the 16 weeks of the pilot service and the average number of times they set out items per month.

Over the four months of the study, properties set out bulky items two to three times each month on average.

Month	Oct. 2023	Nov. 2023	Dec. 2023	Jan. 2024*
Average number of weeks properties utilized the service	2	3	2	2

**Note that the pilot ended the third week in January.*

Large properties used the service more often than small properties. As shown by the height of the bars in the chart below, more of the properties with 40-104 and 105+ units set out bulky items each week compared to properties with 5-19 and 20-39 units.

Most properties used the service 8-15 weeks of the 16-week study. Five properties set out items all 16 weeks; all had 100+ dwelling units. Of the smallest properties (fewer than 20 units), most utilized the service fewer than half of the study weeks. Like other waste streams, need varies, with higher-utilization weeks and lower-utilization weeks, such as move-in and move-out at the start and end of the month.

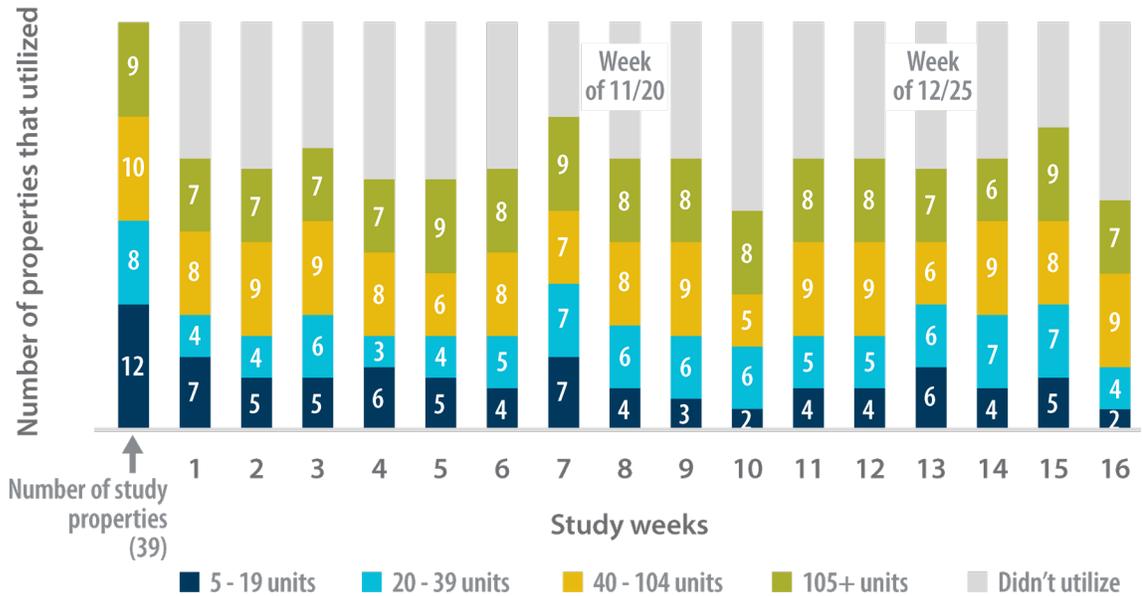
“ I don't think it would be a weekly pickup, maybe a once-a-month service would be good for my residents. It would allow items to accumulate. ”

- Property manager of a 20-49 unit property

“ Once every 2 weeks at a bare minimum for clearing stuff out. ”

- Property manager of a 100+ unit

Number of properties utilizing the service each week by property size



Property managers who were interviewed after the study said they currently need to schedule a pick-up of bulky waste on their property anywhere from weekly to once a month. When asked how frequently they would recommend offering a future bulky waste collection service, their answer was consistent.

Cost

About the measure

The cost estimate accounts for the cost of collection operations and labor as a function of the time it took for collection and disposal; amount of bulky waste generated; and disposal costs, including the tonnage fees, trips to transfer stations and special material fee.

Formula for calculating study costs per week

$$\left(\begin{array}{l} \text{Collection} \\ \text{operations and} \\ \text{labor costs rate} \end{array} \times \begin{array}{l} \text{Truck hours} \\ \text{(time on route)} \\ \text{per week} \end{array} \right) + \left(\begin{array}{l} \text{Per ton tip fee} \\ \times \\ \text{\# tons collected} \end{array} + \begin{array}{l} \text{Transaction fee} \\ \times \\ \text{\# dump trips} \end{array} + \begin{array}{l} \text{Special} \\ \text{material} \\ \text{fees} \end{array} \right)$$

Considering all 16 weeks of the study, on average the cost was \$750 to \$1,000 per ton to operate the weekly bulky waste service. Disposal represented approximately 30 percent of this cost, and the other 70 percent included collection labor and operations.

Spreading the cost to operate the service across the 2,800 dwelling units served by the study, it was approximately \$1.00 per unit per week, or \$4.30 per unit per month.

Given that many properties in the study did not set out items for pickup on a weekly basis, the study also considers the scenario of offering the service once or twice a month instead

of weekly. The following assumptions can be used: collection costs per pickup are the same as the study’s collection costs per week and disposal costs increase in line with cumulative generation of bulky waste over the month. (See Appendix A for more information.) The study service would have cost an estimated \$2.00 per unit per month if it had been offered once a month and \$2.70 per unit per month if it had been offered twice a month.

Study cost per ton each week (includes collection and disposal)



Additional cost considerations

Study costs compared to a fully operationalized service costs

The study cost per ton and per unit is likely higher than it would be for a fully operationalized service. The study was an opportunity for the two participating collection companies to identify opportunities for increased efficiency in their collection routes, for example optimizing the trucks used and the number of properties on a route. Operational and logistical efficiencies like these could potentially result in more tons of bulky waste collected per route and help spread fixed costs, allowing for a lower cost per ton than the study results. As one example, week three of the study saw the highest generation of bulky waste and also the lowest cost per ton.

The study cost estimate does not account for capital costs. An expansion of the service to a whole franchise area may require purchase of additional trucks or capital assets needed for disposal and storage that were not needed for the study service of 2,800 multifamily units.

Current costs to manage bulky waste

Three property managers who participated in the study quoted the following costs for what they currently pay for disposing bulky waste on their properties, before and after the study service:

- Property of less than 50 units: \$400-\$800 per month using their franchised collection company or a third-party junk hauler.

- Property of 100 units: \$120-\$300 per month using their franchised collection company.
- Property of 150 units: \$1,000 per month using a third-party junk hauler.

These property managers also indicated that managing bulky waste entails non-financial costs, which decreased during the collection study, including:

- Reduced time property managers spent calling their collection company for pickups.
- Fewer confrontations with residents disposing items.
- Perception of reduced stress for some residents who were able to place items out for disposal without fear or concern they were violating property policies.

“ I would love to be able to budget ... to be able to anticipate the charge would be more helpful, keep the property cleaner and take jobs off my plate. ”

- Property manager of a 100-150 unit property

“ For both me and the residents it was nice that instead of having to call out that they left their items out, it would just get picked up. ”

- Property manager of a 20-49 unit property

Material characterization

About the measure

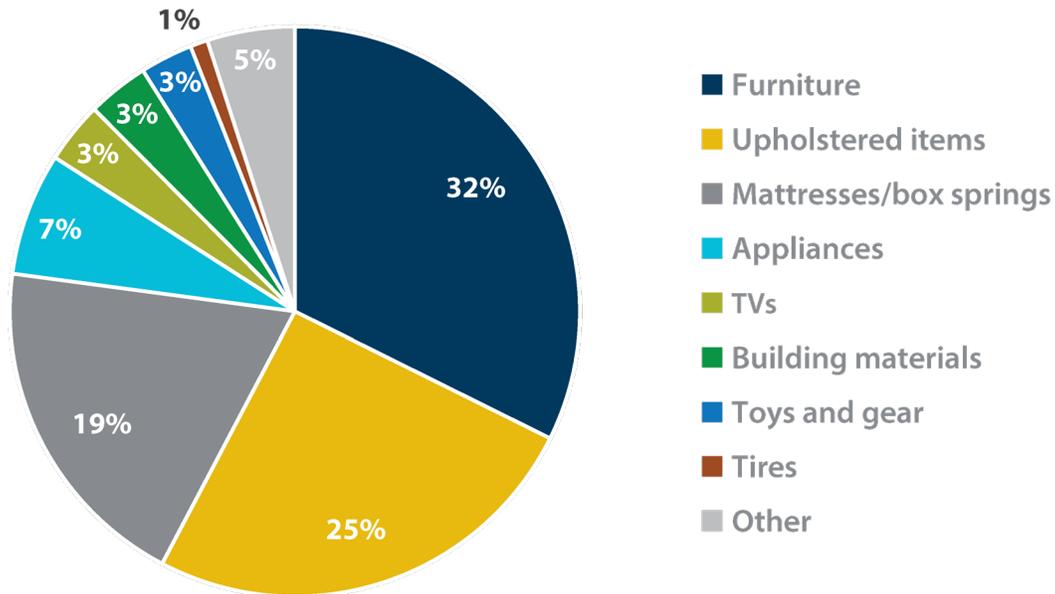
Bulky waste set out for disposal was identified and counted for 3 weeks in 3 different months of the study. The types of bulky waste were counted and assigned within major categories of large household items, specifically furniture (upholstered and unupholstered), mattresses (including box springs), TVs and large appliances. Additional categories were created for items that appeared frequently in the results, including tires, toys and gear, and building materials.

Understanding the types of bulky waste items that were set out for collection in the study helps inform the equipment and logistics that might be needed to pick up and properly dispose or recover the materials.



The bulky items set out most frequently were furniture (upholstered and unupholstered) and mattresses (including box springs). Items that were potentially not from residents, such as construction materials, appeared infrequently.

Study material characterization



Percentages do not add to 100% due to rounding.

EPR materials

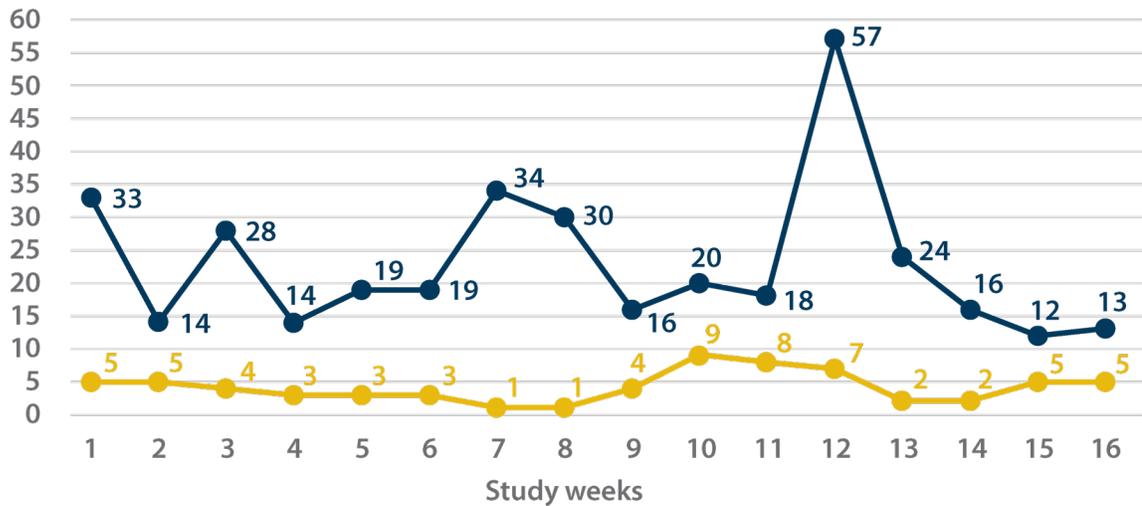
Two common types of bulky waste items counted in the collection study were large televisions and mattresses (including box springs). These materials are, or will soon be, managed through new and existing EPR programs.

