

Chapter 3 - Core Services Funding Needs Analysis

Local Government Funding for Solid Waste in Washington State

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PREPARED BY:



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[Publication 23-07-045 -Chapter 2 -Current Funding Types - Local Government Funding for Solid Waste in Washington State](#)

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Solid Waste Management Program

Statewide Headquarters

P.O. Box 47600

Olympia, WA 98504-7600

Phone: 360-407-6000

Website¹: [Washington State Department of Ecology](http://www.ecology.wa.gov)

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Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400
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Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	P.O. Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	P.O. Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 West Alder Street Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 North Monroe Spokane, WA 99205	509-329-3400
Headquarters	Statewide	P.O. Box 46700 Olympia, WA 98504	360-407-6000



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Executive Summary

The solid waste core services model was developed by the Washington Association of County Solid Waste Managers to “improve the solid waste management system in Washington by assuring a set of core programs and services are operating in every county and available to most residents, regardless of where they live, at a reasonable cost.” The model provides a policy framework designed to address current challenges in the state’s waste management infrastructure including access to curbside and self-haul services, consistency in programs, and economic disparities between communities. To address these challenges, the framework recommends minimum standards for disposal and recycling programs and services in every county.

As part of a broader analysis and as a subconsultant to Resource Recycling Systems (RRS), FCS Group evaluated the funding needed to implement the solid waste core services model. According to the contract with the Washington State Department of Ecology (Ecology), “It is not intended that the Contractor look at all cities and counties in the state, but rather a representative sample.” This study compared existing service levels and the core services model recommendations in twelve counties across Washington, representing 34% (about 2.6 million people) of the state’s population. The counties (Chelan, Clallam, Cowlitz, Island, Kitsap, Kittitas, Lincoln, Pierce, Skagit, Spokane, Walla Walla, and Yakima) include rural and urban counties in all four of the Ecology regions (i.e., Northwest, Southwest, Central, and Eastern). This comparative analysis identified existing program gaps and estimated funding needs to implement the core service model in the twelve counties. Funding needs are estimated over a ten-year period as well as unit costs per ton and per capita.

Key Findings

Existing Service Levels

- MSW (municipal solid waste, i.e., garbage) collection is accessible to every resident in the twelve counties assessed.
- About 80% of residential households in the twelve modeled counties have access to recyclable and yard debris curbside collection; however, access varies widely by county.
- Self-haul facilities within the twelve modeled counties generally accept the materials included in the core services model.
- Counties with less access to curbside collection services for recycling and yard debris tend to have more self-haul facilities on a per capita basis.
- Each of the twelve counties modeled operate at least one household hazardous waste (HHW) permanent facility.

Core Service Model Gap Analysis

- Approximately 916,000 and 853,000 residential households across the twelve counties have access to recycling and yard debris curbside collection, respectively. If curbside collection of recyclables and yard debris were to be made available to every household in cities and towns within the twelve modeled counties, it is estimated that these services would need to be expanded to approximately 38,000 households for recyclables and 59,000 households for yard debris.
- About half of the twelve counties may need additional self-haul facilities to meet the core service recommendations for access to MSW, recyclables, or yard debris services, based on existing conditions.
- County solid waste managers also identified capital improvements needed to maintain existing self-haul facilities as well as additional facilities to meet future demand for MSW, recycling, yard debris, and other solid waste services.

Funding Needs Analysis

- The ten-year (2023-2032) funding needs to implement the core services model are estimated at \$412 million to \$470 million for the twelve modeled counties. This estimate includes expanding access to more households, maintaining services at existing facilities, and improvements to facilities in response to anticipated population growth within the assessed counties. The funding estimate is equivalent to raising the MSW tipping fee in the assessed counties by \$19 to \$22 per MSW ton.
- Extrapolated ten-year cost estimate for core service improvements statewide ranges from \$2.07 billion to \$2.24 billion. County-identified capital projects comprise the majority of the statewide funding need (\$1.62 billion). The annual statewide funding need ranges from \$25 to \$27 per capita over the ten-year period.
- Funding needs tend to be proportionally higher in rural counties and in the central region of the state relative to other regions, due primarily to lower access to recycling and yard debris curbside collection services.
- Currently, state-supported grant and loan funding to local governments comprise less than 2% of operating revenue for modeled counties. Most of the revenue (97%) is generated from charges for goods and services – generally the tipping fees assessed at area transfer stations and landfills. Barring a major shift in funding models, these core service improvements are likely to be funded by increases to tipping fees and user rates. More discussion about the role of grants can be found in Chapter 2, Current Funding Types.
- Chapter 4 of this report addresses the alternative funding models for consideration to address funding gaps for solid waste management services in the state.

Background & Purpose

Background

The State of Washington Department of Ecology (Ecology) was directed by the Legislature to contract with a third-party consultant to study the adequacy of local government solid waste management funding, including options and recommendations for future program funding if significant statewide policy changes are enacted.

The Project Team was led by **Resource Recycling Systems (RRS)** and included **Cascadia Consulting Group (Cascadia)** and **FCS Group**. The study began in October 2022 and ended in June 2023, and resulted in five independent yet complementary reports:

- **Chapter 1** provides an **Executive Summary** of all four components of the study and the range of research and findings that resulted from the research. Chapter 1 also contains the set of **Recommendations** that are based on the findings and the contract team's collective expertise in materials management, policy, and analysis.
- **Chapter 2** reviews the **Current Funding Types** that state and local governments are currently authorized to use for solid waste management activities, summarized current solid-waste-related expenditures by state agencies, and conducted a web-based survey of local governments to learn about solid waste funding types and their rate of adoption.
- **Chapter 3** is an analysis of **Core Services Funding Needs**, and is based on a service model designed to improve the solid waste management system in Washington, with the aim of ensuring that a set of core services are both operating and available to all residents of each county in Washington.
- **Chapter 4** discusses **Alternative Funding Models** that are in use or have been proposed in other parts of the United States and across the world that may have relevance in Washington.
- **Chapter 5** evaluates the **Material Flow, Service Level and Cost to City and County Solid Waste Systems** of twenty-three (23) policies that have been considered or enacted by the Legislature between 2019 and 2022.

Chapter 3 focuses on the solid waste core services model, developed by the Washington Association of County Solid Waste Managers (WACSWM). This standardized set of core programs and services provides a framework designed to address current challenges in the state's waste management infrastructure, including access to curbside and self-haul services for waste, recycling, and yard debris; consistency in programs across the entire state; and economic disparities between communities. To

address these challenges, the framework recommends minimum standards for disposal and recycling programs and services in every county.

Key research areas included:

1. Funding needed to implement the core services model, breaking out recommendations for urban and rural counties.
2. Differentiation of the uses of funding, including staff versus infrastructure costs.
3. Comparison of jurisdictional tipping fees, percentage of funding from grants, emergency management funds, and availability of services and programs.

Study Approach

FCS Group coordinated with Ecology and WACSWM staff to identify twelve counties to include in the evaluation. These counties were selected to provide a high-level perspective of funding needs for a variety of communities across the state, and are referred to as “representative counties.” Table 1 details the representative counties, population, and land area.[1], [2] King County, the largest county by population in the state, was excluded from the survey because the county’s solid waste services generally meet or exceed the minimum recommendations of the core services model. As a result, the funding gap to meet the service recommendations is likely less than for other counties within the state.

Table 1. Representative Counties Included in Funding Needs Evaluation

County	Ecology Region	2021 Population Estimate	Land Area (Square Miles)	Population Density (Per Sq Mi)
Chelan	Central	80,000	2,921.2	27.39
Clallam	Southwest	77,750	1,738.7	44.72
Cowlitz	Southwest	111,500	1,140.4	97.77
Island	Northwest	87,100	208.4	417.95
Kitsap	Northwest	277,700	395.1	702.86
Kittitas	Central	45,225	2,297.3	19.69
Lincoln	Eastern	10,900	2,310.5	4.72
Pierce	Southwest	911,055	1,663.7	547.62
Skagit	Northwest	130,000	1,730.1	75.14
Spokane	Eastern	542,100	1,763.9	307.33
Walla Walla	Eastern	62,100	1,270.0	48.90
Yakima	Central	258,100	4,294.5	60.10

The evaluation consisted of three steps:

- **Inventory of Existing Solid Waste Services:** Identifies the existing curbside collection and self-haul facility services available to residents within each of the twelve counties. FCS Group compiled the inventory from collection service surveys conducted by Ecology and WACSWM, annual reports from UTC-regulated solid waste haulers, solid waste comprehensive planning documents, and information from county websites. The inventory was also reviewed with county solid waste managers/staff from the twelve sampled counties.
- **Core Service Model Gap Analysis:** Compares existing service levels within each county to the recommended minimum service standards outlined in the WACSWM core services model.
- **Funding Needs Analysis:** Estimates the annual funding needs for collection and facility improvements within each county to align with the core service model. Funding needs are itemized by operating and infrastructure categories and aggregated both by Ecology region and in total for all twelve counties. If service gaps were identified within a county service area, planning-level operating and capital funding requirements were estimated to meet the minimum service standard.

Study Purposes

Planning-Level Funding Estimates

The funding analysis provides low, medium, and high estimates for the funding needs to have each of the twelve surveyed counties meet the minimum service standards outlined in the WACSWM core services model. The analysis also provides a cumulative funding needs estimate for all surveyed counties. Funding estimates are expressed as ten-year funding needs (2023-2032), and as an equivalent cost per ton of municipal solid waste (MSW).


Comparative Perspectives on Service Levels and Funding Needs

The study analyzes the differences in existing service levels, service gaps, and funding needs for the twelve counties based on population, population density, geography, and current MSW tipping fee levels. The comparative analysis also provides perspectives on the differences in funding needs for urban, suburban, and rural counties.

Study Limitations

The funding needs analysis provides planning-level cost estimates and does not reflect specific tipping fee or rate recommendations by FCS Group to the twelve surveyed counties.

The cost estimates are based on historical MSW tonnage, which is then adjusted by anticipated population growth within each county. Changes to consumer behavior, population growth, accepted recyclable commodities, waste policy, and other factors may impact the volume and mix of waste flows in the future from those assumed within the analysis.



Funding needs cost estimates are based on data provided by county solid waste managers, Ecology, WACSWM staff, solid waste haulers, and public utility rate studies conducted by FCS Group for agencies in the Pacific Northwest. Privately-owned facilities that are open to the public are included in some cases, when provided by county solid waste managers. In addition to this data, assumptions related to cost inflation, waste generation, customer demand, curbside/self-haul service levels, and other factors were used to compute operating and capital funding requirements to implement the core services model. Key assumptions used within the analysis are summarized in the “Methodology” section of the report.

To test the impact of these assumptions, FCS Group conducted a sensitivity analysis of these inputs on the study results. Cost estimates are also bracketed into a low, medium, and high range to capture the impact of variations in these assumptions.

Project Details

Core Services Model (WACSWM)

The core services model recommends minimum service levels for solid waste management to be provided in every county. Based on the core services model provided by WACSWM, the model itemizes these standards into direct programs (which are “the most visible programs to residents, and the programs with which residents frequently interact,” including “waste collection, waste disposal, recycling, household hazardous waste, and emergency response”) and indirect programs (which refer to “several other programs that are less visible to the public and that function as the foundation, or roots, of the system”). [3] It also differentiates the minimum service standards for urban, suburban, and rural areas within counties. Table 2 outlines the minimum service standards for direct programs.

