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REPORT

COMPARATIVE COST ANALYSIS FOR RESIDENTIAL CURBSIDE ORGANICS COLLECTION PROGRAMS

AUTHORS:
Anya Obrez, Darby Hoover

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NRDC Team:
Yvette Cabrera, Andrea Collins, Darby Hoover, Madeline Keating, Anya Obrez, Nina Sevilla, Rebecca Riley, Sarah Dougherty

Raftelis:
Eugenia Manwelyan, Harold Mitchell, PMP, PMI-ACP, PMI-PBA, Jennifer Porter, James Bratton

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Twila Singh, Edina Public Health

NRDC Senior Policy Publications Editor: Leah Stecher
NRDC Director of Peer Review, Science Office: Laurie Geller

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

Residential curbside organics collection is expanding across the United States as states and local governments seek to reduce food waste sent to landfills and incinerators, meet waste-diversion and climate goals, and respond to landfill capacity constraints.[1] Yet for many communities, the perceived cost of adding organics recycling collection atop existing trash and recycling collection remains a significant barrier to implementation.

This *Comparative Cost Analysis for Residential Curbside Organics Collection Programs* report finds that there is no single predetermined cost of implementing and operating an organics collection program. The cost to communities depends substantially on how organics collection is designed and, critically, how it is integrated into the broader solid waste system. A municipality that simply adds weekly organics collection to an otherwise unchanged garbage and recycling program is likely to see an increase in cost. However, a municipality that uses the introduction of organics to evaluate and optimize collection frequency, routes, contracts, processing arrangements, participation, and funding can offset a significant portion of the new service cost.

This analysis draws on eight established residential curbside organics programs and two active pilot programs representing communities of different sizes, densities, regions, service models, and participation structures. Across these communities, several findings emerge:

- **Whole-system integration can substantially reduce the incremental cost of organics collection.** Communities that treat organics as part of an integrated garbage, recycling, and organics system can identify savings through reduced collection frequency, route redesign, shared equipment, and contract restructuring. These efficiencies can partially, and in some cases substantially, offset the cost of adding organics service.
- **Higher participation is associated with lower per-household program costs.** Carts, vehicles, administration, education, billing, and route infrastructure carry significant fixed costs. Programs with broad participation spread those costs across more households and generally achieve stronger economies of scale than opt-in programs serving a relatively small share of eligible customers.
- **Existing collection contracts and infrastructure can materially reduce startup and operating costs.** Communities that build organics collection onto existing hauling relationships, routes, yard waste programs, billing systems, or processing infrastructure can avoid costs associated with establishing a stand-alone service. The timing of contract renewals can also create opportunities to incorporate organics collection at favorable pricing.
- **Processing access and market conditions are major determinants of program cost.** Distance to processing, tipping fees, available capacity, contamination requirements, and facility ownership all affect the cost of organics service. Communities with access to nearby, stable, and competitively priced processing capacity have a significant structural cost advantage, as do communities that own their processing facilities.
- **Funding and billing structures shape both financial sustainability and the cost visible to residents.** Carts, vehicles, administration, education, billing, and route infrastructure carry significant fixed costs. Programs with broad participation spread those costs across more households and generally achieve stronger economies of scale than opt-in programs serving a relatively small share of eligible customers.

The community comparisons demonstrate the practical significance of these choices. In several communities studied, residents receive garbage, recycling, and organics collection at rates that are comparable to what residents in peer communities pay for garbage and recycling alone. (Residents in peer communities may receive additional solid waste services covered in part or fully by the solid waste management fee, including but not limited to yard waste, household hazardous waste, and bulky waste collection.) For example, Austin, Texas, residents pay approximately $29 per month for three-stream curbside service, compared with approximately $22 per month for garbage and recycling service in Raleigh, North Carolina. The comparison is not intended to suggest that every community can replicate a particular rate; rather, it demonstrates that the addition of organics does not necessarily translate into a proportionate increase in the total cost of residential solid waste service.

The report aims to support states and local communities in implementing effective strategies to fund residential curbside organic waste collection programs as a critical tool to improve resilience, reduce greenhouse gas emissions, and divert material from landfills and incinerators. The central implication for local governments is therefore straightforward: the

affordability of curbside organics is largely a program design question. Communities considering organics collection can begin by evaluating the economics and performance of their existing solid waste system; then move to identifying efficiencies that can help offset the new service; testing critical assumptions through a pilot where appropriate; and designing a full-scale program around the participation, collection, processing, and funding structures that best fit local conditions. To support this process, the report translates these findings into a three-phase implementation framework for evaluating the existing system, designing and testing an organics program, and moving toward financially sustainable full-scale implementation. With deliberate planning and system-wide optimization, curbside organics can serve not simply as an added service, but as a catalyst for a more efficient, resilient, and sustainable solid waste system.