- **Mattresses:** the study results indicate a substantial opportunity to remove mattresses from the waste stream through a bulky waste collection program. Over the 16-week period, 367 mattresses (including box springs) were collected, representing approximately 8 mattresses per 1000 multifamily dwelling units served per week.
- **E-cycles:** 67 large e-cycles materials, including televisions, were collected over the 16-week period.

What is Extended Producer Responsibility?

Extended Producer Responsibility, or EPR for short, is commonly defined as policies that require companies to take responsibility for the end-of-life of the products they make. This can include paying for the cost to recycle or dispose of their products. Additionally, many EPR laws create incentives for producers to incorporate environmental considerations into the design of their products and packaging, such as reducing the amount of natural resources or hard-to-recycle materials in the products. Oregon has EPR laws to support recovery of paint, electronics, unused medications, mattresses, and paper and packaging.

Number of mattresses and e-cycles collected during the bulky waste study



- # e-cycles
- # mattresses & boxsprings

Materials requiring special handling

Some items collected as bulky waste require special handling and management before they can be processed and properly disposed. Two examples were seen during the collection study, tires and refrigerant-containing appliances.

- **Tires:** tires cannot be disposed in the standard municipal solid waste stream and must be separated for proper disposal. They are commonly collected in bulky waste collection programs and were accepted in the collection study. At a mid-point in the study, Metro and the study’s collection companies elected to include and collect data for tires, as they were a common item noted by the route drivers, and their special handling and associated costs made them an item worthy of additional tracking. 52 tires were collected between weeks 11-16 of the study.
- **Refrigerant-containing appliances:** appliances containing refrigerants include refrigerators, freezers and window or portable air conditioning units. The refrigerant must be removed from the appliances before they can be disposed or recycled. A few refrigerant-containing appliances were collected during the study.

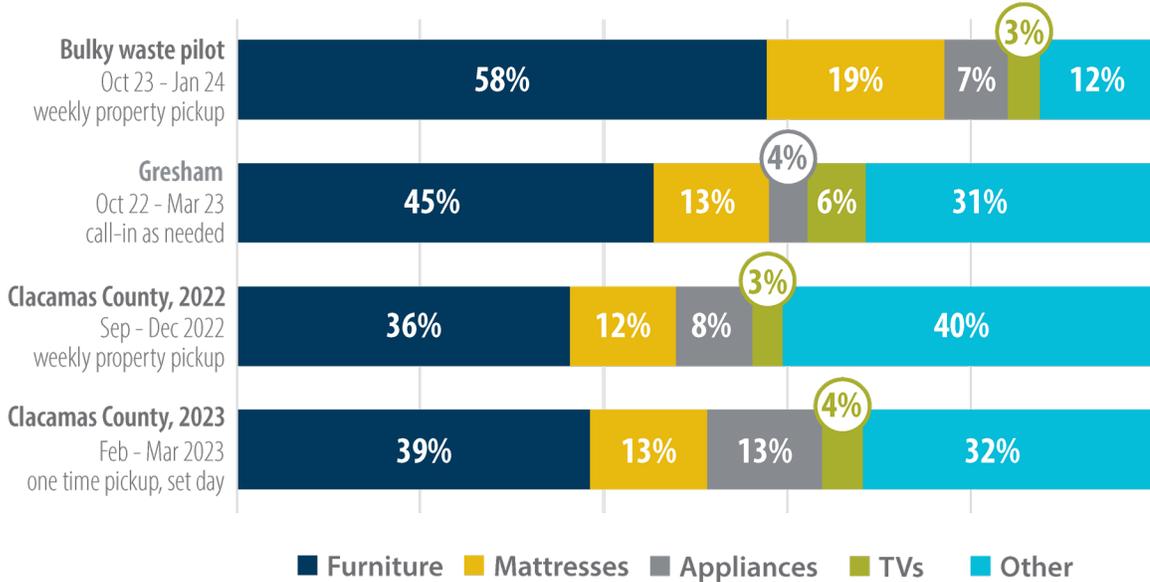
Supplemental material characterization

Additional information was available from special projects focused on removing bulky waste materials from multifamily properties that were implemented by several local governments in the region. Since this data was available, the study included only a small sample size of material characterization. For that reason, the results from those projects are shared below.

City of Gresham and Clackamas County both offered enhanced bulky waste collection service to multifamily properties using one-time funding from the State of Oregon. Furniture represented at least a third or more of the bulky waste haulers collected through these programs. Many materials collected didn’t fall into a major category. For Clackamas

County, most “other” items were less than 75 pounds. For Gresham, descriptive data on each item was available and mainly consisted of Christmas trees, family and pet gear, recreational equipment, tires and building materials.

Local multifamily bulky waste removal projects: Main bulky waste materials collected



Reuse

About the measure
 In assessing the opportunity for reuse, items needed to be both an item that is accepted for donation and which is also considered to be in good condition. For this study, with items collected outside, a wetness measure was evaluated.

As part of the multifamily collection study, Metro aimed to assess the opportunity to separate reusable large household items from the multifamily bulky waste stream. Reusing materials provides greater environmental benefit than recycling. Extending the usability of large household items provides additional social and environmental benefits. For this study, Metro partnered with Community Warehouse, a local non-profit furniture bank with three locations in greater Portland. Community Warehouse is a national leader in collecting and distributing reusable furniture and household items to people who need them.

Items must meet <u>all three</u> of the following standards to be accepted by Community Warehouse:		
<u>Accepted for donation</u>	<u>Condition</u>	<u>Wetness</u>
Are the items a type of item accepted for donation by Community Warehouse?	Are items generally free of stains, rips and odors and do they contain all parts?	Are items wet at the time of collection due to being outside?

Metro staff applied Community Warehouse’s acceptance and condition standards (see Appendix B) to characterize all materials set out at 18 sites during three weeks of the study. Using Community Warehouse’s criteria ensured the material would realistically be accepted for reuse if collected in a manner that preserved its condition. In total, 201 items were characterized and assessed.

The results of the reusability assessment showed the majority of materials did not meet condition standards or were not items that would be accepted for donation by Community Warehouse.

Additionally, weather conditions are a confounding factor when materials are placed outside for collection, particularly for mattresses and upholstered furniture.

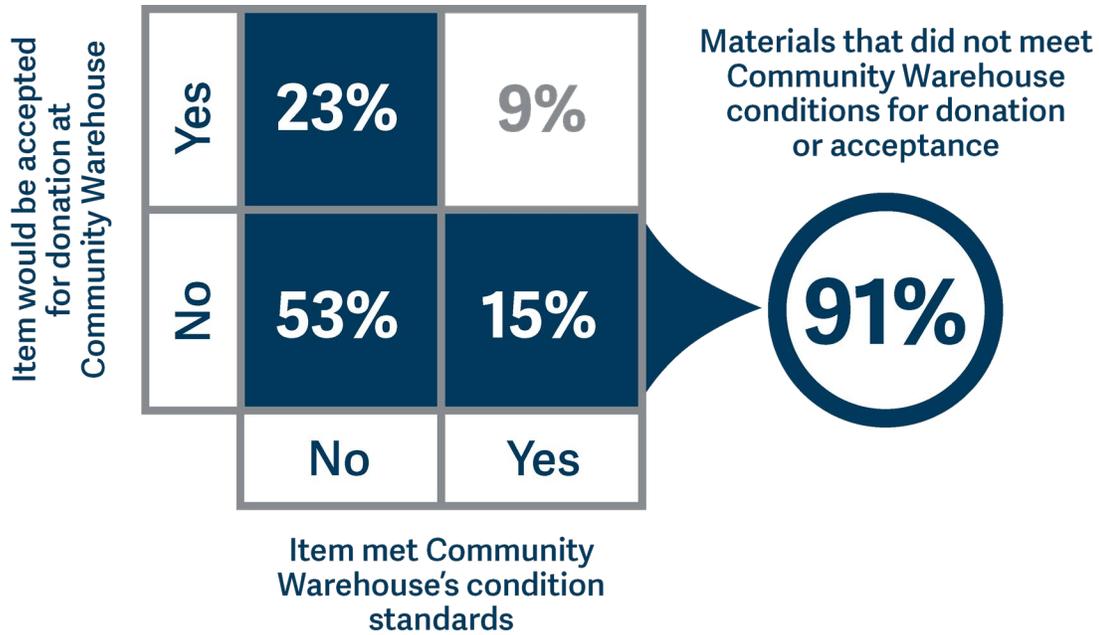


- 68 percent of materials collected were **items not accepted for donation** by Community Warehouse. These materials include items such as headboards, office furniture and baby items or upholstered furniture or mattresses. Community Warehouse does not accept upholstered furniture or mattresses that have been placed outside for any amount of time.
- 76 percent of assessed materials did not meet Community Warehouse **condition standards** for donation, meaning the materials had missing parts, were not in good working order or had stains, rips or odors.
- Combining the two measures above, 91 percent of all materials did not meet Community Warehouse’s condition or acceptance for donation standard, and therefore are not considered reusable by this assessment.
- 82 percent of items **were wet when they were collected** due to exposure to rain and snow. The items that weren’t impacted by weather were either collected on dry days or were left in covered enclosures.

The matrix below offers a visual of two of the criteria noted above:

1. Was the item an item type that is accepted for donation by Community Warehouse?
2. Was the item considered in good condition for donation (free of stains, rips and odors and containing all their parts).

The three percentages shaded blue represent the 91% of the materials from the assessment which would not be accepted for donation at Community Warehouse because they either did not meet the acceptance for donation or condition standard. The remaining 9% would meet the standards for donation before factoring in if they were wet from sitting outside. Material wetness is not represented in the matrix.



See Appendix B for the data collection methods and the detailed reuse criteria.



SECTION 3: USING RESULTS FOR PLANNING

The results of this study are expressed as planning values that can be applied to any service area where the number of apartment units is known in order to provide a benchmark for generation, frequency of utilization and an estimate for cost in that service area. The per unit value considers all multifamily units at properties that participated in the study, regardless of whether they used the service or not.

This section helps to illustrate what the results might look like in practice. The planning values can be used by both local governments and collection companies to:

- Estimate how much material (how many tons) might be generated each week within their jurisdiction or service area through a regular bulky waste collection service
- Estimate a frequency of collection service based on likely demand by property unit-count size.

- Estimate the cost to provide a regular bulky waste collection service based on generation, frequency of service, and local factors that will impact the cost to operate the collection service such as geographic area and optimization of routes, multifamily property type and size makeup, and collection company-specific factors.

Generation

The average generation result of 3 pounds per unit per week can be used to inform how much bulky waste to anticipate from a service area. For instance, if the service was expanded to all multifamily properties in Gresham (about 19,500 multifamily dwelling units), the results suggest that up to 23 tons might be generated per week. If a regular service was offered twice a month to all Gresham multifamily properties, collection companies could anticipate up to 6 pounds of bulky waste per dwelling unit and a total of 46 tons would need to be collected per pickup.

The consistent level of generation throughout the weekly study suggests that generation would likely remain steady, regardless of the frequency of the service. In general, a more frequent service would result in smaller amounts of waste collected at each pickup; a less frequent service is likely to result in more material at each pickup. Other factors may also influence the amount set out for pickup, including how much space a resident has in their unit to store items until the pickup, how that pickup coincides with moveouts and how aware residents are of the service.

Frequency of utilization

The number of times that properties utilized the weekly service is one indicator of the frequency of service that multifamily properties need. Properties in the pilot utilized bulky waste pickup about a twice a month on average. The results suggest that large properties would likely use a pickup at least twice a month. Some small properties could also utilize a pickup at that frequency, but others may not need it as often.

Cost

The study’s cost results of between \$2.00 up to \$4.30 per unit per month for once-per-month up to weekly service can be a starting place for estimating costs for a jurisdiction’s service area. The collection companies in the study noted that variables such as number of staff on-route, equipment, and proximity to the transfer station are factors that impact the cost and efficiency of the service.