Table 2. Minimum Core Service Standards for Direct Programs


Direct Program	Urban	Suburban	Rural
Curbside Collection Residential/Commercial MSW	X	X	X
Curbside Collection Recyclables ²	X	X	
Curbside Collection Yard Debris ³	X	X	
Self-Haul Residential/Commercial MSW	X	X	X
Self-Haul Recyclables ²	X	X	X
Self-Haul Yard Debris ³	X	X	X
Self-Haul Construction and Demolition	X	X	X
Self-Haul Hazardous Waste	X	X	X
Commercial Container Collection MSW	X	X	X
Commercial Container Collection Recyclables ²	X	X	X
Commercial Container Collection Construction and Demolition	X	X	X
Transfer Stations/Drop Box/Landfill	X	X	X
HHW Permanent Facilities ⁴	X	X	X
HHW Events ⁵	X	X	X
Recyclables Processing	X	X	X
Yard Debris Processing	X	X	X
Food Waste Processing			
White Goods / Scrap Metal Processing	X	X	X
Emergency Response Collection Points for Debris	X	X	X
Emergency Response Debris Disposal Sites	X	X	X
Emergency Response Resource Sharing Agreements for Debris Management	X	X	X
Emergency Response Multijurisdictional /Multiagency Collaboration for Debris Management	X	X	X
Emergency Response Contracting for Debris Management	X	X	X
Emergency Response Fee Flexibility Authorizations for Debris Management	X	X	X
Emergency Response Continuity of Operations Plan	X	X	X

² Refers to source separated collection of recyclables for recycling.

³ Refers to source separated collection of yard debris for composting or other form of organics processing.

⁴ Includes service to SQGs.

⁵ Includes service to SQGs.



Apart from curbside collection of recyclables and yard debris, the core services model recommends that all direct programs be relatively accessible to all residents within a county. In addition to the direct programs outlined in Table 2, the core services model also identifies four indirect program elements that are less visible to the public but that are critical to the solid waste system's overall success: administration, enforcement, education/outreach, and risk management.

Representative Counties

Under state law, counties in Washington are generally responsible for coordinating comprehensive solid waste planning.[4] As part of this planning effort, county agencies designate minimum service levels for collection services, as well as acceptable recyclable and compostable materials. Counties also have the authority to set residential curbside collection service levels in unincorporated areas of the county, as well as in cities/towns that do not regulate solid waste activities. Many of the counties also operate or contract for the operation of the regional transfer stations and MSW disposal facilities. The solid waste management infrastructure within each county is also supported by cities, environmental health districts, and regulated and non-regulated private waste haulers/companies.

The twelve counties that were selected to include in this funding needs analysis are based on recommendations from Ecology and WACSWM staff with the intent to study a representative sample of how core services are currently provided across the state, and to measure the varying level of similarities and differences between counties and regions. Three counties were selected from each of the four planning regions (Northwest, Southwest, Central, and Eastern). An overview of the study objectives was also presented to county solid waste managers from across the state at the 2022 WACSWM annual conference on November 14, 2022.

Table 3 summarizes key demographic data for each county. County populations range from 10,900 for Lincoln County to 911,055 for Pierce County. Six of the twelve counties have populations of less than 100,000. Most of the assessed counties have a population density of less than 100 people per square mile. Counties with higher population densities include Spokane (307.33), Island (417.95), Pierce (547.62), and Kitsap (702.86).

Waste collection services in unincorporated areas of the counties are generally provided by private waste haulers through franchises regulated by the UTC.[5] These franchises, along with the waste collection programs provided by cities and towns, ensure that garbage collection service is accessible to all residents. Table 3 provides an estimate of the percentage of residential households in each county that are within waste collection service areas regulated by the UTC, based on a 2020 statewide waste collection survey conducted by Ecology.[6] As mentioned above, counties have the authority to set curbside collection service levels in these areas. Cities/towns can operate their own waste

collection utilities, contract for the operation of waste collection with a private waste hauler, or use the county service provider. Approximately 29% of households in Spokane County are within a UTC-regulated service area compared to 74% for Kitsap and Island counties.⁶

Table 3. Representative County Characteristics

County	Region	2021 Population	2021 Housing Units	Population Density (Per Sq Mi)	% Households In WUTC-Regulated Areas
Chelan	Central	80,000	37,846	27.39	48%
Clallam	Southwest	77,750	38,228	44.72	63%
Cowlitz	Southwest	111,500	45,814	97.77	48%
Island	Northwest	87,100	42,159	417.95	74%
Kitsap	Northwest	277,700	114,252	702.86	74%
Kittitas	Central	45,225	24,217	19.69	57%
Lincoln	Eastern	10,900	5,767	4.72	55%
Pierce	Southwest	911,055	357,358	547.62	49%
Skagit	Northwest	130,000	56,101	75.14	45%
Spokane	Eastern	542,100	226,813	307.33	28%
Walla Walla	Eastern	62,100	25,079	48.90	29%
Yakima	Central	258,100	91,290	60.10	51%

Data Sources

The funding needs analysis is based on publicly available data as well as electronic and phone communications with county solid waste managers. Privately-owned facilities that are open to the public are included in some cases, when provided by county solid waste managers. Key data sources are included in the appendix.

⁶ Spokane, the largest city in the county, operates curbside collection services within its city limits.

Methodology

The method used to estimate funding needs to implement the core services model is based on a three-step process (see Figure 1).

- **Inventory of Existing Solid Waste Services:** Identifies the existing curbside collection and self-haul facility services available to residents within each of the twelve counties.
- **Core Service Model Gap Analysis:** Compares existing service levels within each county to the recommended minimum service standards outlined in the WACSWM core services model.
- **Funding Needs Analysis:** Estimates the annual funding needs for collection and facility improvements within each county to align with the core service model. Funding needs are itemized by operating and infrastructure categories and aggregated by Ecology region and in total for all twelve counties.

Figure 1. Core Services Model Funding Needs Methodology



Inventory of Solid Waste Services

The first step of the analysis summarizes the existing service area and solid waste management service levels within each county. This information provides a baseline from which to identify any potential service gaps between existing services and those outlined in the core services model. Then, demographic information was gathered related to the population, households, and population density for each county, and an inventory of available solid waste collection services was compiled for cities within the county as well as for unincorporated areas of the county. An inventory of landfills, transfer

stations, and drop-boxes that are open to the public was also compiled, along with the list of items that are accepted at each facility (e.g., MSW, recyclables, used oil).⁷

Based on the inventory of solid waste services, several solid waste core service metrics were developed (see Table 4). These metrics provide a benchmark to compare existing services to the core service model. These metrics quantify access to each county’s solid waste system for various waste types (i.e., MSW, recyclables, and yard debris) and jurisdictions (i.e., cities/towns, unincorporated areas served by UTC-regulated haulers).

Table 4. Solid Waste Service Metrics

Metric	Why Is This Metric Important?
County Population Density (per square mile)	Lower population density decreases the economies of scale for curbside collection of MSW, recyclables, and yard debris. Counties with lower population densities may have higher funding needs to ensure access to collection services and/or self-haul facilities.
Percent of residential households in unincorporated areas and other UTC-regulated service areas	Higher relative population in unincorporated areas places greater responsibility on counties to set collection service standards and may increase demand on self-haul facilities.
Percent of residential households with access to MSW, recyclable, and yard debris collection	Access to curbside collection programs is a key component of the core service model. Lower access to these services may increase demand on self-haul facilities.
Percent of UTC-regulated residential households with access to MSW, recyclable, and yard debris collection	Access to curbside collection programs is a key component of the core service model. Lower access to these services may increase demand on self-haul facilities.
Percent of UTC-regulated households that subscribe to curbside MSW collection	Counties with relatively low subscription rates to curbside MSW collection may need to provide greater access to self-haul facilities to residents.

⁷ See appendix for complete list of county solid waste comprehensive plans.

Metric	Why Is This Metric Important?
Population per self-haul facility	Benchmark to measure relative access to self-haul facilities that accept MSW, recyclables, yard debris, white goods, HHW, and other materials.

Core Service Model Gap Analysis

Existing solid waste service levels within each county are compared to the recommended minimum service standards outlined in the core service model to identify potential gaps.⁸ If a gap is identified, the analysis estimates the improvements needed to align with the core service model. For example, if 50% of households have access to MSW collection today but the core service model recommends all households have access to this service, then the gap analysis estimates the relative increase in existing service level. The gap analysis is conducted on the twelve surveyed counties for the following services:

- Access to MSW curbside collection
- Access to recyclables curbside collection
- Access to yard debris curbside collection⁹
- Access to self-haul facilities that accept MSW, recyclables, yard debris, white goods, C&D, and special waste
- Access to a HHW facility and events within the county

Curbside Collection Index

The core services model recommends that solid waste services should be “relatively convenient to access” for residents. Determining a reasonable threshold for convenient access can be dependent on a variety of factors including travel time, travel distance, availability of similar services, and cost. Based on discussions with county solid waste managers, FCS Group developed a general framework for gauging convenient access for services based on the following principles:

- Ensuring convenient access to waste services through curbside collection service is preferred over operating more self-haul facilities (e.g., staffed drop-off centers and unstaffed drop boxes).

⁸ While this analysis focuses on collection services and self-haul facilities, the solid waste management system within each county extends beyond these services and includes other indirect activities like education/outreach, closed landfill monitoring, litter control, and administration support. A 2007 Ecology report on solid waste cost flows in Washington estimated that the cost of these indirect activities represents approximately 9.5 percent of total solid waste management costs.[8]

⁹ Excludes food waste. The core service model does not include food waste curbside collection as a minimum service for all residents.

- Service areas with higher access to curbside collection services would likely need fewer self-haul facilities relative to areas with lower access to curbside collection services.

Based on these principles, a Curbside Collection Index was calculated for each county. The Curbside Collection Index is a score of 0 to 100 and corresponds to households’ access to curbside collection services. A higher score indicates greater access to curbside services, while a lower score indicates less access. The Curbside Collection Index is based on the metrics developed as part of the existing service level analysis and the weights described in Table 5.

Table 5. Curbside Collection Index Metrics and Weights

Metric	Relative Weight
County Population Density (per square mile)	5%
Percent of residential households in unincorporated areas and other UTC-regulated service areas	10%
Percent of residential households with access to MSW, recyclable, and yard debris collection	35%
Percent of UTC-regulated residential households with access to MSW, recyclable, and yard debris collection	35%
Percent of UTC-regulated households that subscribe to curbside MSW collection	15%

The Curbside Collection Index also provides a benchmark for measuring service gaps for self-haul facilities. A lower Curbside Collection Index score may indicate higher demand for self-haul facilities whereas a higher Index score may indicate that curbside services are sufficient, and the county can rely less on self-haul facilities to manage MSW, recyclables, and yard debris. To estimate service gaps for self-haul facilities, FCS Group computed the population per existing self-haul facility for each of the twelve surveyed counties. A minimum threshold was established for each county based on the Curbside Collection Index and waste material (see Table 6). The benchmark for counties with a Curbside Collection Index score of 0 to 24 was set at one self-haul facility per 10,000 population. The benchmark for counties with an Index score of 25 to 49 was one self-haul facility per 25,000 population. Benchmarks for counties with an Index score of 50 to 74 and 75 to 100 were one self-haul facility per 50,000 and 150,000 population, respectively. The benchmarks for the self-haul facilities are based on existing services levels within the twelve counties and similar policy research currently being conducted for the State of Oregon.[7]

Table 6. Drop-Off Center Minimum Core Service Target Levels (Population per Facility)

Accepted Materials	Curbside Collection Index Score <25	Curbside Collection Index Score 25 To 49	Curbside Collection Index Score 50 To 74	Curbside Collection Index Score 75 To 100
MSW	10,000	25,000	50,000	150,000
Recyclables	10,000	25,000	50,000	150,000
Yard Debris	20,000	50,000	100,000	150,000

Funding Needs Analysis

The final step in the analysis estimates funding requirements to meet the recommended minimum core services for each county. The funding requirements are categorized into three service improvements: collection service improvements, self-haul facility improvements, and county-identified capital needs. The methodology and key assumptions for these categories are summarized below.