2. BACKGROUND

Food waste bans are among the most impactful state policies to limit the amount of food going to landfills and incinerators.[2] They are a critical component of NRDC's food waste reduction strategy. These policies can have the greatest impact when they reach food waste generators across sectors, including households. However, the perceived cost and complexity of providing residential food waste collection can present a significant barrier to implementation.

This report is intended to help address that barrier by demonstrating how communities can design, fund, and operate effective residential curbside organics collection programs while controlling costs to municipalities and residents. **Rather than treating organics collection as a standalone service, the analysis considers how it can be integrated into the broader solid waste system and how decisions about participation, collection frequency, contracts, infrastructure, processing, funding, and billing affect overall program economics.**

Drawing on eight established residential organics programs and two pilot programs representing a range of community sizes, service models, and participation structures, the report provides:

- Comparative case studies illustrating how communities structure, operate, fund, and bill for residential curbside organics collection.
- Cost-control strategies related to whole-system integration, participation, economies of scale, contracts, existing infrastructure, processing access, and market conditions, as well as funding and billing.
- Implementation tools and strategies for evaluating existing solid waste systems, designing and testing organics service, and planning for full-scale implementation or expansion, including a sample Scope of Work in Appendix E.

Together, these resources are intended to help state and local governments translate food waste diversion goals and policies into practical, financially sustainable residential organics collection programs.

2.1. KEY CONCEPTS IN SOLID WASTE MANAGEMENT

This report uses several terms to describe how residential organics collection programs are structured, operated, and funded. Residential service generally refers to curbside collection for single-family and small multifamily properties, most commonly buildings with one to four units**.** Organics collection includes both food-waste-only programs and programs that collect food waste together with yard waste. Tipping fees are the per-ton charges assessed by processing or disposal facilities, such as composting facilities or landfills, for accepting material.

The report also distinguishes programs according to several aspects of program design. Participation models include opt-in, in which households voluntarily subscribe to service; standard, in which organics collection is available to all eligible households as part of the solid waste collection program but use is optional; and mandatory, in which participation is required by ordinance or policy. Service models describe who provides collection and include public, contracted, franchise, and open market systems.

Finally, communities use different funding and billing models to pay for solid waste services. Programs may be supported through an enterprise fund, special purpose fund, general fund, or franchise arrangement, often using a dedicated solid waste management fee to recover some or all program costs. Customers may experience these costs as no direct (customer-facing) charge, a charge on a utility bill or property tax bill, a separate solid waste invoice, or direct billing by a private hauler. These distinctions are important because the way a community structures participation, service delivery, funding, and billing can significantly affect both program costs and the costs visible to residents. (See Appendix B for a full list and definitions of key terms.)

3. PROFILED ORGANICS COLLECTION PROGRAMS

This report draws on research from eight mature curbside organics programs and two active pilots spanning a range of community types, sizes, program structures, funding models, and geographic regions. Information about these programs included in this report comes from publicly available information and is supplemented by interviews with government officials and private haulers representing some of the profiled communities (see Appendix A for a detailed description of the methodology).

The eight established and two pilot organics collection programs profiled in this report demonstrate that successful food waste management can take many forms. These case studies range from small rural communities to major urban jurisdictions and include opt-in, standard, and mandatory participation models; public, contracted, and franchise collection systems; and both food-waste-only and combined food-and-yard-waste programs. Rather than identifying a single preferred model, the case studies illustrate how communities have adapted organics collection to their existing solid waste systems, infrastructure, policy environments, and financial structures. The tables below summarize the defining characteristics and principal takeaway from each program; brief descriptions follow, with full community profiles provided in Appendix D.

TABLE 1: SUMMARY OF PROFILED ESTABLISHED ORGANICS COLLECTION PROGRAMS

Community	Community Type	Program Launch (Pilot Launch/Full Program Launch)	Customer-Facing Cost (Monthly)
Benson, MN	Small Rural City	Full 1992	$14 – $24 for organics, garbage, and recycling
Hamilton, MA	Small Town	Pilot 2009; Full 2012	No separate charge (general fund)
Shorewood, WI	Small Dense Suburb	Full 2018	$12.25 – $14.75 for organics; no separate charge for garbage and recycling (general fund)
Edina, MN	Mid-size Suburb	Full 2020	$5.63 for organics; $5 for recycling; varies for garbage (open market)
Boise, ID	Mid-size City	Full 2017	$27.30 for organics, garbage, and recycling
Oakland, CA	Mid-size City	Full 2015	$55.41 – $165.42 for organics, garbage, and recycling
Prince George's County, MD	Large Suburb	Pilot 2017; Full 2024	$29.75 for organics, garbage, and recycling
Austin, TX	Large City	Pilot 2012; Full 2020	$28.50 – $64.10 for organics, garbage, and recycling