Property managers have reported that they currently incur costs related to bulky waste disposal and that a predictable monthly service would allow them to better plan and budget for bulky waste disposal costs.

$$\begin{array}{c}
 \text{Collection costs} \\
 \left(\begin{array}{ccc} \text{Collection} & & \text{Truck hours} \\ \text{operations and} & \times & \text{(time on route)} \\ \text{labor costs rate} & & \text{per week} \end{array} \right) + \left(\begin{array}{ccc} \text{Per ton tip fee} & \text{Transaction fee} & \text{Special} \\ \times & \times & \text{material} \\ \text{\# tons collected} & \text{\# dump trips} & \text{fees} \end{array} \right)
 \end{array}$$

The collection costs and disposal costs formula above could be used by local jurisdictions that set garbage and recycling rates to estimate the cost to implement an on-route bulky waste collection service. However, it is recognized that each jurisdiction is unique, with localized factors that will impact cost.

Cost impacts related to material: EPR program materials

Materials covered by EPR programs will generally avoid costs associated with disposal and recovery. The costs associated with onsite collection and transportation are generally not covered by the EPR program. It is important to note that these materials will likely need to be collected in non-compacting equipment to preserve their ability to be recycled and compensated through an EPR program.

- **Mattresses:** the Oregon Mattress Stewardship program is scheduled to begin in late 2024 or early 2025. When the program is live, mattress producers will be required to set up a network of convenient collection locations and recycle mattresses collected in Oregon. However, producers are not required to fund collection from homes or transportation of the mattresses to collection points.

The Mattress Recycling Council, the Producer Responsibility Organization (PRO) implementing mattress stewardship in Oregon, estimates the average weight of covered program units (mattress or box spring) at 55 pounds each. Using that factor, the study's count of 367 mattresses collected represents approximately 10 tons of materials or about 20 percent of the total tonnage collected in the study. If mattresses are compacted during collection, they are no longer acceptable for recycling and are charged the garbage rate for disposal.

- **Large electronics:** large electronics such as televisions are covered under the Oregon E-cycles EPR program and have multiple free collection points throughout greater Portland. Some e-cycles covered materials, such as larger televisions, are too large to be easily transported to a collection site. E-cycles materials are not appropriate for compacting collection, as hazardous materials would be released upon compaction and are banned from being landfilled.

Cost impacts related to material: items requiring special handling

Some items collected as bulky waste require special handling and management prior to processing and proper disposal. These materials can incur additional charges by collection companies.

- **Tires:** on-rim and off-rim tires incur additional charges for disposal. Typically, on-rim tires charged at a slightly higher rate to separate the rim from the tire before processing and disposal.
- **Refrigerant-containing appliances:** appliances containing refrigerants include refrigerators, freezers and window or portable air conditioning units. During the study, these materials incurred an additional charge of \$33-\$58 per item to properly remove the refrigerant to prepare them for recovery or disposal.

Tracking special materials

Consider incorporating tracking systems such as item count by category or other method for EPR materials to calculate cost impacts and help estimate the opportunity for recovery. Tracking these specific materials may support better understanding of the impact of both the avoided disposal costs associated with EPR covered materials and additional costs for materials like tires and refrigerants on total disposal costs.

This study suggests a greater number of EPR covered materials such as mattresses and large electronics will be collected, and the avoided disposal costs may offset some additional costs associated with collecting items that require special handling.

Reuse

The opportunity to collect large items for reuse is generally before they are set out on the curb or point of collection.

Opportunities

- The most common reusable items that met Community Warehouse’s standards were wood and metal furniture, such as chairs, tables, dressers, bed frames and patio furniture.
- A small number of items, 15 percent including bikes and baby and toddler furniture, were not accepted for donation by Community Warehouse and were in good condition. These items may be accepted by other reuse organizations. Among the wet items, about
- 1 in 5 met the standards of condition and acceptability.

Limitations:

- This study was designed to assess the opportunity to collect reuseable large items from the multifamily on-route/onsite material stream. None of the materials assessed for reuse were donated.
- Residents may have also donated items in good condition through other channels.
- Community Warehouse will accept mattresses and upholstered items when dropped off at their location or as part of a scheduled pick up. For this study these items were considered not accepted for donation, though the condition of these materials was still evaluated.
- Other organizations that accept and reuse bulky items have different acceptance and condition criteria. However, the methods of this study ensure all materials identified as reusable in this assessment are also reusable in practice.

SECTION 4: PROPERTY MANAGER INTERVIEWS SUMMARY

Interviews were conducted with five property managers at the conclusion of the study, with one additional property manager submitting written feedback, totaling six responses. The property managers interviewed represented properties with residential unit counts ranging from 16 to 147 units and included properties served by each of the collection companies. See Appendix F for the full list of interview questions.

Property size (by number of dwelling units)	Number of property managers interviewed
5-19 units	1
20-49 units	2
50-99 units	1
100-150 units	2

The summaries below are from the responses of the six interviewed property managers. Qualitative information was gathered on their experiences with bulky waste collection from before and during the collection study.

Before the collection study

The six property managers provided their perspectives on how their properties manage bulky waste normally, not inclusive of the temporary service during the study. They reported that managing large item disposal is an ad hoc, expensive and time-intensive task.

Property managers were asked about their experiences managing large household items before the study began. They noted the following behaviors from residents and non-residents:

- It is uncommon for residents to coordinate with the property manager to schedule a pickup for large unwanted items. Large items are often left near garbage and recycling receptacles after normal business hours, including times when maintenance staff have left for the day, or at locations where there are no security cameras.
- Resident move-outs frequently result in a greater volume of large items for disposal.
- Illegal dumping of materials by non-residents can occur in addition to the items that residents leave out.
- It is challenging to determine which unit a large item came from making it difficult to bill residents for the additional disposal costs.

“ Always when people move out, always around the holidays. ”

- Property manager of a 50-unit property, when asked how often bulky waste typically accumulates and how often materials need to be disposed of

Property managers were asked about disposal of the large items that accumulated on their properties prior to the study:

- Property managers noted that scheduling and coordinating the hauling away of large items is taken care of as needs arise.
- Some property managers noted that they typically call their regular garbage and recycling collection company for disposal of large items. For move-out services or other specialized disposal services, a third-party company may be called.

- The need for disposal services for large items ranged from a frequency of weekly to once per month.
- The estimated cost information shared by three property managers ranged from \$120 - \$1,000 per month for disposal of large household items. See the cost section of the study results in Section 2 of the report for more details on the cost information shared by these three property managers. Please note that every multifamily property incurs different costs to dispose of large items and additional information from a broader group of multifamily property managers could provide more insights into their current costs to dispose bulky waste.

“ Bulky waste usually appears in the middle of the night; we don’t know who it is and are stuck with the bill and calling for pickups. ”

- Property manager of a 50-99 unit property

During the collection study

The six property managers provided their perspectives on what they experienced and noticed at their property while the temporary service was available. Overall, the service was generally well received. Having a consistent collection combined with ensuring people knew about the service enabled residents to properly manage bulky waste, reduced conflict and eased the burden on property managers.

Property managers provided their impressions of the temporary service:

- Their residents knew about and used the service.
- Residents generally felt positive about the service and if complaints were received, they related to concerns about cleanliness and appearance of the large items set out.
- Almost all property managers felt the temporary weekly service made it easier for them to manage bulky waste at their property and eliminated the need for on-call collection service.
- A few property managers noted that they did see reuse and some gleaning happen during the study, with items coming and going from the disposal location.
- A few property managers shared that the regular service, known about by residents, seemed to reduce stress for residents who need the service. They felt that the dedicated location for bulky items allowed residents to dispose unwanted items responsibly and without worry that they are violating property policies.

Property managers were asked about material accumulation and cleanliness associated with the placement of large items for disposal. This was their feedback:

- Property managers reported that most residents used the service as property managers expected. On occasion residents would place their items out for disposal at the wrong garbage enclosure or in the wrong location on property. Property managers noted that when this occurred maintenance staff would often need to move large items to the correct location for collection.

- A few property managers shared that there was some confusion for residents as to what should be disposed of in their normal garbage receptacle versus the large item collection drop location.
- Property managers did not spend time investigating the source of dumped items, which was a need prior to the study.
- Most property managers thought the temporary service generated collection of more large household items at the property compared to before the temporary service.
- Property managers had a mix of impressions as to whether the property seemed cleaner or less clean through the study. Property managers connected their impressions to factors like the size of property, prevalence of illegal dumping, and the set up for normal garbage and recycling areas.

“ We have so many residents who were typically dumping large items, it seemed like they were using it [the service] and I think they were really happy with it. ”

- Property manager of a 20-49 unit property

Future service planning

Driven by resident move-outs, at least a monthly collection service is desired, with greater frequency depending on property size and prevalence of illegal dumping. Identifying the right location for bulky waste collection and enclosure design for each property will be helpful to dissuade illegal dumping and cleanliness of the property.

Suggestions from property managers:

- **The ideal service frequency is between once a week to once a month.** Every two weeks or bi-monthly was the most common frequency property managers recommended for their properties. This generally aligned with the frequency that they report needing to call for a pickup of bulky waste currently.
- **Use of an enclosure** for the material so that it looks nicer, does not get smelly and may discourage illegal dumping.
- **Flyers on doors worked well as an outreach strategy to residents.** It was an effective way to reach residents to ensure all residents are reached since not everyone uses email or internet.

SECTION 5: RESIDENT SURVEY

Resident feedback was solicited through an online survey during the final weeks of the collection service, available in English and Spanish, with additional language translations available upon request. The survey was promoted through the final informational flyer with a weblink and QR code. The flyer was distributed door-to-door by Trash for Peace to each residential household at the participating properties.

The survey response was low and generated only 14 responses from residents living at multifamily properties that participated in the study. The responses came from residents at 10 different properties.

As future service adjustments are considered or implemented by cities and counties, additional resident engagement is recommended. Advertising a survey or engagement opportunity earlier, and through multiple attempts or varied mediums, may increase number of responses.

See Appendix G for survey results and full list of survey questions.

SECTION 6: CONCLUSIONS AND POTENTIAL BEST PRACTICES

Conclusions:

Generation, frequency of utilization of the service and cost results provided in this study can be used by local governments that set garbage and recycling collection rates to support future system planning for multifamily bulky waste collection service. It could also be used by collection companies to improve bulky waste services provided to multifamily customers. Results will also be used by Metro to support policy planning related to bulky waste collection services within the regional service standard.

Bulky waste collection that occurs regularly supports efforts to responsibly dispose of large unwanted items and enhances access to service for multifamily residents.

Best practices:

Regionally consistent list of accepted materials

A regionally consistent list of accepted materials for bulky waste collection will support residents to use the service.

- Flyers and signage are an opportunity to remind residents what items are accepted and what items are not considered bulky waste such as hazardous waste, paint, or garbage and recyclables that fit in the regular receptacles.
- Seasonal items such as Christmas trees will likely require added education for how residents can dispose trees after the holiday.

Determining the onsite location for bulky waste at each multifamily property

Determining a location for storing bulky waste helps ensure residents and collection companies have a safe and convenient location to store and collect items for disposal.

Considerations:

- Engage with both property managers and collection companies to ensure the consolidation location of the bulky items do not impede access to the primary garbage and recycling receptacles and to normalize where to place items for collection.
- Smaller properties with limited exterior space may face additional challenges, especially when balancing the need for parking.

- Enclosure location and design for bulky waste may help reduce the unattractive appearance of large items that accumulate and could impact illegal dumping through a less visible collection point.
- Clear signage for residents indicating where bulky waste should be set out supports property managers to have materials placed in the right location.

Property manager engagement ahead of service implementation

- Initial recruitment of properties to participate in the temporary service was time-consuming and generally involved multiple conversations to explain what the service was and how it might benefit a property and its residents.
- Some properties were hesitant or opted to not participate due to concerns related to increased illegal dumping, unsightly accumulation of items, or lack of convenient location for the material storage.
- Some property managers were concerned that a temporary service would confuse residents, since the regular messaging and policy from the property is that large items cannot be set out for collection with the regular garbage and recycling collection.