Collection Service Improvements

Collection service improvements include the funding needs to expand curbside collection of MSW, recyclables, and yard debris to residential households based on the minimum standards recommended by the WACSWM core services model (see Table 2). This includes ensuring access to MSW collection for all households, as well as recyclable and yard debris collection for households in urban and suburban areas of each county. Funding needs were estimated based on the following steps:

- Unit cost estimates were developed for each of these services based on reported revenue and residential customer counts from UTC-waste haulers for curbside services in regulated service areas.¹⁰
 - Unit cost estimates were based on the average reported revenue per customer as reported from all UTC-waste haulers, as well as the highest reported revenue per customer from an individual UTC-waste hauler.¹¹ It is assumed that expanding collection services to more rural areas of the twelve counties will likely cost more than the current average revenue per account, due to the distance to provide service. Using

¹⁰ UTC-regulated haulers are required to set service rates based on the cost-of-service plus a reasonable profit. As such, the revenue per residential account in a UTC-regulated area is a close approximation for the cost to provide service for MSW, recyclable, and yard debris collection.

¹¹ Reported revenue based on Schedule 8 (Lines 1, 6, and 10) and Schedule 9 (Lines 1, 6, and 8) of 2021 WUTC Annual Hauler Reports.

the highest revenue per customer figure provides a basis for the high-cost estimates within the analysis.


- The number of households within each county that currently do not have access to these services was estimated based on the results of the core service gap analysis.
- Subscription levels were assumed for curbside collection services based on a sample of actual subscription levels for these services in areas where they are provided:
 - 67.0% for MSW collection based on actual subscription rate for MSW collection in UTC-regulated areas in all twelve surveyed counties.
 - 33.5% for recyclable and yard debris collection (e.g., half the subscription rate for MSW collection). This estimate is based on subscription levels for these services from a sample of cities and UTC-regulated service areas, including unincorporated Kitsap County, Bremerton, Port Orchard, Poulsbo, Bainbridge Island, Port Angeles, Sequim, and UTC-regulated areas in Clallam, Island, Skagit, and Spokane counties.¹²
- Unit costs were multiplied by the assumed number of subscribing households to estimate the annual cost of collection service improvements.

Self-Haul Facility Improvements

The target levels for self-haul facilities identified in the gap analysis (see Table 6) were used to estimate the number of additional facilities needed in each county to meet the recommended minimum core service standard. Operating and capital cost estimates were developed for six self-haul facility options to meet the minimum service standard. Note that the difference between “Drop Box” and “Drop-Off Stations” is whether they are staffed or not. All facility options assume that material is transported off-site for disposal and processing.

- Unstaffed Recycling Drop Box
- Unstaffed Yard Debris Drop Box
- Staffed MSW Drop-Off Station (5,000 tons per year)
- Staffed MSW Drop-Off Station (5,000 tons per year) with Recyclable Drop Box
- Staffed MSW Drop-Off Station (10,000 tons per year) with Recyclable and Yard Debris Drop Boxes
- Staffed HHW Drop-Off Station

¹² FCS Group tested lower subscription rate assumptions for yard debris collection service. Overall costs of implementing the core service model recommendations in aggregate were relatively inelastic to a lower subscription rate assumption. Assuming a 25 percent yard debris subscription rate generates a cost range of \$404M to \$459M over a ten-year period compared to cost range of \$412M to \$470M with the baseline 33.5 percent subscription rate assumption. A 20 percent subscription rate generates a cost range of \$400M to \$454M over a ten-year period.



Facility operating costs are based on cost-of-service studies completed for similar facilities in Washington. Transportation and disposal/processing costs are based on a survey of container rental charges, pickup charges, and transport charges assessed by UTC-regulated haulers for drop-box services, as well as estimated transportation distances to disposal and processing facilities across the state.

County-Identified Capital Needs

County solid waste managers provided WACSWM staff with a ten-year schedule of facility improvements at existing and proposed transfer stations and landfills based on existing solid waste handling requirements. Examples of these capital costs include maintenance/replacement costs for existing transfer stations, planned facilities to accommodate future growth, and cell design at permitted landfills. Nine of the twelve counties sampled provided capital cost data to WACSWM with a combined cost of \$198.6 million.¹³

The cost of collection service improvements, self-haul facility improvements, and county-identified capital needs were combined for each county and forecasted over the next ten years to provide a funding needs estimate to meet the minimum standards outlined in the core service model.

¹³ Washington Association of County Solid Waste Managers. Solid Waste Capital Project Needs Survey (2022).

Results & Discussion

Inventory of Existing Solid Waste Services

MSW curbside collection is accessible to every resident in the twelve counties. Every county currently meets the minimum standard for MSW curbside collection recommended by the WACSWM core services model.¹⁴ Actual subscription rates for garbage collection vary widely by county. Subscription levels in UTC-regulated areas within the twelve counties evaluated range from an estimated 4% in Lincoln County to 76% in Pierce County (see Table 7).¹⁵ The weighted subscription level for MSW collection across the twelve counties is estimated at 67%. Subscription levels in cities are likely to be higher than those in the UTC-regulated areas of each county as cities may require mandatory (universal) MSW collection. For example, the MSW subscription level for unincorporated areas in Skagit County is estimated at 51% while most cities within Skagit County (Anacortes, Mount Vernon, and Sedro-Wooley) all provide mandatory garbage collection. Similarly, the MSW subscription level for UTC-regulated areas in Pierce County is 76% while almost every city in the county requires mandatory collection for MSW.

¹⁴ Based on discussions with Department of Ecology staff, some households in the rural areas within the state are provided MSW collection with front-load commercial containers, which may be shared with neighbors. A precise estimate of the number of residential customers that receive front-load MSW collection service is not available. However, as all residential customers within the state have some type of MSW collection service available, the distinction between curbside and container service for MSW collection does not affect the cost estimates of the core service model financial evaluation.

¹⁵ Estimated MSW subscription rates are based on each county's most recent UTC cost assessment questionnaire for reported residential customer accounts divided by 2021 housing estimates for each county as reported by the Washington Office of Financial Management.

Table 7. Access and Subscription to MSW Curbside Collection by Representative County

Representative County	Region	% Of Households with Access to MSW Curbside Collection	% Of Households In UTC-Regulated Areas Subscribing to MSW Curbside Collection
Chelan	Central	100%	85%
Clallam	Southwest	100%	44%
Cowlitz	Southwest	100%	75%
Island	Northwest	100%	50%
Kitsap	Northwest	100%	77%
Kittitas	Central	100%	36%
Lincoln	Eastern	100%	4%
Pierce	Southwest	100%	76%
Skagit	Northwest	100%	51%
Spokane	Eastern	100%	64%
Walla Walla	Eastern	100%	66%
Yakima	Central	100%	53%
All Sampled Counties		100%	67%

Approximately 80% of residents have access to recyclable and yard debris curbside collection¹⁶

Residents living in higher populated counties tend to have greater access to recyclable and yard debris collection services. It is estimated that over 90% of residents have access to recyclable collection in the three most populous counties (Pierce, Spokane, and Kitsap). By contrast, recyclable collection is not provided in Lincoln County while approximately half of residents in Yakima County have access to recyclable collection. As a result of separate collection being more costly to counties and a perceived lack of interest from county residents, access to yard debris collection tends to be lower than access to recyclable collection; 84% of residents across the twelve counties have access to recyclable collection compared to 78% for yard debris collection. Table 8 summarizes the estimated access to recyclable and yard debris curbside collection.

¹⁶ Refers to access to source separated collection of recyclables for recycling and source separated collection of yard waste for composting or other forms of organics processing.

Table 8. Access to Curbside Recycling and Yard Debris Collection

Representative County	Region	Population Density (Per Sq Mi)	% Of Households With Access To Recyclable Curbside Collection	% Of Households With Access To Yard Debris Curbside Collection
Chelan	Central	27.39	100%	39%
Clallam	Southwest	44.72	91%	37%
Cowlitz	Southwest	97.77	41%	0%
Island	Northwest	417.95	49%	49%
Kitsap	Northwest	702.86	100%	79%
Kittitas	Central	19.69	38%	38%
Lincoln	Eastern	4.72	0%	0%
Pierce	Southwest	547.62	100%	100%
Skagit	Northwest	75.14	78%	78%
Spokane ¹⁷	Eastern	307.33	87%	72% to 90%
Walla Walla	Eastern	48.90	71%	54%
Yakima ¹⁸	Central	60.10	49%	51% to 73%
All Sampled Counties			84%	78%

Self-Haul Facilities Within The Twelve Counties Generally Accept The Materials Outlined In The Core Services Model

Self-haul facilities include area landfills, transfer stations, rural drop-off stations, and drop-boxes. In general, counties have an adequate number of facilities that accept the materials outlined in the core services model. Due to recent recyclable commodity market conditions, some counties do not

¹⁷ Access to yard waste debris collection in Spokane County is estimated based on available data. Based on discussions with County staff, the access rate is likely between 72% and 90%. The variation in the estimate is due to unavailable data for the actual number of residential customers in unincorporated parts of the county who have access to yard debris collection.

¹⁸ Yakima Waste Systems offers yard debris collection service to residential customers within the urban growth areas (UGAs) of the county. Data was not available on the proportion of the county population in the UGAs. The estimated range in Table 8 is based on yard debris collection not being offered in unincorporated county areas (low-end) and yard debris collection being offered to all households served by Yakima Waste Systems in unincorporated areas of the county (high-end).

accept certain recyclables recommended within the WACSWM Commingled Recycling Guidance Report such as envelopes, mixed paper, and plastic materials.¹⁹

Counties with less access to curbside collection services Tend to have more self-haul facilities on a per capita basis

Counties with lower subscription levels to curbside garbage collection and less access to recyclable/yard debris collection services have more self-haul facilities on a per capita basis. As an example, there are four facilities that accept self-hauled MSW in Spokane County or about one facility for every 135,000 residents. In contrast, there is one self-haul facility that accepts MSW for every 22,000 customers in Kittitas County. While Lincoln County residents do not have access to curbside recycling, the County operates eight self-haul facilities that accept recyclables, or about one station for every 1,400 residents. Table 9 summarizes the population per self-haul facility for each representative county and material type.

Table 9. Population per Self-Haul Facility by Accepted Material Type

Representative County	Region	MSW	Recyclables ²⁰	Yard Debris ²¹
Chelan	Central	16,000	40,000	16,000
Clallam	Southwest	19,438	25,917	77,750
Cowlitz	Southwest	37,167	11,150 ²²	55,750
Island	Northwest	21,775	17,420	43,550
Kitsap	Northwest	55,540	46,283	138,850
Kittitas	Central	22,613	22,613	22,613
Lincoln	Eastern	10,900	1,363	5,450
Pierce	Southwest	91,106	101,228	101,228
Skagit	Northwest	43,333	32,500	130,000
Spokane	Eastern	135,525	108,420	108,420
Walla Walla	Eastern	62,100	62,100	62,100
Yakima	Central	129,050	129,050	129,050

¹⁹ Chelan County facilities do not accept envelopes. Kittitas County facilities do not accept paperboard and envelopes. Walla Walla and Yakima County facilities do not accept HDPE and PET plastics.

²⁰ Refers to source separated collection of recyclables for recycling.

²¹ Refers to source separated collection of yard debris for composting or other forms of organics processing.

²² There are ten recyclable drop-off centers available to self-haulers; six of these centers are not operated/managed by Cowlitz County.