TABLE 2: SUMMARY OF PROFILED PILOT ORGANICS COLLECTION PROGRAMS

Community	Community Type	Pilot Launch	Program Cost (Monthly; NOT charged to customers)
Nashville, TN	Large City	2023	$27 (all-inclusive)
Durham, NC	Mid-size City	2022	$8.20 (labor and vehicle only; excludes processing and overhead)

3.1. ESTABLISHED ORGANICS COLLECTION PROGRAMS

3.1.1. BENSON, MINNESOTA

Benson is a small rural city with a long-running mandatory organics program operated in partnership with Swift County. Garbage and source-separated organics are collected simultaneously by the same private hauler, vehicle, and crew and then processed through the county's municipal solid waste composting system; residents pay a volume-based garbage charge of approximately $14–$24 per month. This co-collection model reduces the need to operate separate vehicle fleets for garbage and organics, an especially important efficiency in a lower-density rural setting. Benson demonstrates that organics collection can be integrated into a rural solid waste system through shared collection infrastructure, pay-as-you-throw incentives, and locally controlled processing.

3.1.2. HAMILTON, MASSACHUSETTS

Hamilton is a small town with a mandatory, food-waste-only curbside organics program serving all residential solid waste customers through a contracted private hauler and processor. The town pairs weekly organics collection with every-other-week garbage collection, while the cost of garbage, recycling, and organics collection is included in property taxes rather than billed separately to residents. Enforcement is closely tied to the collection system: garbage containing food waste, or garbage set out without an accompanying organics bin, is not collected. Hamilton provides a useful small-community benchmark for a long-running mandatory program characterized by high participation and reduced garbage collection frequency.

3.1.3. SHOREWOOD, WISCONSIN

Shorewood is a small, high-density suburb with an opt-in, food-waste-only program operated by a private hauler alongside the village's existing public garbage and contracted recycling services. Approximately 350 of 4,800 eligible households subscribe to the service, with residents paying the hauler $12.25-$14.75 per month for food waste collection services, depending on container size and whether paying quarterly or annually. The village provides a small general fund subsidy of $1.20 per participating household per month. Shorewood demonstrates a low-risk approach for municipalities seeking to make curbside organics available with minimal capital investment or administrative responsibility. Its experience also illustrates the participation limitations of a voluntary subscription model: approximately 7 percent of eligible households participate, although engagement among enrolled households is strong.

3.1.4. EDINA, MINNESOTA

Edina is a mid-sized suburb where organics collection is provided as a standard service to residential customers, with organics and recycling contracted by the city while garbage remains open market. When weekly food waste collection was introduced, recycling was shifted from weekly to every-other-week service, allowing savings from reduced recycling frequency to partially offset the cost of the new organics service. All eligible households pay the $5.63 monthly organics fee, alongside the $5 monthly recycling fee, through their utility bill regardless of whether they use the service. This billing method supports transparency and broader cost-sharing across the customer base. Edina provides a useful example of pairing standard enrollment and a universal fee with operational changes elsewhere in the solid waste system to control costs.

3.1.5. BOISE, IDAHO

Boise is a mid-sized city where garbage, recycling, and combined food and yard waste are collected by a single private hauler under an exclusive franchise agreement with the city, with customers paying the city directly for solid waste service, and the city, in turn, paying the hauler. Organics collection is included as a standard service, and customers pay $27.30 per month on their utility bill for all three waste collection services, and $34.73 per month if they choose to participate in just two of the collection services. Since customers pay more if they opt out of organics collection, this produces a reported participation rate of 97 percent without a formal residential mandate. Boise also owns its composting facility, eliminating exposure to a third-party organics tipping fee. The combination of an existing hauling relationship, high participation, and publicly owned processing infrastructure makes Boise one of the clearest examples in the study of using existing system assets to control the incremental cost of organics service.