Resident engagement and education

- Door-to-door flyers are an effective outreach tactic to provide information about services. Of the 14 residents to take the survey, 13 reported that the flyers effectively notified them about the temporary bulky waste service and some property managers shared in interviews that the door-to-door flyers are useful to reaching residents.
- Some property managers shared that they utilize a variety of additional methods of communication to residents such as email and text alerts and updates, but these will not necessarily reach all residents and households. For this reason, a variety of media types, such as paper flyers, web content, emails, etc. are useful for resident outreach.

Equipment types for bulky waste collection

The types of equipment used to collect bulky waste is important when considering EPR covered materials such as TVs and mattresses, which cannot be mixed with other waste materials or lose recycling viability when disposed in compacting trucks.

GLOSSARY

Bulky waste – a solid waste industry term for items generally considered too big to fit into a standard garbage can or roll cart. These are large household items that include furniture, appliances, electronic devices, outdoor patio and garden items, miscellaneous household items and household vehicle items. This term does not include household hazardous waste, construction and demolition debris, remodeling debris, yard debris, standard recyclable material, gas cylinders, business waste, or any waste that can fit within the standard garbage receptacle.

Extended Producer Responsibility (EPR) – policies that require companies to take responsibility for the end-of-life of the products they make. This can include paying for the cost to recycle or dispose of their products.

Illegal dumping – unauthorized dumping of large items or other materials by generators that are not intended to be served by a specific program or service.

Multifamily property – apartment and condominium buildings with five or more units; may also include mixed-use buildings, retirement communities and mobile home parks.

On-call collection – garbage, recycling, or other material collection service that is provided as needed when a customer requests a pick-up at their property.

On-route collection – garbage, recycling, or other material collection service that typically has a set day where items are removed by the licensed, franchised, or certificated collection company. Collection is recurring at some cadence on a designated route.

Producer Responsibility Organization (PRO) – an organization established to administer a producer responsibility program, which is a program for the responsible management of covered products (such as mattresses and electronics).

Single-family property – individual residential dwelling units, duplexes, triplexes, or four-plexes.

APPENDIX A: DETAILED METHODOLOGY

Study design

Weekly service

Testing a weekly service provided a robust dataset to gauge the ideal service frequency. It allowed close tracking of demand and accumulation and avoided significant accumulation, which can lead to “noise” in weight-based generation results (e.g., wet, heavier items during rainy months). Regularly occurring service reduced scheduling and logistics costs and helped facilitate awareness of the service by property managers and residents.

In addition, testing a 16-week service enabled a repeated measure design: each property was measured 16 times. This allowed for a higher degree of confidence in the results and a smaller sample size compared to measuring a single point in time.

Representative sample

The sample was constructed by properties, rather than the more granular level of dwelling units (individual apartments, condos, multifamily residences). That allowed selection of both large and small properties, with size being one factor that may impact bulky waste generation and cost to service properties.

The target sample size was at least 30 properties. To make the results of the study broadly representative of greater Portland, the sample included a mix of property sizes reflecting the multifamily inventory in the region. Looking at the proportions of multifamily properties by number of dwelling units¹, properties fall out in the following groups of properties: those with 5-19 units; 20-39 units; 40-104 units; and 105+ units. Taking into account study resources, the project team opted to not further disaggregate the group of properties with less than 20 units.

The study sampled 39 properties in total, with the following breakdown by the number of dwelling units at each property:

Property groups (by number of dwelling units)	Sample size
5 to 19 units	12
20 to 39 units	8
40-104 units	10
105+ units	9

Collection study location

¹ Metro Regional Land Information System, Multifamily Housing Inventory (2023)

The City of Gresham was selected as the location for the collection study in part because it is one jurisdiction in the region that looks like the greater Portland area in terms of multifamily property density, property size distribution and demographics (based on data from Metro's Multifamily Housing Inventory).

- **Multifamily density:** The proportion of multifamily households among all households is 1.7 percent in Gresham, compared to 1.5 percent in the greater Portland area. Apart from City of Portland, Gresham has the highest number of multifamily properties (407) among jurisdictions in the region.
- **Property size (number of dwelling units):** Gresham's multifamily property stock is roughly distributed the same as the greater Portland area in terms of property size.
- **Demographics:** In Gresham, 89 percent of multifamily properties are located in equity focus areas (or areas with a higher-than-average density of people of color, people with limited English proficiency, or people with incomes equal to or less than 200 percent of the federal poverty level). This helps ensure that the experience of underserved communities will be considered as part of the study.
- **Occupancy rate:** Gresham's occupancy rate (95 percent) is similar to other locations in greater Portland, where occupancy ranges from 92 percent to 96 percent. If anything, Gresham's occupancy rate is higher than several areas in the region, which means that bulky waste collection per unit in Gresham is likely on the higher end (more conservative estimate) for the region.

The City of Gresham was also selected because of willingness and capacity to support the coordination work required as a host jurisdiction.

Collection companies

For the study, Metro partnered with Gresham Sanitary, a local collection company and WM, a national collection company. This approach enabled the study's results to capture collection and disposal costs associated with different business and operations models in the region. Each company's property list had a balance of small and large properties. The two participating companies' data were aggregated for all calculations to ensure a robust and representative sample of multifamily properties in the region and protect sensitive business data.

Data collection

The study utilized two main data collection methods: weekly tracking of collection and disposal data by participating collection companies and qualitative feedback from participating collection companies, property managers and residents.

Metro's Data Research Center staff built custom data collection applications for this study. ESRI's ArcGIS Survey123 platform was used to create tablet and web-based reporting tools that collection companies used to report route-based data, including the time drivers spent on route, priority materials counts, tonnage and disposal fees. The use of web-based

platforms improved the accuracy of the data because the collection companies and Metro project team could monitor and troubleshoot data collection in real time.

Site visit start time: *

🕒 8:44 AM

⌵ ⌶ AM

08 : 44

⌴ ⌷ PM

▾ Site information

Multifamily site name: *

Address: Number of units:

Is bulky waste present on site?: *

Bulky waste is defined as large household items that don't fit in collecting bin (e.g. mattresses, appliances, furniture)

Present at site Not present at site This site was skipped

Number of mattress, boxsprings, and e-cycles

Mattresses Box Springs TVs/e-cycles larger than 3 feet

1 of 8

▾ End of route info

Number of dump trips *

2

Please refer to your transfer station ticket for this information
If there are multiple loads for this route, please use the arrow to enter additional entry and exits times.

Entry time on ticket * Exit time on ticket *

🕒 11:05 AM 🕒 11:25 AM

1 of 2

Total minutes spent unloading during dump runs

28

End time *

🕒 11:07 AM

Were all the properties on this route visited?*

Yes
 No

If not, explain why:

Total tonnage for the route*
All bulky waste collected on the route, including recoverables

Total disposal costs for the route*
Inclusive of tip fee and any other charges assessed on the load(s) or costs to process the load(s)

Analysis

Where possible, results were provided in a range using the calculated standard deviation within the results.

Bulky waste study results	Weekly average	Standard deviation	Reported range
Tons generated per week	3.3	1.0	2-4
Pounds generated per dwelling unit per week	2.3	0.7	1.5-3
Cost per ton of bulky waste	\$872	\$133	\$750-\$1,000
Cost per dwelling unit per week	\$0.98	\$0.13	\$0.85-\$1.11 (\$1.00)

Calculations

Average generation or cost per week = average of total tons collected or estimated cost per week for 16 weeks

Generation or cost per dwelling unit = total tons or estimated cost per week divided by total number of units served per week, average of 16 weeks

Cost per ton = total cost per week divided by total tons collected per week, average of 16 weeks

Adjusting the study cost per dwelling unit per week to once or twice a month service

Assumptions:

- Collection costs per pickup are the same as they were per weekly pickup in the study (in other words, average time on route is the same).
- Weekly generation is up to 3 pounds per dwelling unit (study results).
- Disposal costs are quadruple (for once-a-month service) or double (twice a month service) the amount they were per weekly pickup in the study, accounting for accumulation of bulky waste over 2-4 weeks.
- Of the estimated cost of \$1 per dwelling unit per week in the study, \$0.30 represents disposal costs and \$0.70 represents collection and other costs (study results).

Calculation:

- **Once a month service:** \$0.70 (collection costs for 1 pickup) + \$1.20 (disposal costs for 4 weeks of bulky waste generation) = \$2.00 per month (rounded up to \$2.00)
- **Twice a month service:** \$1.40 (collection costs for 2 pickups) + \$1.20 (disposal costs for 4 weeks of bulky waste generation) = \$2.70 per month

Note on generation

By definition, bulky waste does not fit inside a residential or multifamily property's garbage and recycling receptacles. As a result, measuring bulky waste in volume-based units is not possible. For this study, results are expressed in terms of weight and are not converted to a volume-based expression because the volume of bulky waste is widely variable and cannot be standardized using a weight-to-volume conversion factor.

The study measured generation in terms of the weight of bulky waste collected from each route. Counts or weights of bulky items were not collected during the route because it was important that routes were run as they would be on a typical pickup in order to estimate cost of the service. Given the shared service format of multifamily garbage and recycling collection, determining the number of households setting out or generating materials at each property was also not possible.

Study limitations

The study focused on estimating the cost of an on-route regularly occurring bulky waste service, the rate of generation of bulky waste by multifamily residents and frequency of utilization, and the scale of items that are reusable or recoverable under extended producer responsibility programs.

By providing a weekly service, the study aimed to measure the maximum possible cost and generation rates, i.e., the most bulky waste that residents would generate and the most a

service would likely cost (excluding new equipment and capital assets for scaling to cover the region). In practice, when rolling out a future service, collection companies and local governments will likely need to identify the frequency that is appropriate for a given jurisdiction, taking into account cost and demand trade-offs, such as distance to transfer station and driving time optimization, size of properties in the franchise, available equipment and labor (collection, disposal and administrative).

As a study in the City of Gresham, the service area for the study was a subset of one jurisdiction's multifamily residents. The study's service area was designed as a representative sample of jurisdictions in the greater Portland area so that the results, expressed as rates, can be applied to a given franchise area in the region.

In measuring the cost, it was important that the routes were run as they would be on a typical pickup without additional trips to a transfer station scale to weigh the bulky waste collected at each property. Therefore, it was not possible to measure data on bulky waste collected from individual properties. It was also not possible to trace generation back to any particular dwelling unit (household).

In this context, the study did not measure:

- Generation by property or dwelling unit/household;
- Cost of an on-demand or scheduled service;
- Costs adjustments for individual service area or jurisdiction characteristics, such as long distances to the closest transfer station or high-rise apartment buildings with very limited space in their garbage and recycling area;
- Costs adjustments for individual collection company characteristics, such as staffing, fleet or other capital assets;
- Material or item-specific weights or costs (counts are limited to the sub-study on characterization and reuse covering 3 weeks of the study and products covered by extended producer responsibility programs); or
- Potential costs of capital investments needed to scale up to large service area.

In addition, the study was focused on gathering data to help inform planning for a future bulky waste collection service. The study does not specify:

- How a bulky waste service should be provided;
- How the service should be charged;
- How residents should access a bulky waste service; or
- Pricing methods or rate format of a bulky waste service.

APPENDIX B: REUSE ASSESSMENT METHODOLOGY

Assessment design

Reusability criteria

Metro worked with Community Warehouse staff to clarify the non-profit's material acceptance list and create the material reuse criteria that was used by Metro staff in the assessment. Community Warehouse also provided in-person training to Metro staff on identification of acceptable materials with particular attention on material condition. The criteria can be found in this section. In general, to meet condition standards, materials should have all parts, be in good working order and be free of stains, rips or odors.

Wetness also impacts material condition and acceptance for reuse. Oregon has on average 146 rainy days a year. The ability to accept materials for reuse from the curb, or onsite point of collection, is hampered by weather conditions. In this study materials were identified as wet (or rain was noted in the last 24 hours) in two out of three data collection weeks. The fourth, planned, data collection week was cancelled due to a multi-day snow and ice storm. All materials set out for collection during this week can also be assumed to be wet. Weather will be a confounding factor in collecting materials for reuse from the curb.