Every County Operates At Least One Permanent HHW Facility

The WACSWM core services model includes a standardized list of 25 household hazardous waste materials that counties should collect and manage separately from general waste. These items include used motor oil, batteries, anti-freeze, oil-based paints, and household cleaners. The core services model also recommends that a permanent collection facility operate in every county.

Based on a review of county comprehensive solid waste plans and feedback from county solid waste managers, all twelve counties operate at least one permanent HHW facility, and these facilities generally accept all of the items recommended within the core services model.²³ Some counties operate a regional facility that accepts all of the items (Kittitas County and Clallam County) while others may operate several drop-off stations that accept some or all of these materials (Island County).

Other Observations

- MSW commercial container (e.g., bin, cart, metal container) collection service is available in every county sampled.
- None of the sampled counties currently have minimum service requirements for commercial recycling.
- Every county sampled operates at least one self-haul facility that accepts white goods. Most counties accept white goods at more than one facility.
- Every county sampled operates at least one self-haul facility that accepts construction and demolition debris.
- Some counties accept special waste like asbestos and contaminated soil on an appointment basis; however, these materials are not universally accepted across the twelve counties.

Core Service Model Gap Analysis

Curbside Collection Services

Existing curbside collection services are compared to the minimum core service standards to estimate needed improvements in the twelve representative counties. Access to MSW curbside collection is already available to all residents in the sampled counties, due in part to the UTC franchise system. Curbside collection and yard debris access varies by county (as referenced in Table 8). If curbside collection of recyclables and yard debris were to be made available to every household in urban and suburban areas (e.g., cities and towns) of the counties sampled, it is

²³ Not all counties in Washington operate a permanent household hazardous waste facility. A 2022 survey conducted by WACSWM indicated that at least two counties (Skamania and Wahkiakum) do not operate permanent facilities.

estimated that these services would need to be expanded to approximately 38,000 households for recyclables and 59,000 households for yard debris (see Table 10).²⁴

Table 10. Number of Residential Households in Cities and Towns without Access to Curbside Collection Services


County	Ecology Region	MSW	Recyclables	Yard Debris
Chelan	Central	0	0	5,771
Clallam	Southwest	0	1,406	1,406
Cowlitz	Southwest	0	7,494	26,295
Island	Northwest	0	745	745
Kitsap	Northwest	0	0	0
Kittitas	Central	0	2,616	2,616
Lincoln	Eastern	0	2,620	2,620
Pierce	Southwest	0	0	0
Skagit	Northwest	0	377	377
Spokane ²⁵	Eastern	0	6,171	699
Walla Walla	Eastern	0	682	4,884
Yakima ²⁶	Central	0	15,685	14,022
Total		0	37,796	59,435

Figures 2 and 3 illustrate current access to recycling and yard debris collection service in the twelve counties. Approximately 916,000 and 853,000 residential households have access to recycling and yard debris collection, respectively. Expanding these services to all cities and towns in the twelve counties would require increasing existing service areas to an additional 38,000 households for recycling collection and 59,000 for yard debris collection if just expanded to cities and towns. Based on the core service model framework, it is estimated that approximately 111,000 residential households within the twelve counties would continue to be without access to recycling collection – all of these households would be in rural

²⁴ The WACSWM model does not recommend curbside collection of yard debris and recyclables in unincorporation portions of counties. For this reason, table 10 only presents residential households without access in cities and towns of representative counties. Please refer to 10 for additional detail on the WACSWM Core Services Model.

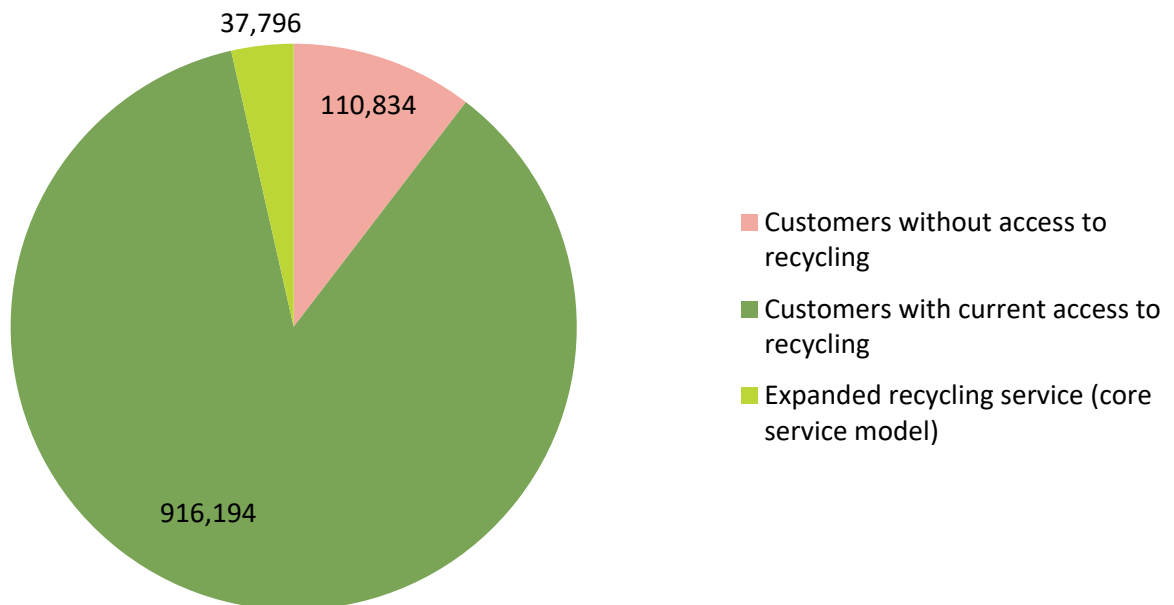
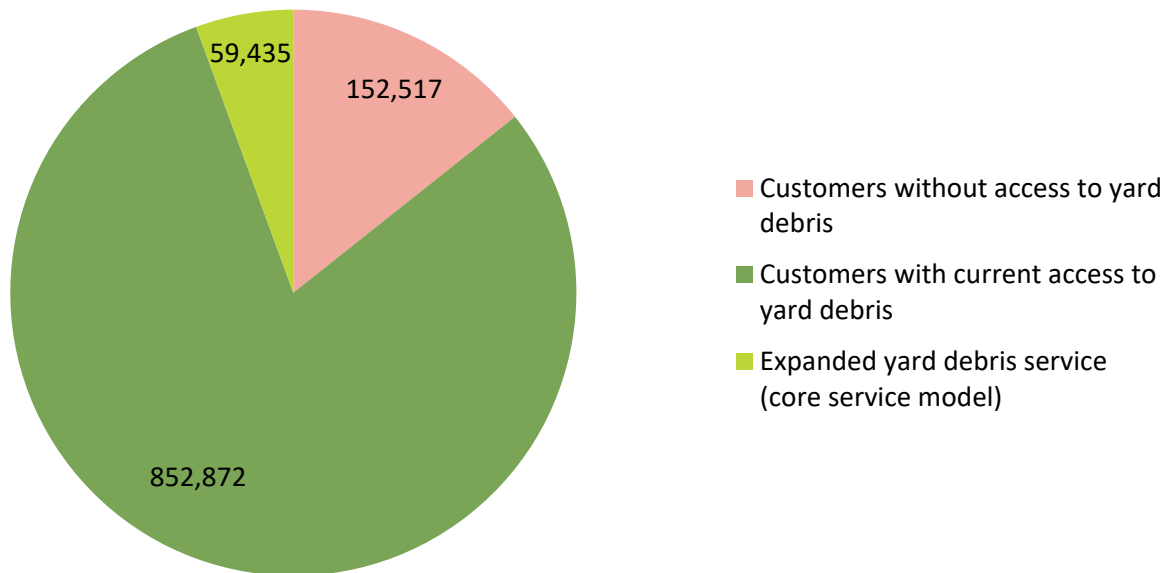
²⁵ The City of Cheney offers curbside yard debris collection service to residential customers; however, curbside recycling service is currently not offered in Cheney.

²⁶ The cities of Harrah, Naches, and Toppenish offer curbside yard debris collection service to residential customers; however, these cities do not currently offer curbside recycling collection service.



(unincorporated) areas of the counties, and would instead have access to drop box recycling. Similarly, 153,000 households would be without access to yard debris collection based on the criteria outlined within the core services model and would therefore rely on self-haul (or home composting). It is estimated that the core service model minimum service requirements would result in recycling collection service being available to 90% of residential households and yard debris collection service being available to 86% of residential households within the twelve counties.

Figure 2 & Figure 3. Coverage of Residential Household Recycling Collection & Residential Household Yard Debris Collection



If the target area for recyclable and yard debris collection services were expanded to include all cities, towns, and rural areas, the number of households requiring access would increase. For example, if access were expanded to all residential households within each of the twelve counties, it is estimated that collection services would need to be expanded to approximately 149,000 households for recyclables and 212,000 households for yard debris (see Table 11).

Table 11. Selected Scenarios for Number of Additional Residential Households Provided Access to Curbside Collection Services

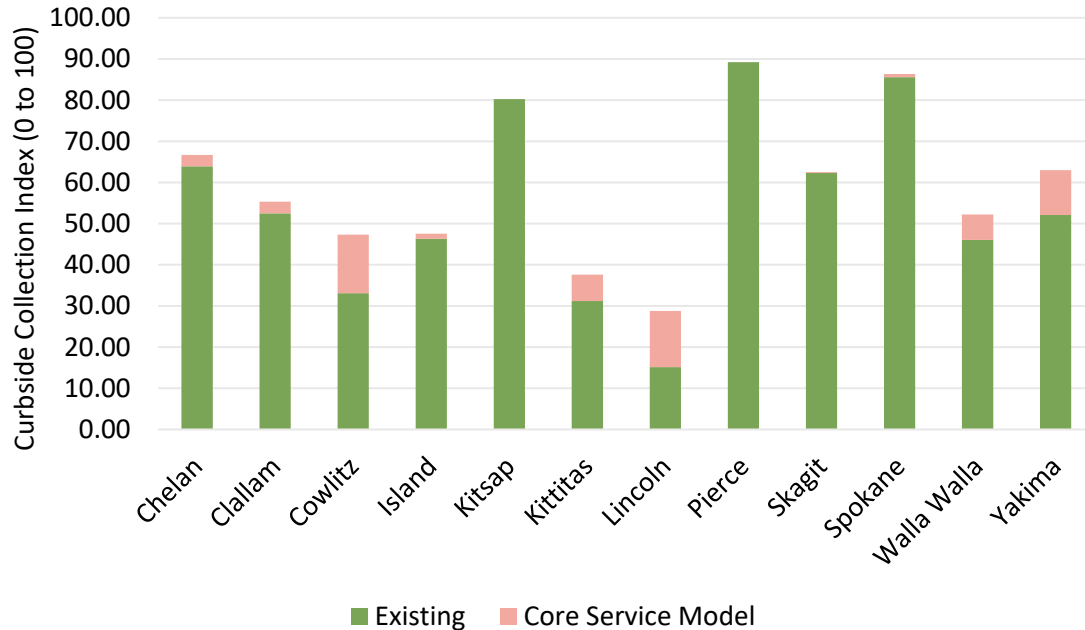
Scenario	Recyclables	Yard Debris
Recyclable and Yard Debris Service Available to Households in Cities and Towns	37,796	59,435
Recyclable and Yard Debris Service Available to All County Households	148,630	211,952

Self-Haul Facility Services

The core services model recommends that solid waste services are “relatively convenient to access” for residents. To determine a reasonable threshold for convenient access to self-haul services, several factors were evaluated within each county including population density, access to garbage/recycling/yard debris curbside services, and the relative share of residents that do not live in cities or towns. Based on these factors, a curbside collection index was developed for each county. The index is a score of 0 to 100 and corresponds to households’ access to curbside collection services. A lower score indicates less access to curbside services and would suggest that residential households in these counties require more self-haul services at transfer stations and drop-off centers. A higher score suggests that curbside collection services are adequate in the county and may indicate that less reliance on self-haul services is needed relative to counties with lower index scores.