Weeks selected

Reuse data collection weeks were selected as weeks likely to have more bulky items generated. Weeks associated with holidays were avoided. The first and last weeks of months were prioritized as likely to generate more bulky items due to the move in, move out cycle associated with rental units. Four weeks, listed below in the table, representing a quarter of the study's weeks, were selected for assessment. As previously stated, week 4 of reuse data could not be collected due to a multi-day snow and ice storm.

Reuse assessment data collection weeks

Week 1	Oct 30-Nov 2, 2023
Week 2	Nov 6- 9, 2023
Week 3	Dec 4-7, 2023
Week 4	Jan 15-18, 2024 (weather prevented data collection this week)

Data collection

Each week, Metro data collection staff visited each study site ahead of the collection company's collection truck. A picture was taken of what was set out and then each item was assessed and characterized in a Survey 123 app designed for the purpose. If no materials were set out, that was noted. Each item was characterized, identified by item type, including a robust 'other' category and assessed for specific condition criteria based on its characterization.

Is bulky waste present on site? *

Present at site
 Not present at site
 This site was skipped

Is the material wet? *

Did it rain in the last 24 hours? Is there standing water? Is it currently raining?

Yes
 No

Bulky Waste Reuse Characterization

Category *

Mattresses/box springs
 Upholstered items
 Electrical items
 Furniture
 Other

Item *

Carpet piece
 Dining/office chair
 Futon (with both components ok)
 Ottoman/bench
 Rug (10 feet max, 3 feet min)
 Rug (oversize)
 Sleeper sofa
 Sofa/armchair/ recliner (7 feet max)
 Sofa (oversize)
 Other

Acceptable conditions:

Visual: no rips or major stains, no major pet hair or damage

Smell: no moldy/musty smells or smoke

Physical: lift cushions to check for stains/rips/debris and sleeper sofa, no crunchy cushions, lift to test weight

Condition *

Regardless of wetness

Acceptable condition
 Unacceptable condition

2 of 2

Number of bulky waste items observed

Acceptance Information & Guidelines

Real-time adjustments

The first, second, and third data collection weeks occurred as planned. During the fourth and final data collection week, the greater Portland area experienced a multi-day snow and ice storm weather event. Metro staff was not able to collect data for three of the four days and collection was not able to occur for those same days. It was determined that only three weeks of reuse characterization and condition data would be used for the purposes of this report. The data collected through the Survey 123 application was then reviewed and additional material categories that appeared frequently in the results were identified and added to the characterization.

Acceptance and condition criteria

Community Warehouse's General Acceptance Guidelines:

- Items must be safe, clean, and functional
- Items must be in ready-to-use condition, with all parts assembled
- Upholstered items and mattresses must be free of stains, odors, and pet hair

- Items must be from a non-smoking household

Additional, refined guidelines

- Is it a household furniture item? (Y/N)
 - No: baby/toddler furniture, medical grade items, no large appliances (dishwashers, dryers, etc.), no exercise equipment
- Is it in working condition? (Y/N)
 - Ex: recliner that doesn't recline, chair with broken leg, drawers that don't slide properly
- Size/weight
 - No extra-large/heavy items / can be moved by 2 people up stairs / does it fit in an elevator or would it work in a studio apartment? / consider full size of collapsible items
- Not acceptable: any items that are wet or have been rained on, or any upholstered items that have been outside

Item category-based criteria and exceptions

The categories and subcategories below were determined by Community Warehouse and exceptions to acceptance and category-specific condition criteria were added.

- Mattresses/box springs
- Upholstered items
 - Sofas/armchairs
 - Dining chairs/ottomans
 - Rugs
- Electrical items (lamps, small appliances, fans/AC units, TVs)
- Furniture (non-upholstered)
 - Tables (dining, side, coffee, other)
 - Dressers & nightstands (things with drawers)
 - Desks
 - Shelves & TV stands
 - Chairs
 - Other (plastic drawers, closet alternatives, room dividers, coat racks)

Item Category	Item Subcategories & Details/Dimensions	Exceptions	Condition
Mattresses/box springs		<ul style="list-style-type: none"> • Standard sizes only (twin, full, queen) 	<ul style="list-style-type: none"> • No bedbugs

		<ul style="list-style-type: none"> No king size 	<ul style="list-style-type: none"> No rips or stains (minor wear & tear on box springs ok) Dry (not damp/wet) No heavy latex Good structural integrity (no sagging/indentations)
Upholstered items	<ul style="list-style-type: none"> Sofas & armchairs/recliners (7 feet max) (Futons with both components ok) Dining/office chairs & ottomans/benches Rugs (10 feet max, 3 feet min) Other 	<ul style="list-style-type: none"> No sleeper sofas No carpet pieces 	<ul style="list-style-type: none"> Visual: <ul style="list-style-type: none"> No rips or major stains No major pet hair or damage Smell: no moldy/musty smells or smoke Physical: <ul style="list-style-type: none"> Lift cushions to check for stains/rips/debris and sleeper sofa No crunchy cushions Lift to test weight
Furniture (non-upholstered)	<ul style="list-style-type: none"> Bed frames only Hollywood (metal/collapsible) or Platform (basic assembly (4 pieces of wood and slats) Tables - dining, side, coffee, other (6 feet max) Dressers & nightstands (things with drawers) Desks (4 feet max) Shelves & TV stands (6 feet tall max) Chairs (small too) Other (yes: at least 3' in length plastic drawers, closet alternatives, room dividers, coat racks) 	<ul style="list-style-type: none"> Bed Frames:, no headboard/footboard of any material Glass tables: need to be nested & no glass damage No entertainment centers No large armoires No glass display cabinets No baby/toddler furniture (cribs, changing tables, high chairs, pack and plays) 	<ul style="list-style-type: none"> Safety/structural integrity (can it be moved without coming apart?) No major damage (small wear & tear ok) All components included / no major missing pieces <ul style="list-style-type: none"> Dresser example: 1 or 2 knobs missing is ok, missing drawers is not
Electrical items	<ul style="list-style-type: none"> Optional subcategories: <ul style="list-style-type: none"> lamps, microwaves, large fans, standing and window AC units, heaters 	<ul style="list-style-type: none"> No large appliances (washers, dryers, ovens, dishwashers) 	<ul style="list-style-type: none"> Safety/structural integrity (can it be moved without coming apart? No torn cords) No major damage (small wear & tear ok, no fire damage)

	<ul style="list-style-type: none"> • TVs 		<ul style="list-style-type: none"> • All components included (no major pieces missing for it to function - does it have a cord?)
Other	<ul style="list-style-type: none"> • Open entry • Clocks (wall) • Large Art • Large Décor, including large fake plants • Patio/yard furniture 	<ul style="list-style-type: none"> • Not accepted • Medical equipment • Bikes • Pianos • Exercise Machines • Fake Christmas tress 	<ul style="list-style-type: none"> • No major damage • No missing pieces • All components included • No stains, tears, rips • No rust, grime/grease building

APPENDIX C: CONNECTION TO EXISTING WORK AND STUDY DEVELOPMENT

Regional Service Standard

Metro code and administrative rule sets a base level standard for garbage and recycling collection services and education for residential and business customers across the region. This is referred to as the Regional Service Standard (RSS). In 2021, the RSS administrative rules were updated to address inequities in multifamily housing by establishing minimum collection requirements for garbage and recycling including consistent collection bin colors and signage. Additionally, the 2021 update to the RSS set a requirement for regularly occurring bulky waste collection for multifamily residences. The Bulky Waste Policy Project was designed to bring partners together to develop consistent, affordable, and convenient bulky waste collection services for multifamily households, by July 1, 2025.

2030 Regional Waste Plan action 10.5: Provide regularly occurring bulky waste collection service, with particular emphasis on multifamily communities and lower-income households.

In 2022, Metro released the first Multifamily Garbage and Recycling Service Study report which tracked implementation of the 2021 multifamily garbage and recycling service updates. As in previous assessments and reports, the 2022 study found the presence of large items at 25 percent of randomly sampled properties through that study. The 2022 measure noted large items at times impeded access to garbage and recycling bins and created safety problems.

The Bulky Waste Policy Project

The Bulky Waste Policy Project (BWPP) builds on Metro Council direction. In the BWPP, Metro and local governments are taking a close, research-based look at the bulky waste collection services currently available for multifamily and single-family homes, with an emphasis on multifamily services, where additional barriers are present.

Project timeline and phases

The project is divided across five phases of work. This report marks the end of the phase three collection study, referred to also as the pilot. Phases one and two were completed collaboratively with a project team comprised of local government and Metro staff. Phase one showed that access, materials collected and costs for bulky waste service were inconsistent across greater Portland.

In addition to phase one research, phases one and two engaged people living in multifamily homes, collection companies and property managers. All audiences acknowledged bulky waste at multifamily properties is an issue and could be better addressed. Phase one engagement focused on identifying barriers and opportunities and phase two engagement asked participants for feedback on four different collection service models. All audiences

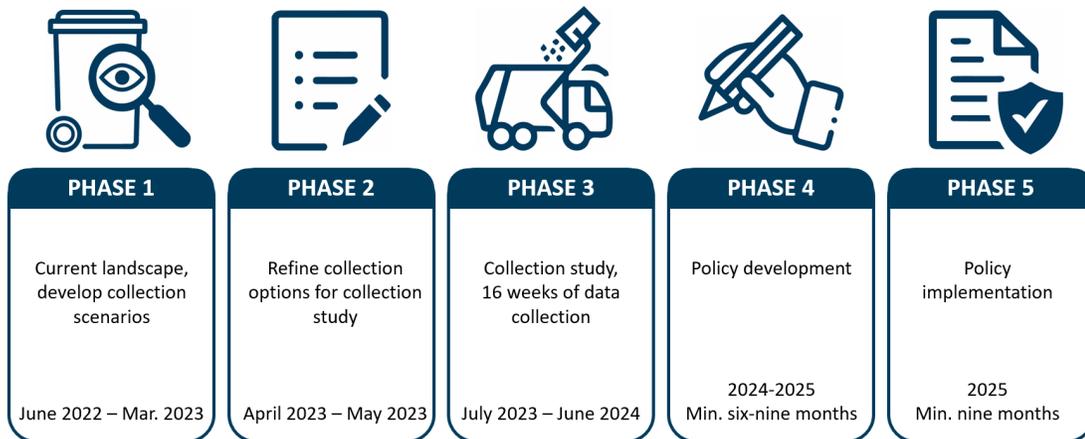
recognized issues with the current system and saw value in a regularly occurring, consistent approach. All audiences also identified cost as a key issue in considering future services, as well as space constraints on multifamily properties for the service.

In phase two, the project aimed to model costs of various multifamily and single-family collection scenarios. The project team was unable to obtain data to inform modeling and estimating the cost of regularly occurring multifamily bulky waste services. This, in turn, shifted the objectives and outcomes of the phase three study from ground testing potential collection standards to gathering a robust and reliable dataset on multifamily bulky waste generation and frequency of demand for service and developing reliable methodology for estimating the cost of an on-route multifamily bulky waste collection service. Phases four and five represent future work related to policy development and implementation.

The findings of BWPP phase one and two can be found in Appendix I.

The Single-family Connection

In parallel with this study, Metro interviewed 16 jurisdictions across the western United States to learn more about existing single-family bulky waste collection services, with the qualitative and quantitative results summarized in the Single-family Bulky Item Collection Program Interview Summary. Some of the findings and recommendations align across both single-family and multifamily customers such as generation rates, the need for a consistent accepted-materials list, and the need for non-compacting trucks.



Collection study description

The Multifamily Bulky Waste Collection Study was conducted in the City of Gresham and included 39 properties with a sum of roughly 2,800 apartment homes or units. Property managers were recruited by the City of Gresham staff and consented to their property’s participation in the voluntary study. Residents were informed of the temporary weekly service through door-to-door flyers.

The collection study lasted four months and occurred October 2023 through January 2024. Each multifamily property received a weekly bulky waste pick-up service from their

garbage and recycling collection company – franchised by the City of Gresham. Items that accumulated throughout the week at the onsite designated collection location were picked up weekly by the collection company on a regular day of the week. A large sign at each property indicated the item drop-off location for residents, which was the pick-up location for the route drivers. Once each property on the daily route was visited and materials picked up, routes ended at the disposal site (transfer station).

The two participating collection companies operated specific bulky waste collection routes for the study, independent of their normal garbage and recycling service operations to ensure data quality. Each collection company utilized a non-compacting truck for bulky waste collection, with one operating a flatbed truck and the other a box truck. Routes were determined by the collection companies and operated with two staff in the truck to manage heavy or awkward bulky items.

Data was collected and reported by the collection companies for each day the bulky waste routes operated. Key data collected included time on the route, which multifamily properties utilized the service each week, weight of materials disposed for each route, and the disposal costs. Collection companies agreed on a cost estimate per truck hour that covered the operating costs of the route, including the labor for two staff on the route. Disposal costs were provided by the collection companies which included the cost per ton, transfer station transaction fees, and any additional special handling fees by material. See Appendix A for detailed study methodology.

Initial property selection

Property selection for the collection study involved the coordination of multiple parties and data sources: from Metro’s Data Resource Center providing property lists, to Gresham Sanitary Service and WM selecting properties to design an optimized collection route, and finally, securing agreement from each property manager/owner to participate in the study.

Metro’s Data Resource Center generated a list of all known multifamily properties within the City of Gresham and isolated properties within the franchise areas of the two contracted collection companies. Each collection company received a unique list of properties within their franchise territory. Properties were organized into four groupings by number of housing units at the property (i.e. number of apartment/condo/dwelling units at that property). The groupings were for properties in these four size ranges: 5-19 units, 20-39 units, 40-104 units, and 105+ units. See Appendix A for more information on study methodology.

Gresham Sanitary Service and WM utilized the lists provided by Metro to select six – eight properties in each of the housing unit-count groupings (total of 25-30 properties for each contractor). Each contractor factored in the size of the property as well as its geographic location to generate a relatively optimal driving route for collection pick-ups. The intention was to have a distributed range of properties by size which were also in close geographic proximity to one another. The purpose of optimizing the route was to minimize fuel costs as

well as time trucks and drivers were on their routes. Route optimization is a standard practice for garbage and recycling collection companies.

Property recruitment

City of Gresham and Metro contacted property managers and owners to secure their approval to participate in the study. As there would likely be unresponsive property managers or those that declined to participate, Gresham Sanitary Service and WM each provided a list of 25-30 potential properties with a goal of securing 20 properties to participate on each collection company's route.

City of Gresham provided the initial contact to property managers through email. See Appendix D to view the property manager recruitment email. Follow-up emails and phone calls were completed by City of Gresham and Metro staff, where the details of the study were shared and participation was confirmed. Each multifamily property is unique, with different dwelling unit counts, exterior space layouts for garbage and recycling services and different make-up of residents. The needs, opportunities and constraints varied at each property. For this reason, engagement with property managers was important for the success of the collection study.

City of Gresham coordinated with the two franchised collection companies and some participating property managers as needed to confirm the physical location(s) on site where residents would place their large items for collection and where the collection companies would collect items once per week. A large sign was hung at each property to indicate to residents where items should be placed out. See Appendix H for the large sign graphic.

Final property list and collection routes determined

With property manager agreement to participate, Gresham Sanitary Service and WM developed weekly routes with about 20 multifamily properties per week for each contractor. Routes were determined before the study began, with the same daily routes operating each week for the duration of the study.

- Average range of multifamily properties on the bulky waste routes: between five to seven
- One contractor operated set bulky waste routes Monday through Thursday (four days per week)
- One contractor operated set bulky waste routes Tuesday through Thursday (three days per week)

Partners of the study

City of Gresham

City of Gresham served as the host jurisdiction for the study. All participating multifamily properties were within the City of Gresham and Metro contracted with two of Gresham's

franchised collection companies for the study. City of Gresham staff led study activities in several areas:

- Recruitment of multifamily properties to participate in the study
- Designation of on-site bulky waste collection points at each multifamily property
- Joint coordination with Metro on resident outreach efforts, supported by Trash for Peace
- General project advising related to multifamily property collection services

Support from the City of Gresham was crucial to the success of this study and their experience working with their franchised collection companies as well as with multifamily property managers and residents provided invaluable perspective on the study.

City of Gresham is located in Multnomah County, immediately east of Portland. Gresham is home to roughly 117,000 residents². Within the city, there are 417 multifamily properties (residential properties with five or more units) with a combined 19,815 multifamily homes.³ See Appendix A for more details on Gresham as the location for the study.

Gresham Sanitary Service and WM

Gresham Sanitary Service and WM were the two franchised collection companies in the City of Gresham that operated the collection routes. Both collection companies provided the collection of bulky waste for the study as well as on-route and off-route data collection.

Gresham Sanitary Service was founded in 1948, and is a family owned and operated company. Currently, they provide service to roughly 7,000 residential and commercial customers in the City of Gresham, City of



Portland, and Multnomah County. Gresham Sanitary Service operates residential and commercial collection routes and owns a transfer station in Gresham.

WM was founded in 1968, and is headquartered in Houston, Texas. WM operates throughout greater Portland, providing collection services for residents and businesses. WM also owns two and operates three transfer stations in greater Portland (Forest Grove, Troutdale, and operates the Sandy Transfer Station through a contract with Clackamas County). Greater Portland sends most of the region's solid waste to WM's Columbia Ridge Landfill in Arlington, Oregon.

² Portland State University Population Research Center. <https://www.pdx.edu/population-research/middle-east-studies/population-estimate-reports>

³ Metro Regional Land Information System. https://rlisdiscovery.oregonmetro.gov/datasets/d4dd13400a3041d3a0b66969c3e67d5a_6/explore

Trash for Peace

Trash for Peace conducted the educational outreach to residents at each of the participating multifamily properties. Outreach to residents included distributing informational flyers at three time points throughout the study, as well as placing at least one large exterior sign at each property to indicate where residents should place their large household items for collection by the collection company. See Appendix H to view the educational materials.

Trash for Peace is a nonprofit organization founded in 2012 in Portland, Oregon. Trash for Peace is committed to sustainability, waste reduction, and environmental justice, with community-led programming focused on hands-on learning, low-barrier job opportunities, and education about sustainability.

Community Warehouse

Community Warehouse served as the subject matter expert specific to assessing the reusability of large household items placed out by residents for collection through the collection Study. Community Warehouse collaborated with Metro staff to further develop their existing condition criteria for the material reuse assessment and provided training to Metro data collectors.

Community Warehouse is a nonprofit organization founded in 2001, whose services support a broad constituency, including immigrants and refugees, people transitioning from homelessness, veterans, and many others. Community Warehouse is a local nonprofit furniture bank in Oregon, with warehouse buildings in Portland, Tualatin and most recently Gresham. They engage with over 200 partner agencies and serve more than 7,500 people each year to provide household furnishings to individuals and families living with limited income.

Metro's Regional Illegal Dumping (RID) Patrol

Metro's Regional Illegal Dumping (RID) Patrol conducted the data collection for the reuse and material characterization elements of the collection Study.

Since 1993, Metro's RID Patrol has been providing cleanup services across the greater Portland area removing dumped garbage from public lands, sidewalks, alleyways and waterways. RID Patrol responds to thousands of cleanup requests each year with five two-person cleanup crews.

APPENDIX D: PROPERTY MANAGER RECRUITMENT EMAIL

Hello Property Manager,

Ahead of the July 1, 2025 requirement to regularly collect multifamily bulky waste, the City of Gresham, Metro, and WM (Formally known as Waste Management, your garbage hauler) are partnering to conduct a five-month pilot to collect bulky waste at several apartment buildings in the City that would include your property. The City of Gresham and Metro recognize that the disposal of large household items (also called bulky waste) is a challenge, particularly for folks living at multifamily properties. This collection pilot will help us gather data around how much and what material gets placed out and how often. We also hope to better understand the cost of collecting this material. You are one of 45 properties selected by your franchised collection company for this pilot. This pilot is different from the bulky waste collection work over the past year in that it is limited to this small and select group of 45 properties rather than city-wide. Also, this pilot includes resident education before, during, and at the conclusion of the pilot so that they are aware of the service and how to use it.

About the bulky waste collection pilot:

What is the service: weekly collection of bulky waste, provided at no cost to the property or tenants.

Who is providing the service: Your normal garbage and recycling collection provider (WM)

When will the service take place: The pilot will begin in early October and run for 16 weeks, likely concluding in February.

Why we are conducting this pilot: to gather data to better understand the cost to collect bulky waste and to better understand how much material is generated.

Why was your property selected: Your garbage hauler selected your property based on its size and location to plot an efficient collection route which includes the other selected properties.

What materials will residents be able to put out for collection each week: Bulk trash includes large items that don't easily fit in your regular trash or recycle bins, such as furniture (couches, tables, chairs, dressers/chest of drawers, nightstands, coat racks, bed frames, bookshelves, etc.), patio furniture & grills, mattresses & box springs, tires, child car seats, appliances, and electronics.

What is NOT included: Hazardous waste, including paint, construction or remodeling material, acceptable recyclable materials, gas cylinders, any garbage that fits in your standard garbage container/dumpster.

What we need from you:

- 1) Directions on where you'd like to instruct residents to put bulky waste each week for the collection company to pick up – our team will be placing a large sign either near the garbage enclosure or wherever you'd like the bulky items to go. Any details about your enclosures and where/how to hang the large sign(s) will be helpful. We will also consult with your collection company to confirm that the designated bulky waste collection location at the property is both safe and accessible for residents to place items and their company's drivers to collect the material.
- 2) Confirmation that our teams are OK to tape flyers on all resident doors informing them of the service. There will be flyering three times throughout the duration of the pilot (start, mid-point, conclusion)
 - a) Are doors internal or external? Will our teams need access to the building to complete the flyering?
 - b) Does your property have multiple stories? Stairs, elevator, or both? For accessibility for our team that does the flyering.
 - c) Are there common areas where we can place flyers notifying folks about the service?
 - d) Do you have a community newsletter where you'd like a PDF of the flyer to be included?
 - e) Do you have an onsite property manager?
- 3) Are you the best point of contact for this work and is this the best way to reach you?
- 4) Do you have staff on site with whom we should work when our teams are present to flyer and place signs?

The hope is that this pilot incurs minimal impact to any of your normal operations. We will be responsible for notifying residents of the pilot via the flyers, access to an informational website, and the large sign(s) for where the bulky waste should be placed by residents for collection. Your garbage and recycling company will collect the bulky waste items that are left out by residents in the designated location. Again, there is no charge to you or your tenants.

We appreciate your cooperation and support of this pilot and ask that you respond to this email within the next week to answer the questions we've outlined above. Thank you so much and we look forward to hearing back from you.

Sincerely, etc.

APPENDIX E: RESIDENT OUTREACH MATERIALS AND STRATEGY

General garbage and recycling education and information is typically distributed to residents in greater Portland, ideally to ensure they are aware of what services are available and how to properly dispose of items where they live. To accurately understand properties' utilization of a bulky waste collection service, it was important that residents receive information about the service and how to use it. Awareness of the service impacts how much and how often material is generated at each property and would most closely reflect conditions seen with a regular collection service.

Flyers for residents

The outreach and education strategy to residents included three separate efforts throughout the Study to distribute informational flyers to each residential household. Flyers were posted in community areas and extra copies were provided to the resident office and property manager when that option was available to the Trash for Peace outreach teams.