Figure 4 summarizes the Curbside Collection Index score for each county. Kitsap, Pierce, and Spokane counties all have an index score of 80 or higher – significantly higher index scores than other surveyed counties. Curbside collection index scores are the lowest in Cowlitz (33), Kittitas (31), and Lincoln (15) counties. The green columns in Figure 4 indicate the relative increase to the Index scores if curbside collection services for recyclables and yard debris were expanded to all cities within each county. For example, the current Curbside Collection Index score for Cowlitz County is 33 out of a possible 100. If recycling and yard debris collection service were expanded to all cities and towns in the county, the index score would increase to 47. If the county were to implement these core service collection service improvements, the county may need to rely less on self-haul facilities in the future than it would have without the collection service improvements.

Figure 4. Curbside Collection Index by Representative County



The Curbside Collection Index scores were used to model self-haul facility improvements within each county (see Table 6). FCS Group reviewed these improvements with solid waste managers and adjusted the modeled improvements based on their feedback. Based on this information, Cowlitz, Lincoln, Skagit, and Walla Walla would require additional self-haul services to meet the core service model recommendations. Table 12 outlines the modeled self-haul facility improvements for each county.

In addition, nine of the twelve counties provided capital facility improvements for existing facilities through the WACSWM Solid Waste Capital Project Needs survey completed in 2022. The capital cost estimates to maintain existing services as identified in the WACSWM survey are added to the cost estimates for the core service self-haul facility improvements.

Table 12. Modeled Core Service Self-Haul Facility Improvements

County	Ecology Region	Modeled Self-Haul Facility Improvements
Chelan	Central	
Clallam	Southwest	
Cowlitz	Southwest	One MSW/recycling/yard debris drop-off station(staffed)
Island	Northwest	
Kitsap	Northwest	
Kittitas	Central	
Lincoln	Eastern	Two recycling drop boxes (unstaffed) and one MSW/recycling/yard debris/MRW drop-off station (staffed)
Pierce	Southwest	
Skagit	Northwest	One MSW/recycling/yard debris/MRW drop-off station (staffed)
Spokane	Eastern	
Walla Walla	Eastern	One MSW/recycling/yard debris drop-off station (staffed)
Yakima	Central	

Funding Needs Analysis

Expanding Bi-weekly Recyclable and Yard Debris Collection Service to All Cities in the Twelve Counties Estimated to cost \$5 Million to \$7 Million in 2023

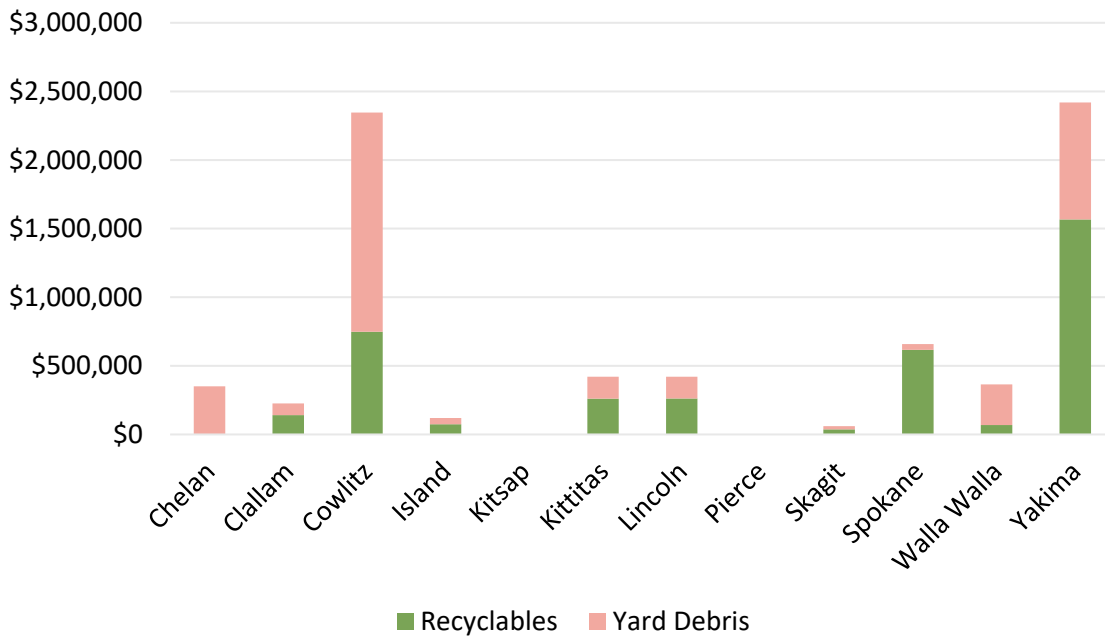
The core service gap analysis identified approximately 38,000 households in cities and towns across the twelve counties that currently do not have access to recyclable curbside collection.

Additionally, there are 59,000 households in cities and towns that do not have access to yard debris curbside collection. Expanding every-other-week curbside collection to these households is estimated to cost \$5 million to \$7 million in 2023. The cost estimate is based on financial reporting from UTC-regulated waste haulers, so the cost estimate includes the same costs recovered by UTC-regulated haulers through the monthly rates charged by the haulers to subscribers (i.e., collection, transport, processing, and billing). Cumulative costs over a ten-year period (2023 to 2032) are estimated at \$52 million to \$85 million. Figure 5 illustrates the annual cost to expand curbside collection costs for the twelve counties.

About one in three of the households is assumed to subscribe to the new curbside services. If the costs were passed directly onto the residential households that subscribe to the service through monthly solid waste rates, the monthly cost per subscriber is estimated at \$11 to \$24 for recyclable collection and \$11 to \$14 for yard debris collection. If recycling collection costs were spread to all curbside garbage customers as is done in many westside counties, we would expect the unit costs

to be less. Other potential policy strategies may also reduce or spread the cost of implementing the core service model (e.g., EPR) and are discussed in Chapters 4 and 5.

Figure 5. Annual High-Cost Estimate to Expand Recyclable and Yard Debris Collection to Cities by County (\$ in 2023)



Core Service Self-haul Facility Improvements Estimated to Cost \$15M to \$20M Annually

The operating and annualized capital costs for the modeled self-haul facility improvements in Cowlitz, Lincoln, Skagit, and Walla Walla counties referenced in Table 12 is estimated at \$8 million to \$11 million. The cost estimate is comprised of \$7 million to \$8 million in annual operating costs, and \$1 million to \$3 million in annualized capital costs. The operating costs are estimated based on the type of self-haul facility and include facility operations, container pick-up and rental fees, MSW transport/disposal, recycling transport/processing, yard debris transport/processing, and HHW processing.²⁷ Cumulative costs over a ten-year period (2023 to 2032) are estimated at \$98 million to \$123 million.

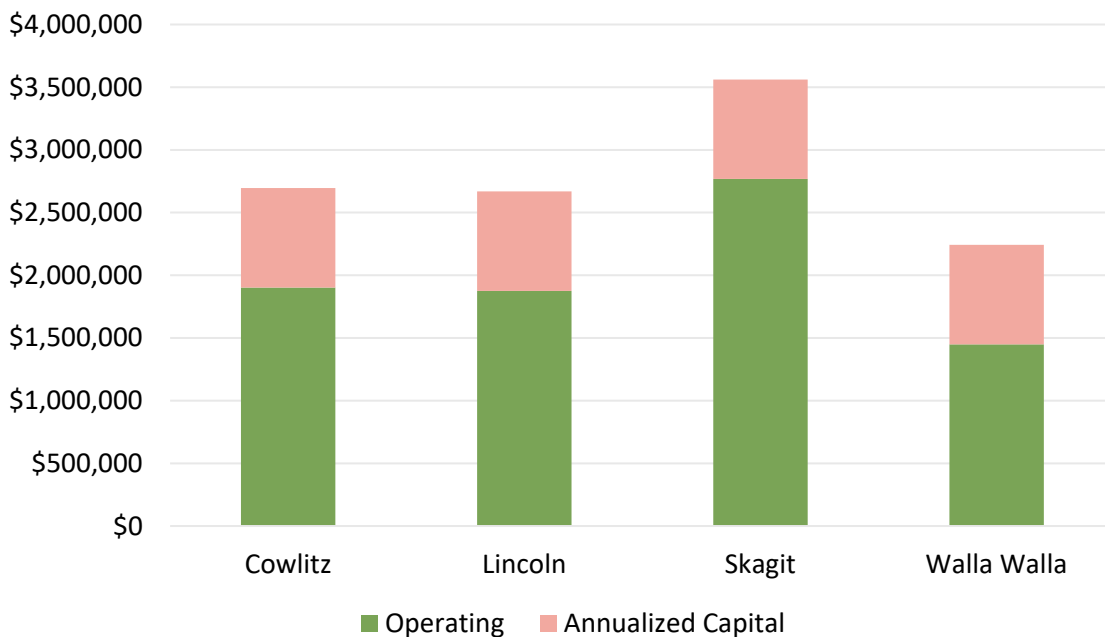
If the modeled self-haul facilities improvements were paid for by tipping fees within the respective counties, it is estimated that 2023 tipping fees would increase:

²⁷ Recycling transport and processing costs are adjusted for commodity resale revenue.

- \$23 to \$29 per ton in Cowlitz County
- \$632 to \$866 per ton in Lincoln County²⁸
- \$25 to \$31 per ton in Skagit County
- \$27 to \$36 per ton in Walla Walla County

Figure 6 summarizes the estimated operating and annualized capital costs by county for the core service self-haul facility improvements.

Figure 6. Annual High-Cost Operating and Annualized Capitalized Cost Estimate for Self-Haul Facility Improvements by County (\$ in 2023)



County Solid Waste Managers Identified \$200M in Capital Facility Needs at Existing and Planned Solid Waste Facilities Over Next Ten Years

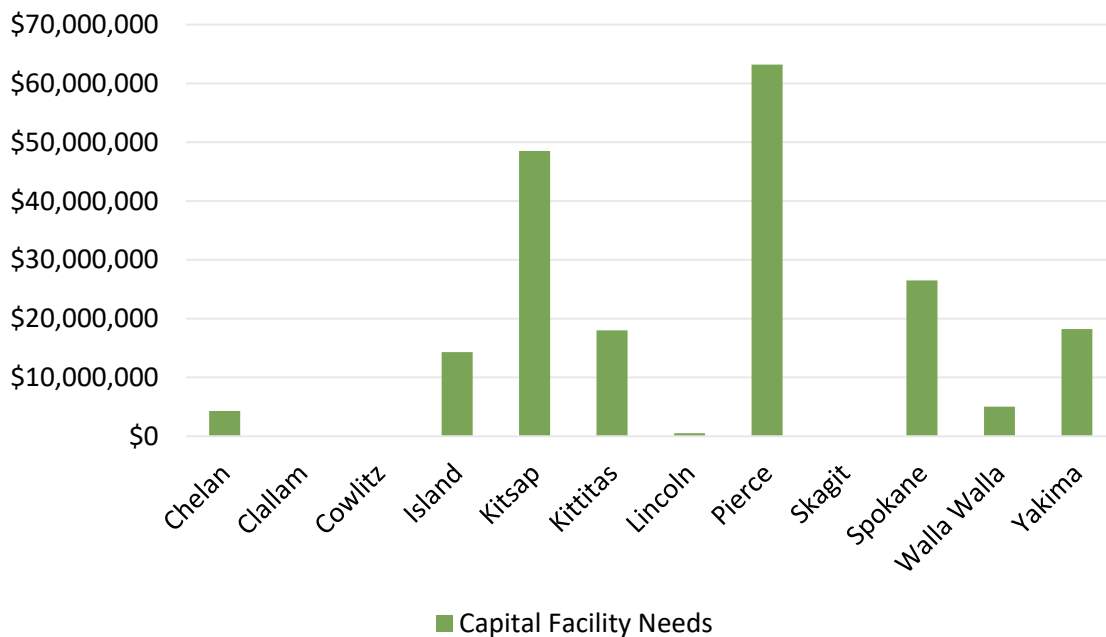
The cost estimate is based on a survey conducted by WACSWM staff in 2022 to county solid waste managers.²⁹ Nine of the twelve sampled counties provided cost estimates for replacement of

²⁸ A significant portion of self-haul facility operating costs are fixed relative to the number of received tons. Lincoln County is the smallest of the twelve counties surveyed by population and by MSW tonnage. As a result, the cost to expand self-haul facilities is spread over relatively few tons resulting in a high cost per ton estimate. FCS Group also modeled a 1,000 ton per year drop-off center for Lincoln County – the tipping fee impact for this scenario is also higher than all other counties at \$279 to \$513 per ton.