Timing of Door-to-Door flyer outreach

	Time period	Flyer content (see Appendix H for outreach materials)
Pre-study	September 2023	Initial informational flyer, double-sided in English and Spanish
Mid-study	November 2023	Reminder informational flyer, identical to the initial notice flyer
Study conclusion	January 2024	Service ending flyer, to urge residents to use the service before its conclusion

Each flyer contained the following information:

- What the service is;
- When the temporary service is available;
- What items can and cannot be disposed through the service;
- Website and QR code for information in additional languages: Spanish, Russian, Vietnamese, Simplified Chinese, and Arabic; and
- Recycling Information Center hotline phone number, with staff prepared to answer questions related to the Study

Large exterior sign placement

A large sign was placed at each property to indicate where residents should place their items for collection, what items were generally included in the service, and where the collection companies would collect materials each week for the Study. For the final two weeks of the temporary service, stickers were attached to all exterior signs that indicated the service was ending.

City of Gresham staff were primarily responsible for placing the large sign at each property, with some properties utilizing more than one sign to allow multiple locations for residents to place large items out for collection. This was more common at larger properties with multiple enclosures. Each property was unique, with different space availability and configuration for both the hanging or placement of the signs as well as a viable location for the materials to accumulate. City of Gresham coordinated with property managers and participating collection companies to determine a safe and accessible location for the bulky waste to be placed out for collection. See Appendix H to view the educational materials.



Outreach coordination between City of Gresham and Trash for Peace

Trash for Peace coordinated their outreach efforts with Metro and the City of Gresham. For the first two outreach visits to the participating properties, City of Gresham notified property managers that teams would be at their property to distribute flyers and hang the large exterior sign(s). This ensured that the outreach team would have access to the property and that property managers would be aware of the contractors on site. Trash for Peace shared that the communications with property managers were helpful and most property managers and on-site maintenance staff were welcoming to their teams throughout the outreach.

At the conclusion of each of the three flyer efforts, Trash for Peace communicated any challenges the team experienced or anything they noticed related to bulky waste at the property. On a few occasions, residents asked questions of the outreach staff, who were able to share more information verbally about the temporary service.

Trash for Peace is experienced with outreach to residents living at multifamily properties and they have developed a strong relationship and rapport with City of Gresham's staff. Their experience in and with the City of Gresham contributed to a successful outreach campaign for the Study and ensured that residents had timely information about the temporary service at multiple points throughout the collection Study.

Metro, City of Gresham, and Trash for Peace coordinated in advance with property addresses, site maps, and unit counts at each property. Trash for Peace shared that the advance planning and coordination contributed to a smoother and quicker outreach effort. They operated with two teams which allowed flexibility as needed if one team needed support to complete their work.

APPENDIX F: PROPERTY MANAGER INTERVIEW QUESTIONS

Background provided to property managers at the beginning of the conversation:

Metro and the City of Gresham recently ended a pilot service at your property where your franchised garbage collection company collected large unwanted items (also called bulky waste). Material was collected once a week from October to January – with the last pickup happening the week of January 29. Flyers told residents that the service has already ended, but your hauler is picking up for an extra two weeks in case anyone places late items out. Our goal was to gather information about how residents might use a regular service to dispose of large unwanted items, particularly at apartments and condos like your property. The City of Gresham and Metro recognize that the disposal of large household items is a challenge, particularly for folks living at multifamily properties. Through today's conversation, we would like to get feedback on your experience with this service. We will be looking at all the data we collected throughout the pilot as well as these conversations with property managers to develop potential future services that balance the cost to provide the service with the need of our community's residents.

Before the service

- 1) How are large unwanted items that don't fit in the bin typically managed at your property?
- 2) What did residents do with those items when they need to get rid of them?
- 3) How often did large items typically accumulate at the property? How often did materials need to be disposed of?
 - a. Is off-property or illegal dumping (of trash or large items from non-residents) a problem at the property?
- 4) Did you usually use your franchised hauler or a third party for removing large unwanted items?
- 5) How much do you spend each month for collection of large unwanted items (through the hauler or a third-party collection company?)

Impression and use of the service

- How do you think the pilot service went at your property?
- Was the service used by tenants as you expected?
 - Why or why not?
 - Was there anything about the service that was surprising?
 - Did your residents share any of their impressions with you?
- Were there more, fewer, or the same amount of large unwanted items accumulating compared to before the temporary service?
 - *[If they typically use a third party]* Did you still need to use a third party during the pilot? Or did the service replace the need for them?

Challenges with the service

- Was there anything that was difficult about the pilot?

- Did the pilot service make it easier or harder to manage large unwanted items compared to before the pilot? In what ways?
- Did you notice off-property dumping on the property during the pilot?
 - Was it more, less, or the same as before the pilot?
 - *[If illegal dumping occurred during the pilot]* Roughly what amount of items set out for the pilot collection would you guess were from non-residents?
- Did the property feel cleaner or less clean compared to before the pilot?
 - Did residents use the enclosure(s) properly?
 - Did you feel that they knew where to set them out for collection?
- Is there anything else about the pilot that was difficult?
 - Sufficient space for setting out items?
 - Impact of items being outdoors/not in a covered bin?
 - Clear for residents and staff when and where to set out items for pick up?
 - Hard for residents to get items to the enclosure area?

Suggestions for future service

- Do you have any suggestions for how this service could be improved in the future if it is offered again?
 - How frequently would you recommend offering the service for your property?
 - Improvements to the process for setting out items
 - Where items are set out
 - Enclosure size or space
 - Additional equipment needed
 - Other improvements?
- Do you have a preference between bundled rate or fee for service for bulky waste collection?
- Do residents/did residents approach you with questions about disposing large items? (pre-pilot and during pilot).
- Do you have a system for communicating with residents that helps you disseminate information?
- Is there anything else you would like us to know?

APPENDIX G: POST-STUDY RESIDENT SURVEY QUESTIONS AND RESULTS

Purpose: To gather feedback on resident’s experiences with the temporary large household item collection service. Responses will help staff assess future options of providing this type of collection to residents living in apartments and condos.

Who’s listening: Metro and the City of Gresham

1. Name of the property where you live
2. Between Oct. 1, 2023 and Jan. 19, 2024, Metro tested collection of large household items at a small number of properties in Gresham. Were you aware of this service?
 - a. If yes, where did you hear about it?
3. Did you set large items out for collection?
 - a. If yes, how many times did you put out items for collection?
 - b. If you did not put out items for collection, why not?
4. In the future, if you had a garbage service that included occasional pick-ups for large items, how often do you think you would use that service?
5. Was it clear to you where you should place your large unwanted items outside for collection?
6. Did you ever reuse large items that were placed outside by other residents for collection?
7. Do you have any suggestions for how this service can be improved in the future if it is offered again? Please provide any additional feedback you would like us to know.
8. How long have you lived at this property?
9. How many people live in your household?

Select survey questions and responses	Yes	No
Between Oct. 1, 2023 and Jan. 19, 2024, Metro tested collection of large household items at a small number of properties in Gresham. Were you aware of this service?	13	1
Did you set large items out for collection?	6	8
Was it clear to you where you should place your large unwanted items outside for collection?	11	3
Did you ever reuse large items that were placed outside by other residents for collection?	6	8
Where did you hear about the service? Paper door-to-door flyer = 13 respondents		
If you did not put out items for collection, why not? Didn’t have anything to dispose = 6 respondents		

Didn't know where to place items = 1 respondents

Didn't know about the service = 1 respondents

In the future, if you had a garbage service that included occasional pick-ups for large items, how often do you think you would use that service?

Every couple of weeks = 9 respondents

Every month or two = 2 respondents

Once or twice a year = 3 respondents

APPENDIX H: FLYERS DISTRIBUTED TO RESIDENTS

Included here are samples of the materials that were distributed at all the participating multifamily properties of the study:

- Two-sided flyer for residents notifying them of the service (produced in English and Spanish). This flyer was delivered to each multifamily residential unit at all 39 of the participating properties at two different points during the study: September and November 2023.
- Final flyer reminding residents that the temporary service is ending. This flyer was distributed in January 2024 before the final weeks of bulky waste collection.
- Large sign that was set up at each property participating in the study. This is the sign that let residents and collection companies know where to place items and pick up items for collection.
- Two different stickers were affixed to each of the large exterior signs in January 2024 as another mechanism to alert residents that the service was ending.

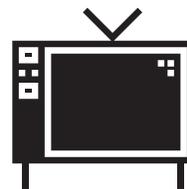
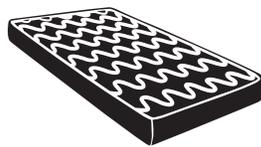
Large item collection

Collected weekly Oct. 1, 2023 to Jan. 19, 2024

This free disposal service is available for a limited time at a small number of properties in the City of Gresham, your property included.



Household items



Accepted items must be larger than 3 feet and include: Furniture, mattresses and box springs, appliances, TVs, computers, and other electronics.



No paint, motor oil, gas cylinders or hazardous waste (flammables, pesticides).



Materials will be picked up weekly by your garbage collection company. A large sign on property indicates where you can place items for collection.

Do not block access to other bins.

More information | Más información
Thêm thông tin) | 更多信息 | Дополнительная
информация | المزيد من المعلومات

oregonmetro.gov/largeitemcollection



Metro's recycling and disposal experts are available to answer questions in Spanish and English. Call 503-234-3000 or visit oregonmetro.gov/askmetro

The large item collection service is a joint effort of Metro and the City of Gresham.



CITY OF
GRESHAM

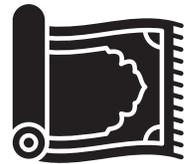
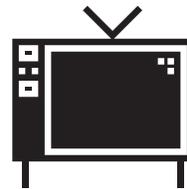
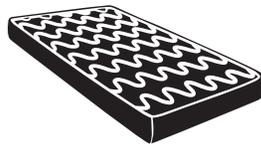
Recolección de artículos grandes

Recolectados cada semana del 1.o de octubre de 2023 al 19 de enero de 2024

Este servicio gratuito de recolección de basura es por tiempo limitado para un número pequeño de propiedades en la Ciudad de Gresham, incluyendo su propiedad:



Artículos para el hogar



Los artículos aceptados deben ser más grandes de 3 pies e incluir: Muebles, colchones y bases de colchones, electrodomésticos, televisiones, computadoras y otros artículos electrónicos.



No se acepta pintura, aceite para motores, cilindros de gas o basura peligrosa (inflamables o pesticidas).



Los artículos serán recogidos cada semana por la compañía de recolección de basura de nuestro complejo de apartamentos. Busque el letrero grande indicando dónde dejar sus objetos.

No bloquee el acceso a otros botes de basura o reciclaje.

More information | Más información
Thêm thông tin) | 更多信息 | Дополнительная
информация | المزيد من المعلومات

oregonmetro.gov/largeitemcollection



Los expertos en remoción de reciclaje y basura de Metro están disponibles para responder preguntas en español y en inglés. Llame al 503-234-3000 o visite oregonmetro.gov/askmetro

El servicio de recolección de basura grande es un esfuerzo conjunto de Metro y la Ciudad de Gresham.



CITY OF
GRESHAM

Take a survey for a chance to win \$100.

bit.ly/largeitemcollectionsurvey



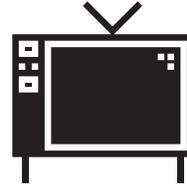
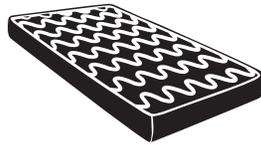
Large item collection

Ending soon!

Update: This temporary service ends the week of Jan. 15, 2024



Household items



Accepted items must be larger than 3 feet and include: Furniture, mattresses and box springs, appliances, TVs, computers, and other electronics.



No paint, motor oil, gas cylinders or hazardous waste (flammables, pesticides).



Do not block access to other bins.

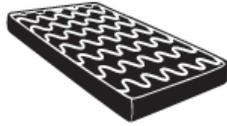
The large item collection service is a joint effort of Metro and the City of Gresham.