²⁹ Washington Association of County Solid Waste Managers. Solid Waste Capital Project Needs Survey (2022).

existing transfer stations, planned drop-off centers, and transfer stations, as well as site improvements at area landfills. Because the survey was administered in 2022, it is likely that construction for some of these projects has already begun, so the cost estimate is conservative. Based on our review of the survey results, approximately \$35 million (18%) of the \$199 million in total capital project costs were scheduled for 2022 and 2023 with the remaining costs (\$164 million or 82%) scheduled for 2024 to 2032. Figure 7 summarizes the capital costs by county as provided by county solid waste managers.³⁰

Figure 7. County-Identified Capital Project Costs for Existing and Planned Solid Waste Facilities (\$ In 2022)



Ten-Year Cost estimate for core service improvements and county-identified Capital facility needs estimated at \$412 million to \$470 million

The combined cost of the curbside collection and self-haul facility improvements related to the core service model as well as county-identified capital facility needs is estimated at \$412 million to \$470 million over the next ten years. This cost estimate is equivalent to increasing the MSW tipping fee in all twelve counties by \$19 to \$22 per ton over the next ten years, or approximately 18%

³⁰ Cost estimates were provided in 2022 dollars. This cost analysis inflates the reported capital costs based on the estimated year of construction.

increase to existing MSW tipping fees in 2023. Table 13 details the ten-year funding needs by representative county and core service improvement.

Table 13. Ten-Year Funding Needs (2023-2032) by Representative County

Representative County	Core Service Curbside Collection Improvements	Core Service Self-Haul Facility Improvements	County-Identified Capital Needs	Total Ten-Year Funding Need
Chelan	\$3M to \$4M	\$0	\$5M	\$8M to \$9M
Clallam	\$2M to \$3M	\$0	N/A	\$2M to \$3M
Cowlitz	\$18M to \$27M	\$24M to \$30M	N/A	\$42M to \$57M
Island	\$1M	\$0	\$20M	\$21M
Kitsap	\$0	\$0	\$60M	\$60M
Kittitas	\$3M to \$5M	\$0	\$25M	\$28M to \$30M
Lincoln	\$3M to \$5M	\$22M to \$29M	\$1M	\$26M to \$35M
Pierce	\$0	\$0	\$84M	\$84M
Skagit	\$1M	\$33M to \$40M	N/A	\$34M to \$41M
Spokane	\$4M to \$8M	\$0	\$37M	\$41M to \$45M
Walla Walla	\$3M to \$4M	\$19M to \$25M	\$6M	\$28M to \$35M
Yakima	\$16M to \$28M	\$0	\$23M	\$39M to \$51M
Total	\$52M to \$85M	\$98M to \$124M	\$261M	\$412M to \$470M
Equivalent Annual Cost per MSW Ton	\$2.44 to \$3.98	\$4.60 to \$5.80	\$12.33	\$19.38 to \$22.11
Equivalent Annual Cost per Person	\$1.88 to \$3.06	\$3.54 to \$4.45	\$9.47	\$14.88 to \$16.98

Note: Differences between county costs and total cost are due to rounding.

Table 14. Ten-Year Funding Needs (2023-2032) For Representative Counties Aggregated by Population Density

Cost Estimates Aggregated by County Population Density	Core Service Curbside Collection Improvements	Core Service Self-Haul Facility Improvements	County-Identified Capital Needs	Total Ten-Year Funding Need
Rural Counties	\$47M to \$76M	\$98M to \$124M	\$60M	\$206M to \$260M
Urban Counties	\$5M to \$9M	\$0	\$201M	\$206M to \$210M
Total	\$52M to \$85M	\$98M to \$124M	\$261M	\$412M to \$470M
Equivalent Annual Cost per MSW Ton	\$2.44 to \$3.98	\$4.60 to \$5.80	\$12.33	\$19.38 to \$22.11
Equivalent Annual Cost per Person	\$1.88 to \$3.06	\$3.54 to \$4.45	\$9.47	\$14.88 to \$16.98

Note: Differences between county costs and total cost are due to rounding.

Extrapolated Ten-Year Cost Estimate for Core Service Improvements Statewide Ranges from \$2.07 Billion to \$2.24 Billion

FCS Group extrapolated the ten-year funding needs identified from the twelve-county sample to the entire state. The statewide ten-year funding need is estimated at \$2.07 billion to \$2.24 billion (Table 15), equivalent to \$25 to \$27 per capita per year over the ten-year period (Table 16).

County-identified capital projects comprise the majority of the statewide funding need (\$1.62 billion). Operating and capital costs related to expanding recycling and yard debris collection and self-haul facility improvements make up the remaining portion of the statewide cost estimate (\$0.45 billion to \$0.62 billion).

The statewide extrapolation of the core service funding need is not proportional to the population within the twelve-county sample and the statewide population. Approximately half of the statewide funding need (\$1.1 billion) targets the replacement of two aging transfer stations in King County and new area of development at the County’s Cedar Hills Regional Landfill. Because King County was not included in the twelve-county sample, the extrapolated statewide funding needs are higher than a straight exploration of the funding need within the twelve-county sample.

Table 15. Ten-Year Funding Needs (2023-2032) Statewide

	Low Estimate	Medium Estimate	High Estimate
County-identified capital projects	\$1.62B	\$1.62B	\$1.62B
Other curbside and facility improvements	\$449M	\$536M	\$623M
Total Cost Estimate	\$2.07B	\$2.16B	\$2.24B

Note: Differences between county costs and total cost are due to rounding.

Table 16. Ten-Year Funding Needs (2023-2032) Statewide in Equivalent Annual Cost per Capita

	Low Estimate	Medium Estimate	High Estimate
County-identified capital projects	\$19.55	\$19.55	\$19.55
Other curbside and facility improvements	\$5.50	\$6.50	\$7.50
Total Cost Estimate	\$25	\$26	\$27


Note: Differences between county costs and total cost are due to rounding.

Grants and Miscellaneous Funding Generate Less Than 5% Of Operating Revenue for Sampled Counties

Both counties and cities most commonly report³¹ using collection, tipping, or user fees; state grants; and money from utility or enterprise funds to fund all solid waste-related programs and services. Based on adopted budget documents available online, grant funding and miscellaneous revenue (e.g., interest earnings) comprise about 2% and 1%, respectively, of operating revenue for the twelve sampled counties. Most of the revenue (97%) is generated from charges for goods and services – generally the tipping fees assessed at area transfer stations and landfills. Absent a significant change in available resources, the cost of the core service improvements and county-identified capital needs would most likely be funded through increases to tipping fees and monthly curbside collection rates.

Though grants comprise a small percentage of operating revenue, feedback from county waste representatives suggests that state grants — particularly Local Solid Waste Financial Assistance (LSWFA) but also Community Litter Cleanup Program (CLCP) and Waste Reduction and Recycling

³¹ As reported by survey respondents in Chapter 2, Current Funding Sources, of Local Government Funding for Solid Waste in Washington State.



Education (WRRED) grants — are the most heavily relied-upon sources of funding for several components of the core services model framework, including contamination reduction and waste prevention, which are both components of education and outreach.

According to survey respondents, current contamination reduction and waste prevention programs meet 40-60% of the need, indicating that the grant funding that is available and utilized is not sufficient to meet counties' needs. Additionally, CLCP and LSWFA grants were commonly identified sources of funding for initiatives focused on litter and illegal dumping, though the sufficiency of funding (as reported in the surveys) ranged from 100% to no services available without a clear pattern across regions or jurisdiction types.

Finally, survey responses indicate that local waste planning, administration, and emergency or disaster debris planning is also highly dependent on state funding, specifically LSWFA, CLCP, or WRRED grants. In general, survey respondents confirm that these indirect programs are being implemented, though they are meeting various levels of service.


Nearly \$28.8 million of Ecology's biennium budget (2021-2023) is allocated to pass-through grants to local governments and community organizations and awards to schools. LSWFA grants make up the single largest share of Ecology's expenditures on solid waste: \$24 million. Ecology's Solid Waste Management Program 2021–2023 budget includes \$4.8 million for contracts related to litter, illegal dumping, food waste reduction, and recycling. Survey respondents are interested in more funding, potentially from grants, to increase recycling programs and access, especially in rural areas; more funding for organics collection services; and more funding for staff capacity and services for education and outreach related to recycling, organics, and HHW. Chapter 2 of this full report provides more detail on grant-related funding.

Conclusion and Discussion

Existing County Programs Generally Align with the Core Service Model Recommendations

The core services model was designed to improve the solid waste management system in Washington by assuring a set of core programs and services are operating in every county and available to most residents, regardless of where they live. Based on a sample of twelve counties, many of these services are already being provided to residents including some of the most critical core services like MSW curbside collection. Over 80% of residential households have access to recycling and yard debris curbside collection. Access levels tend to be higher in cities and towns and less so in unincorporated areas.

Existing access to recycling and yard debris collection services varies widely across the twelve counties.¹⁶ Over 95% of residential households in counties with higher population and population



density (i.e., Kitsap, Spokane, and Pierce) have access to these collection services. Conversely, counties with lower population and population density have less access. Recycling and yard debris collection is not available in Lincoln County, though self-haul services are. Approximately 40% of residential households have access to recycling and yard debris collection services in Kittitas County. Yard debris collection service is not available in Cowlitz County.

Where Service Improvements are Needed, They Tend to be More Pronounced in Rural Counties and in The Central Region of the State

Residents in rural areas, particularly in the Central region, tend to have less access to curbside collection for recyclables and yard debris. To ensure convenient access to waste management services, rural counties may need to supplement curbside collection services with additional self-haul facilities. For rural counties, the cost of operating a self-haul facility is compounded by lower economies of scale relative to more urban counties – the costs of constructing and operating a new facility are spread out over fewer customers in a rural county compared to an urban county. Recycling material recovery facilities are also more concentrated in the Northwest, East, and Southeast regions of the state, so recycling processing costs are comparatively higher in the central region to account for higher transportation costs. As an alternative, siting and operating additional operating facilities across the state (i.e., a hub-and-spoke model, as explained in Chapter 4, Alternative Funding Models) as well as EPR (explained in Chapter 4 and modeled for fiscal impact based on House Bill 2003/Senate Bill 5697 [2022] in Chapter 5) may reduce the operating cost of self-haul facilities or provide alternative sources of funding.