CITY OF
GRESHAM



Place large items here



Accepted items must be larger than 3 feet.



No paint, motor oil, gas cylinders or hazardous waste (flammables, pesticides).



Oct. 1, 2023 to Jan. 19, 2024

Materials will be picked up weekly by your garbage collection company.

Do not block access to other bins.

The large item collection service is a joint effort of Metro and the City of Gresham.



CITY OF GRESHAM

More information | Más información
Thêm thông tin | 更多信息 | Դոպոմենտարна інформация | ڊاٽا ڀرڻ لاءِ
oregonmetro.gov/largeitemcollection
For recycling and disposal questions call 503-234-3000 or visit
oregonmetro.gov/askmetro



This temporary service ends the week of Jan. 15, 2024

Service ending soon!

APPENDIX I: PHASE 2 SUMMARIES

To understand the current landscape and needs related to bulky waste service, the multi-jurisdiction project team engaged the perspectives of community members, collection companies and local governments. The pages below are two-page summaries of the three engagements with these stakeholders. Engagements were held in spring of 2023.



CBO Discussion Groups Summary

Bulky Waste Policy Project – Phase Two Engagement

Local governments and Metro hosted discussion groups with Community Alliance of Tenants, Northwest Housing Alternatives, and Trash for Peace to seek feedback from community members representing multifamily building tenants and other historically marginalized experiences. Discussion groups were conducted in Spanish, Amharic, Tigrinya and English and approximately 20 participants were compensated for their time.

The focus of these meetings was to hear feedback on the four options to collect multifamily bulky waste. The following is a summary of what was heard.

Discussion Questions

Discussion was based on these questions:

- *What do you like & dislike about each option?*
- *Which collection option do you prefer overall?*
- *How should this collection of materials be paid for: per trip, as needed or divided amongst units as part of regular garbage/recycling service?*

What we heard:

Option A: Direct bill to tenant - Large item collection service is scheduled and paid for by tenants, directly to the garbage company.

- Like paying for only what you need if you don't often have bulky waste.
- Like having set prices so you know what the cost will be.
- Concern that some residents would continue to dump bulky waste to avoid paying, or others would add bulky waste to existing items waiting to be picked up.



- Some tenants wouldn't mind calling the collection company to schedule pickup, however they need language options besides English.
- Dislike needing to schedule pick-up individually because of work schedules and needing to coordinate help to carry bulky waste to the pick-up location.
- Prefer to have property managers handle communication with collection companies.
- Like that it's as-needed rather than waiting for a bulky waste event day.
- Costs may need to be subsidized for some tenants.

Option B: One time per year for each unit - Each unit could call the garbage and recycling company to schedule a collection of a set amount of large unwanted items.

- Like the low monthly payment, shared amongst tenants, rather than one large bill.
- Concern that others would add bulky waste to existing items waiting to be picked up. Would not solve the issue of figuring out which unit items came from, or illegal dumping from non-residents.

- Some disliked the frequency, once per year is not enough.
- Some thought the frequency was enough.
- Dislike the additional charges if you need a pick-up more than once a year.
- Would depend on how many items are allowed, might not be enough at that frequency.
- Unsure how scheduling and tracking the yearly pick-up would work.

Option C: Weekly collection - A bulky waste collection vehicle would come by every multifamily property every week on a regular day and time, and collect any large items present.

- Preferred option by most participants.
- Frequency may be unnecessary, biweekly may suffice.
- Tenants wouldn't mind paying extra monthly if they have the added service to use.
- Like option depending on rate increase.
- Like not needing to call & schedule.
- Like having a specific day for pick-up.
- Concern that a regular collection pile of bulky waste would invite non-residents to illegal dump.
- Dislike that some may be paying for a service they wouldn't use.
- Like that bulky waste wouldn't be sitting around long.

Option D: On-Demand - Property managers and garbage and recycling route drivers can call in for collection of large, unwanted household items that appear onsite outside.

- Dislike this option since it is not proactive, and too similar to how bulky waste is currently managed. We should assume that people need the service rather than treating it like an anomaly.
- Like that property managers and route drivers would make the calls rather than tenants.
- Concern that items would be sitting outside
- too long depending on how available property managers are to call.
- Like that it is as-needed.

Overall comments and takeaways from participants:

- Participants preferred regular pick-up service that doesn't need to be scheduled.
- Options C & D are preferred.
- Tenants prefer having a designated place to put bulky items waiting for collection for aesthetic reasons and safety for children.
- Cost will always be passed on to tenants some way, cost will be an important deciding factor.
- Concern for the unknown cost in Option B, C, & D
- Tenants want to know cost upfront regardless of how billing is managed.
- Some participants liked the idea of spreading out the cost on a monthly basis while others preferred paying individually so you're only paying for services you use.
- People may still need help getting the items from their apartments to the designated pick-up locations.
- Language accessibility is important. Materials should always be available in languages besides English.



Collection Company Discussion Summary

Bulky Waste Policy Project – Phase Two Engagement

Local governments and Metro hosted a discussion group with eight collection companies in the region and a representative from ORRA to seek feedback on four options to collect multifamily bulky waste. The following is a summary of what was heard.

Discussion Questions

Discussion was based on these questions:

- *What do you like & dislike about each option?*
- *Which collection option do you prefer overall?*
- *How should this collection of materials be paid for: per trip, as needed or divided amongst units as part of regular garbage/recycling service?*

What we heard:

Option A: Direct bill to tenant - Large item collection service is scheduled and paid for by tenants, directly to the garbage company.

- Preference to require prepayment since there is no other recourse if the bill isn't paid and it's not tied to regular garbage service.
- Dislike option
- Like idea of having a designated area for bulky waste so that large items aren't blocking other garbage containers.
- Like requiring scheduling so that additional staff can be sent for very large items.
- Concern for setting the same rates for the entire Metro region since the Portland market is competitive compared to other franchised markets.
- Concern that some residents would continue to dump bulky waste to avoid paying, or others would add bulky waste to existing items waiting to be picked up.
- Preference for property managers to take responsibility instead.



Option B: One time per year for each unit -

Each unit could call the garbage and recycling company to schedule a collection of a set amount of large unwanted items.

- All participants dislike the additional administrative burden of tracking vouchers.
- Unsure how scheduling and tracking the yearly pick-up would work.
- Would probably use a tag system like existing programs in the Bay Area to try to prevent additional items from being dumped; this would add more administrative work and probably not prevent additional items entirely.

Option C: Weekly collection - A bulky waste collection vehicle would come by every multifamily property every week on a regular day and time, and collect any large items present.

- Like the simplicity and least amount of administrative work.
- Would need to decide if there is no bulky waste to collect will companies be charged for the trip or do a la carte billing?

- Would haulers need to go to every property every week or could property managers help give notice when there is/isn't a need?
- Like option with preference to non-bundled rates
- Concern that frequency is too high for some properties.
- Suggestion for frequency tiers for different sized apartment buildings, or buildings with high furniture turnover at move-outs (such as dorm buildings).
- Preferred option except for possible frequency changes.
- Gresham Sanitary prefers this option based on current Gresham pilot program.

Option D: On-Demand - Property managers and garbage and recycling route drivers can call in for collection of large, unwanted household items that appear onsite outside.

- Collection companies would like to be of more help by calling in items in the right-of-way and could respond faster than other collection programs.
- Like option with preference to non-bundled rates.
- How will collection be handled for items dumped not on a multifamily building property, in the right-of-way?

Overall comments and takeaways from participants:

- Preference for Option C & D
- Option D may be too similar to how bulky waste is currently managed for a pilot program.
- Some companies would prefer not bundling bulky waste service into the current garbage and recycling bill and instead would want to charge a base trip fee + cost per item.
- Preference for minimum service standard regulation for property managers to not be able to refuse tenants access to the service, while not regulating the way that collection companies can charge for the service.
- Concern that some property managers are not taking enough responsibility for bulky waste collection.
- Consistent bulky waste pick-up is preferred over letting bulky items sit for an extended period of time
- Concern that tenants will not want to pay per month if they aren't using the service.
- Concern that the amount of bulky waste will increase once policy is put into place and broadly messaged.
- Acknowledgement that bulky waste is a multi-party issue and needs support from collection companies, property managers, and residents.
- Bottom line is we need to better handle bulky waste for the community, as efficiently and cheaply as possible.



Property Manager Discussion Groups Summary

Bulky Waste Policy Project – Phase Two Engagement

Local governments and Metro held individual interviews with five property managers of multifamily apartment buildings to seek feedback from the perspective of building staff.

The focus of these meetings was to hear feedback on four options to collect multifamily bulky waste. The following is a summary of what was heard.

Discussion Questions

Discussion was based on these questions:

- *What do you like & dislike about each option?*
- *Which collection option do you prefer overall?*
- *How should this collection of materials be paid for: per trip, as needed or divided amongst units as part of regular garbage/recycling service?*

What we heard:

Option A: Direct bill to tenant - Large item collection service is scheduled and paid for by tenants, directly to the garbage company.

- Concern that some residents would continue to dump bulky waste to avoid paying, or others would add bulky waste to existing items waiting to be picked up. Would not solve the issue of figuring out which unit items came from, or illegal dumping from non-residents.
- Like that tenants could schedule at their convenience, especially for buildings that don't have space for bulky items and require tenants keep them in unit until pick-up.
- Like that tenants could price compare and decide for themselves.
- Like that tenants are only paying as-needed rather than paying for a service some may not use.



- Hope that most tenants would use the service if they knew it was available, knew the costs upfront, and if it's cheaper/comparable to private hauler prices.

Option B: One time per year for each unit -

Each unit could call the garbage and recycling company to schedule a collection of a set amount of large unwanted items.

- Concern how cost could be passed on to tenants if bill is combined.
- Tualatin View apartments is currently piloting the voucher program. Building staff are managing the voucher system as a whole rather than per unit and felt the program is helpful.
- Unsure how scheduling and tracking the yearly pick-up would work.
- Concern that option is too complicated.
- Like the frequency on once a year and flexibility to be as tenants need.

Option C: Weekly collection - A bulky waste collection vehicle would come by every multifamily property every week on a regular day and time, and collect any large items present.

- Preferred option by many.
- Concern that frequency is too high for some properties but depends on the property.
- Suggestions for biweekly, monthly, or quarterly.
- Like having a regularly scheduled pick-up without needing to call.
- Concern how cost could be passed on to tenants if bill is combined.

Option D: On-Demand - Property managers and garbage and recycling route drivers can call in for collection of large, unwanted household items that appear onsite outside.

- Concern for items being left outside too long until pick-up can occur.
- Like the on-demand frequency.
- Don't mind needing to call, but preference for regular schedule.
- Concern how cost could be passed on to tenants if bill is combined.
- Like the idea of service being combined in regular billing, depending on how much more per month.
- Dislike that option is too close to current systems.
- Doubt that collection company route drivers would call in items.
- Will billing be a flat fee or as used? Preference to pay as used.

Overall comments and takeaways from participants:

- Some properties don't have space for bulky waste to be stored awaiting collection. Some property managers noted residents would need to hold items in their apartments or their parking space.
- Large complexes with multiple buildings may need multiple designated bulky waste areas.
- Some property managers are concerned that adding the service to the garbage bill will mean the building foots the bill, especially for affordable housing properties where utilities aren't paid by tenants.
- Most property managers believed the cost will work out to be cheaper than the current amount they have to spend on private junk haulers.
- Multiple property managers are participating in the 2023 pilot programs through Washington County, Clackamas County, and City of Gresham. All programs were well received; any bulky waste program was considered better than property managers dealing with the issue individually.
- Reusable bulky items are typically taken before collection companies can pick-up. There is interest for additional reuse programming.
- Many buildings use surveillance cameras to identify if tenants are dumping items, and charge them for it.
- Any new policy would require education materials for tenants and staff.
- People may still need help getting the items from their apartments to the designated pick-up locations.
- Will Christmas tree pick-up be included?