The Core Service Model Includes Recommendations for Indirect Programs

The improvements to curbside collection and self-haul facilities described in this chapter are consistent with the direct services recommended in the WACSWM core services model. In addition to these direct services, the core services model also recommends that local solid waste programs include indirect elements, including administration, enforcement, education/outreach, and risk management. The 2007 Solid Waste Management Cost Flows report estimated the cost of these indirect programs at 9.5% of total solid waste management program costs — \$176 million annually or about \$2.25 per person per month. Adjusted to current dollars, the cost of these indirect programs for cities, counties, and health jurisdictions is estimated at \$3.30 per person per month or about \$8.04 per residential household per month.

Barring a Major Shift in Funding Models, Core Service Improvements are Likely to be Funded by User Fees and Rates

Historically, tipping fees and collection rates have financed most of the state's solid waste management system. The 2007 Solid Waste Management Cost Flows report estimated that 78% of

classified revenues were generated from user fees, rates, and taxes. Grant funding comprises less than 2% of budget operating revenue for the sampled counties.³²

The funding needs for individual counties are considerably more variable. Table 15 summarizes the funding needs for counties on an equivalent MSW ton basis. If the funding needed to implement the core service model were recovered through MSW tipping fees, it would be equivalent to increasing the tipping fees in all twelve counties collectively by \$19 to \$22 per ton in 2023. Converting the costs to an equivalent MSW ton basis is useful for measuring the relative financial impact of these improvements across the twelve counties.

It is important to consider that recycling and yard debris collection service improvement costs would likely not be recovered through the MSW tipping fee, but instead through a monthly curbside collection fee assessed to each residential subscriber. For example, the core service funding needs for Cowlitz County are equivalent to more than doubling the 2021 MSW tipping fee from \$51 to \$104 per ton. However, a large share of these costs is associated with expanding curbside collection of recyclables and yard debris and would likely be covered by monthly curbside collection fees. The results for Lincoln County are similar to the Cowlitz County results. The funding needed to implement curbside collection and self-haul facility improvements in Lincoln County is estimated to exceed \$1,000 per equivalent MSW ton. However, about 10% of these costs are related to expanding recycling and yard debris collection to cities and towns and would be covered from curbside collection fees.

Alternative funding models are being used in other parts of the U.S. and globally, some of which could provide a major shift in funding from user fees, or increase efficiencies as discussed in Chapter 4, Alternative Funding Models, of the full report. While it did not pass, Washington's House Bill 2003/Senate Bill 5697 [2022] (Extended Producer Responsibility for packaging and paper products) is described in Chapter 5 and, as modeled, could reduce or remove the curbside collection fee from residents, and reduce the operating cost of self-haul facilities or provide alternative sources of funding.

³² This estimate is consistent with the 2007 statewide estimate for state grant/loan funding to cities, counties, and local health jurisdictions (2%). See Washington Department of Ecology. *Solid Waste Management Cost Flows in Washington State*. Washington Department of Ecology, 2007.[8]

Table 17. Ten-Year Funding Needs by Representative County – Equivalent Cost per MSW Ton

Representative County	2021 Population Estimate	2021 MSW Tipping Fee	Identified Funding Needs	Equivalent MSW Tipping Fee
Chelan	80,000	\$113.00	+\$11.63	\$124.63
Clallam	77,750	\$193.98	+\$6.30	\$200.28
Cowlitz	111,500	\$51.02	+\$52.70	\$103.72
Island	87,100	\$155.00	+\$38.76	\$193.76
Kitsap	277,700	\$90.00	+\$29.65	\$119.65
Kittitas	45,225	\$116.33	+\$73.63	\$189.96
Lincoln	10,900	\$109.83	+\$976.97	\$1,086.80
Pierce	911,055	\$167.38	+\$11.38	\$178.76
Skagit	130,000	\$101.00	+\$30.02	\$131.02
Spokane	542,100	\$110.00	+\$10.68	\$120.68
Walla Walla	62,100	\$93.30	+\$49.23	\$142.53
Yakima	258,100	\$38.00	+\$15.20	\$53.20

Glossary

Term/Acronym	Definition
Access	Generally defined by how a household or business engages a county’s solid waste system to manage waste (i.e., MSW, recyclables, yard debris, HHW). Access to waste services typically occurs at or near the property (“curbside”) or at a solid waste facility where a household transports or “self-hauls” their waste. Self-haul facilities may include transfer stations, drop-off centers, and drop boxes. Curbside collection service provides the highest level of access to waste services because it is the most convenient for a household. Self-haul facilities do provide access to waste services, but they are less accessible compared to curbside collection.
AWC	Association of Washington Cities
Capture rate	See ‘recovery rate’
Cascadia	Cascadia Consulting Group
CLCP	Community Litter Cleanup Program (grants)
Commercial	Any property intended for business operations such as office buildings, shops, retail malls, and hotels.
Commercial Container	A detachable receptacle (normally designed to hold at least one cubic yard) from which materials are collected by mechanically lifting the receptacle and emptying the contents into a collection vehicle.
Construction and Demolition (C&D)	Materials resulting from the alteration, construction, rehabilitation, or repair of any human-made structure, including but not limited to houses, buildings, industrial or commercial facilities, and roadways.
Cost Scale – Low, Medium, High	Low, medium, and high costs are set at the 1st quartile, median, and 3rd quartile of the applicable cost data.
Curbside Collection	A service provided to households and businesses for the disposal of refuse, recycling, and yard debris. Residents in some areas may be mandated to provide or receive this service. In other areas, residents may have a choice to sign up if available (e.g., subscription).
Curbside Collection Recyclables	Refers to curbside collection of source-separated recyclables for recycling.
Curbside Collection Yard Debris	Refers to source-separated curbside collection of yard debris for composting or other forms of organics processing.

Deposit Return System (DRS)	A surcharge is placed on a product when purchased and a rebate is provided when the product is returned to a designated site for recycling; also known as Bottle Bills.
Drop Box	An unstaffed receptacle at a permanent location into which refuse, recycling, or yard debris can be deposited.
Drop-off Station	A site where self-haul waste is sorted and collected in preparation for transport to a transfer station, processing, or landfill. Drop-off stations serve as small-scale transfer stations designed to provide access to self-haul customers. Drop-off stations do not generally accept waste from a private waste hauling company.
Ecology (ECY)	Washington State Department of Ecology
Enterprise Fund	A self-supporting government account that is mainly funded by fees charged to external users (such as collection or tipping fees) that pay for goods or services provided to those users (such as solid waste management services).
Environmental Justice (EJ)	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.
Extended Producer Responsibility (EPR)	EPR programs require manufacturers and importers of covered products to fund the cost of collection and recycling and to manage the handling of recovered materials. They shift the financial costs of managing products at the end of their useful life from individual disposers and the public sector to product manufacturers.
FCS	FCS Group
Food Waste	Includes but is not limited to excess, spoiled, or unusable food and includes inedible parts commonly associated with food preparation such as pits, shells, bones, and peels. "Food waste" does not include dead animals not intended for human consumption or animal excrement.
Hazardous Substance Tax (HST)	The HST is a 0.7% tax on the wholesale value of taxable hazardous substances (petroleum products, pesticides, and certain chemicals) that is levied on the first possessor in Washington State.
Household	A household consists of all the people who occupy a housing unit. A house, an apartment or other group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters – that is, when the occupants do not live with any other persons in the structure and there is direct access from the outside or through a common hall.

Household Hazardous Waste (HHW)	Household hazardous waste. Includes any item that may harm the environment or human health, such as paints, stains, cleaning chemicals, pesticides, automobile products, etc.
Interlocal Agreement (ILA)	Refers to an agreement between two local governments, such as a city and a county.
Jurisdiction	Referring to a territory or activity of interest, including both counties and cities.
Large City	100,001 or more people
Large County	500,001 or more people
Litter Tax	The Litter Tax (chapter 82.19 RCW) is an excise tax of 0.015% on the value of products deemed likely to become litter. Examples of taxed products include fast food packaging, tobacco products, soft drinks, beer and wine, newspapers, and containers made from various materials; the taxable products list has not been adjusted since the law was first created in 1971.
LSWFA	Local Solid Waste Financial Assistance (grants)
Material Recovery Facility (MRF)	Material recovery facilities are facilities that process recyclable materials.
Medium City	50,001-100,000 people
Medium County	100,001-500,000 people
MRF-shed	Includes all communities that feed recyclables into a single MRF.
MRW	Moderate-risk waste includes household hazardous waste (HHW) and small quantity generator (SGQ) wastes from businesses.
Municipal Solid Waste (MSW)	Commonly known as trash or garbage. It includes non-hazardous disposable materials.
Municipality	A town or district that has a local government.
Non-residential	Any property not designed for people to live in.
Pay-As-You-Throw (PAYT)	Variable rate pricing policy whereby a customer is charged for the amount of trash they throw out rather than a flat rate.
Permanent HHW Facility	A fixed facility rather than a HHW collection event.
PPP	Packaging and paper product.
PPG	Public Participation Grants

Producer Responsibility Organization (PRO)	An organization that assumes the responsibilities of an obligated party as outlined in government regulations regarding the collection and recycling of products.
Recovery Rate	The amount of material that is not discarded in landfill or waste-to-energy, divided by the total amount generated.
Recyclables	Materials or products that can be used again after being treated or processed.
Representative Jurisdictions	In lieu of analyzing every city and county across the state, data from a predetermined set of 12 cities and 12 counties was modeled to determine provision of services and fiscal impacts from policies. Representative cities include the cities of Bellingham, Leavenworth, Marysville, Port Angeles, Richland, Seattle, Spokane, Tacoma, Vancouver, Wenatchee, Winthrop, and Walla Walla. Representative counties included in the modeling of policy proposal impacts include Chelan, Clallam, Cowlitz, Island, Kitsap, Kittitas, Lincoln, Pierce, Skagit, Spokane, Yakima, Lincoln, and Walla Walla.
RRS	Resource Recycling Systems
Rural	Rural: areas outside of cities/towns with low population density (<100 people per square mile). The rural designation is based on population criteria from RCW 82.14.370 used to identify counties for rural area assistance.
Self-haul	Waste that is hauled to a transfer or disposal facility by someone other than a private waste hauling company, or by someone whose primary business is not waste hauling.
Self-haul Facility	A drop-box, drop-off center, transfer station, or disposal facility that receives self-haul waste.
Self-haul Recyclables	Refers to source-separated collection of recyclables at a self-haul facility for recycling.
Self-haul Yard Debris	Refers to source-separated collection of yard debris at a self-haul facility for composting or other forms of organics processing.
Service Offered	Residents have the option to opt into the service for “free.” Cost of service is included in other items, such as recycling costs being included in garbage fees.
Service Required	Residents must participate in service. Failure to do so results in a fine.
Service Subscription	Residents may opt into the service for an additional cost.
Small City	A city with fewer than 50,000 people.
Small County	A county with fewer than 100,000 people.

Small Quantity Generators (SQGs)	Businesses that generate fewer than 220 pounds of moderate risk waste in any month. Ecology further defines SQGs as businesses in Washington that generate fewer than 220 pounds of dangerous waste, or fewer than 2.2 pounds of certain kinds of highly toxic waste, in any month. SQGs may accumulate up to 2,200 pounds (or up to 2.2 pounds of waste regulated at the 2.2 pound limit).
Solid Waste Collection Tax (SWCT)	The SWCT is a 3.6% excise tax on collection charges for solid waste disposal. It is charged on garbage only; materials collected for recycling, composting, or salvage, as well as hazardous or toxic wastes, are not subject to the tax.
Stewardship Organization (SO)	An organization comprised of interested partners responsible for oversight of a specified producer/product's impact on the environment and human health and safety. Used to describe a not-for-profit corporation or organization that is appointed by a producer to act as an agent on behalf of the producer to administer a product stewardship program.
Sustainable Rate Structures	Sustainable rate structures must balance the relatively fixed costs of providing service – such as providing a container, conducting education and outreach, and account administration – with the variable usage costs, such as tip fees for disposing or processing waste.
Suburban (City)	Any city in the state that has a population less than 50,000. This definition is unique to this study and is generally based on the US Census Bureau definition for an urban cluster. Urban clusters are defined as urbanized areas containing at least 2,500 and fewer than 50,000 people. Because some cities and towns in Washington have fewer than 2,500 people, the minimum population criteria for an urban cluster are not applied in this analysis.
Suburban (County)	County with 100 or more people per square mile.
Transfer Station	A site where refuse, recyclables, yard debris, and other waste types are collected and sorted in preparation for processing or landfill.
Urban (City)	Any city in the state that is not rural and has a population of at least 50,000. This definition is unique to this study and is based on the US Census Bureau definition for an urbanized area.
Utilities and Transportation Commission (UTC)	The Washington Utilities and Transportation Commission provides regulatory oversight of solid waste haulers that provide collection services in state-regulated service areas. The UTC does not regulate collection services within cities and towns that provide collection services or contract for such service.
Utility Fund	A self-supporting government account that is mainly funded by fees charged to external users (such as collection or tipping fees) that pay for goods or services provided to those users (such as solid waste management services).

Utility Tax	Taxes levied on the gross operating revenues earned by private and public utilities from operations within the City limits, including the City's own municipal utilities. Utilities on which taxes are levied include electric, water, sewer, solid waste, storm water, ambulance, gas, brokered natural gas, telephone and cable TV. These taxes represent a stable revenue source but can be impacted by a number of different factors, including the economy, technology, utility rate changes, weather and other fluctuations that impact a utility's ability to generate revenue.
WACSWM	Washington Association of County Solid Waste Managers
Wasted Food	Food that is disposed of that is still edible.
White Goods	Large home appliances such as refrigerators and washing machines.
WRRED	Waste Reduction, Recycling, and Education (grants)
Yard Debris	Decomposable waste materials generated by yard and lawn care and includes leaves, grass trimmings, brush, wood chips, and shrubs.

References

Works Cited

- [1] “Historical Estimates of April 1 Population and Housing for the State, Counties, and Cities,” *Washington Office of Financial Management*, 2021. <https://ofm.wa.gov/washington-data-research/population-demographics/population-estimates/historical-estimates-april-1-population-and-housing-state-counties-and-cities> (accessed Mar. 18, 2023).
- [2] “2010 Census Urban and Rural Classification and Urban Area Criteria,” *United States Census Bureau*, 2010. <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html> (accessed Mar. 18, 2023).
- [3] P. Jewell, “Solid Waste Manager Core Services Model Report,” *Washington Association of County Solid Waste Managers*. <https://www.wsac.org/wp-content/uploads/2022/06/WACSWM-Core-Services-Report-Final.pdf> (accessed Mar. 18, 2023).
- [4] Washington State Legislature, *Chapter 70A.205 RCW Solid Waste Management—Reduction and Recycling*. Accessed: May 31, 2023. [Online]. Available: <https://app.leg.wa.gov/rcw/default.aspx?cite=70A.205>
- [5] “Solid Waste Service Maps - By County,” *Washington Utilities and Transportation Commission*, 2023. <https://www.utc.wa.gov/regulated-industries/transportation/regulated-transportation-industries/solid-waste-carriers/solid-waste-service-maps-county> (accessed Mar. 18, 2023).
- [6] Washington Department of Ecology, “State of Residential Recycling/Organics Collection in Washington Survey (2020).”
- [7] “Oregon Recycling Modernization Act Technical Workgroup on Materials Lists,” 2022, Accessed: Mar. 16, 2023. [Online]. Available: <https://www.oregon.gov/deq/recycling/Documents/TWGM6presentation.pdf>
- [8] Cascadia Consulting Group and Industrial Economics, “Solid Waste Management Cost Flows in Washington State: Project Synopsis Report,” 2007. Accessed: Mar. 19, 2023. [Online]. Available: <https://fortress.wa.gov/ecy/publications/SummaryPages/1607013.html>

Additional Reference Documents

County Documents

Chelan County. Solid Waste Management Plan. <https://www.co.chelan.wa.us/files/solid-waste-management/Final%20SWMP%20with%20CROP.pdf>

Chelan County. 2022 Adopted Budget.

<https://www.co.chelan.wa.us/files/auditor/archives/budget/2022/2022%20final%20budget%20book.pdf>

Clallam County. Solid Waste Management Plan.

<https://www.clallamcountywa.gov/DocumentCenter/View/5181/Solid-Waste-Management-Plan-2021-PDF?bidId=>

Clallam County. 2022 Adopted Budget. <https://www.clallamcountywa.gov/Archive.aspx?ADID=77>

Cowlitz County. Comprehensive Solid and Hazardous Waste Management Plan.

<https://www.co.cowlitz.wa.us/DocumentCenter/View/24710/Cowlitz-County-2021-CSHWMP-Draft>

Cowlitz County. 2022-2023 Adopted Budget.

<https://www.co.cowlitz.wa.us/DocumentCenter/View/24620/Enterprise-Funds>

Island County. Solid Waste and Moderate Risk Waste Management Plan.

<https://www.islandcountywa.gov/DocumentCenter/View/3418/2020-Island-County-Solid-Waste-and-Moderate-Risk-Waste-Management-Plan-pdf?bidId=>

Island County. 2020 Adopted Budget.

<https://www.islandcountywa.gov/Documents/2020%20Budget%20Book%20-%20Final.pdf>

Kitsap County Solid and Hazardous Waste Management Plan.

https://www.kitsapgov.com/pw/Documents/2018_SHWMP_Web.pdf

Kitsap County Solid Waste Rate Study Final Report (2021).

https://www.kitsapgov.com/pw/Documents/SolidWaste_COS_RateStudy%202021.pdf

Kittitas County. Solid Waste and Moderate Risk Waste Management Plan Update.

[https://www.co.kittitas.wa.us/solid-waste/documents/Kittitas%20SWMP%20Update_Revised_Approved_\(2020-07-09\)_compiled.pdf](https://www.co.kittitas.wa.us/solid-waste/documents/Kittitas%20SWMP%20Update_Revised_Approved_(2020-07-09)_compiled.pdf)

Kittitas County. 2022 Annual Budget.

<https://www.co.kittitas.wa.us/uploads/auditor/accounting/budget/annual-budget/2022%20Annual%20Budget.pdf>

Lincoln County. Solid Waste Management Plan. <https://www.co.lincoln.wa.us/solidwaste/wp-content/uploads/sites/28/2016/05/Lincoln-County-SWMP-1-25-11-final.pdf>

Lincoln County. 2022 Final Budget Report. <https://www.co.lincoln.wa.us/auditor/wp-content/uploads/sites/9/2022/03/2022-Final-Budget-Report.pdf>

Pierce County. Solid and Hazardous Waste Management Plan. <https://www.piercecountywa.gov/DocumentCenter/View/119112/SHWMP-FINAL?bidId=>

Pierce County. 2022 – 2023 Planning and Public Works Adopted Budget. <https://www.piercecountywa.gov/DocumentCenter/View/108036/Planning-and-Public-Works?bidId=>

Skagit County. Solid Waste Management Plan. <https://www.skagitcounty.net/PublicWorksSolidWaste/Documents/SCSWMP%202018-2023.pdf>

Skagit County. 2022 Adopted Non-General Fund Budget (expenses). <https://www.skagitcounty.net/BudgetFinance/Documents/2022Budget/2022%20Adopted%20Expense%20NonGeneral%20Fund.pdf>

Skagit County. 2022 Adopted Non-General Fund Budget (revenues). <https://www.skagitcounty.net/BudgetFinance/Documents/2022Budget/2022%20Prelim%20NGF%20Revenue.pdf>

Skagit County. Skagit County Solid Waste Rate Study. <https://www.skagitcounty.net/PublicWorksSolidWaste/Documents/Skagit%20County%20SW%20Rate%20Study%20Draft%20Report%20Ver2.1.pdf>

Spokane County. Comprehensive Solid Waste and Moderate Risk Waste Management Plan. <https://www.spokanecounty.org/DocumentCenter/View/44215/Spokane-County-SWMP?bidId=>

Spokane County. Solid Waste Rate Model.

Walla Walla County. Solid Waste and MRW Management Plan. <https://www.wallawallawa.gov/home/showpublisheddocument/750/636673703031070000>

Walla Walla County. 2019-2020 Adopted Budget.

Yakima County. Solid Waste and Moderate Risk Waste Management Plan. <https://www.yakimawa.gov/services/refuse/files/2017/03/2017-Solid-Waste.pdf>

Yakima County. 2020 Annual Budget. <https://www.yakimacounty.us/DocumentCenter/View/26397/Enterprise-Fund>

Oregon Department of Environmental Quality (2022). Oregon Recycling Modernization Act Technical Workgroup on Materials List.

<https://www.oregon.gov/deq/recycling/Documents/TWGM6presentation.pdf>

Washington Association of County Solid Waste Managers. Commingled Recycling Guidance Report.

https://www.wsac.org/wp-content/uploads/2019/07/WACSWM_Recycling_Guidance_Document_02-ver2.pdf

Washington Association of County Solid Waste Managers. Household Hazardous Waste Program

Guidance Report. <https://www.wsac.org/wp-content/uploads/2022/06/HHW-Guidance-Outline-Final.pdf>

Washington Association of County Solid Waste Managers. Member Survey (2022).

Washington Association of County Solid Waste Managers. Solid Waste Capital Project Needs Survey (2022).

Washington Association of County Solid Waste Managers. Solid Waste Management Core Services

Model Report. <https://www.wsac.org/wp-content/uploads/2022/06/WACSWM-Core-Services-Report-Final.pdf>

Washington Department of Ecology. Annual waste disposal reports. <https://ecology.wa.gov/Research-Data/Data-resources/Solid-waste-recycling-data>

Washington Department of Ecology. State of Residential Recycling/Organics Collection in Washington Survey (2020).

Washington Department of Ecology. Solid Waste in Washington State Annual Report. (2015).

Washington Department of Ecology. Municipal Solid Waste Tipping Fees (per ton). (2021).


<https://ecology.wa.gov/DOE/files/a1/a124e6f9-638e-48d8-a9f6-053bdd669d63.pdf>

Washington Geospatial Open Data Portal. Washington State City Urban Growth Areas. (2022).

<https://geo.wa.gov/datasets/wa-geoservices::washington-state-city-urban-growth-areas-1/explore?location=47.239766%2C-120.683716%2C8.10>

Washington Office of Financial Management. Population and Housing Estimates.

<https://ofm.wa.gov/washington-data-research/population-demographics/population-estimates>



Washington Office of Financial Management. 2017 Supplemental Projections of Population.
<https://ofm.wa.gov/washington-data-research/population-demographics/population-forecasts-and-projections/growth-management-act-county-projections/growth-management-act-population-projections-counties-2010-2040-0>

Washington Utilities and Transportation Commission. Solid Waste Company Tariffs.
<https://www.utc.wa.gov/regulated-industries/transportation/regulated-transportation-industries/solid-waste-carriers/solid-waste-company-tariffs>

Washington Utilities and Transportation Commission. Solid Waste Company Tariff Filings.
<https://www.utc.wa.gov/documents-and-proceedings/dockets>

Washington Utilities and Transportation Commission. Waste Company Annual Financial Reports. (2021).