3.1.6. OAKLAND, CALIFORNIA

Oakland is a large, dense city with a mature mandatory organics program embedded within its franchise-based solid waste system. Garbage, recycling, and combined food and yard waste collection are provided through franchise agreements, and organics service is incorporated into the base trash rate rather than billed as a separate service. Oakland's experience shows how organics can be fully integrated into a large-city waste system through long-term franchise agreements and a strong policy framework. It also highlights an important governance consideration: because the franchised hauler does not disclose its actual costs or profit margins, the city has limited ability to independently assess whether customer rates remain aligned with the cost of service over time. At the same time, Oakland retains an important measure of cost control by establishing the maximum service rates that franchise haulers may charge customers, currently set at $55.41-$165.42 per month, based on a trash cart size between 20 and 96 gallons.

3.1.7. PRINCE GEORGE'S COUNTY, MARYLAND

Prince George's County is a large suburban jurisdiction providing standard garbage, recycling, and combined food and yard waste service to approximately 180,000 eligible residential customers through contracted collection. Residents pay a solid waste service charge and receive access to organics collection without an additional fee; processing occurs at a county-owned composting facility, giving the county substantial control over processing costs and tipping fees. The county moved from a 2,000-household opt-in pilot through multiple expansion phases before full-scale rollout, using participation milestones and public education to guide implementation. Prince George's County therefore demonstrates both the value of phased implementation and the potential cost advantages of pairing contracted collection with publicly controlled processing infrastructure.

3.1.8. AUSTIN, TEXAS

Austin is a large city with a publicly operated solid waste system in which organics collection is included as a standard component of residential service rather than offered as a separate subscription. More than 215,000 curbside customers receive garbage, recycling, and combined food and yard waste collection through a unified service package. Customers pay a $23.80 monthly base fee for recycling and organics collection, and an additional volumetric fee for garbage collection, for a total fee ranging from $28.50 to $64.10 per month, depending on the size of the garbage container. Austin has also actively managed its processing relationships, including contracting with multiple processors to increase capacity and direct material to facilities based on proximity. Austin demonstrates the advantages of incorporating organics into a mature, bundled municipal solid waste system while continuing to manage processing capacity and cost as the program grows.

3.2. PILOT PROGRAMS

The two pilot programs profiled in this report are in Nashville, Tennessee and Durham, North Carolina. These programs help illustrate how communities can test the operational and financial assumptions that will shape a future comprehensive service. Pilots allow communities to evaluate collection logistics, participation and set-out rates, contamination, processing relationships, customer response, and actual costs before committing to full-scale implementation. In this way, the pilots reinforce the ways in which organics collection can be influenced by how deliberately a community evaluates its existing system, tests alternative approaches, and adapts program design before scaling. Nashville and Durham are particularly useful because they employ substantially different collection and funding models while achieving similar set-out rates, demonstrating that there is more than one pathway to viable curbside pilot program design and implementation.

3.2.1. NASHVILLE, TENNESSEE

The Nashville Food Scraps Pickup Pilot is a standalone, food-waste-only program serving approximately 750 opt-in households and operated by a specialized private hauler under contract with the city. The pilot is currently funded through the general fund at an all-inclusive cost of approximately $27 per household per month; at the existing pilot scale, passing that cost directly to residents would result in a monthly charge substantially above what participant surveys indicate most households would be willing to pay. At the same time, the pilot has generated strong participation and diversion data, including an approximately 85 percent mature set-out rate and survey responses indicating meaningful reductions in household garbage volume. Nashville therefore illustrates both the value of a pilot in establishing locally grounded cost and customer-response data and the importance of achieving sufficient scale and identifying system-wide efficiencies before determining how a full program should be funded.

3.2.2. DURHAM, NORTH CAROLINA

Durham's food scraps pilot is a city-operated, food-waste-only program serving 500 voluntarily enrolled households within defined pilot geographies, with collection provided using city vehicles and processing performed by a private composting contractor. Participating households opt in to the service, while the city selects the neighborhoods in which participation is offered to test the program across different community characteristics, demographics, and operating conditions. The program has expanded in phases since 2022 and has used state grant funding and outside research support to offset startup costs, test equipment and collection methods, and evaluate participation and contamination. Current collection costs are approximately $8.20 per month ($2.05 per stop) for labor and vehicle operation, although that figure does not include processing, administration, capital amortization, or other program costs and therefore should not be interpreted as a fully loaded cost of service. Durham's experience demonstrates how a municipality can use a pilot to establish an operational baseline, test service at relatively small scale, and identify the relationship between convenience, contamination control, compost quality, and contractor economics before determining the design and cost of citywide expansion.

4. COST CONTROLS FOR ORGANICS SERVICES

Mature residential organics collection programs typically account for 20 to 30 percent of a municipality's total solid waste program budget, with the remaining funds supporting garbage and recycling collection as well as other waste programs (e.g., household hazardous waste, bulky waste).[a] However, that figure should not be read as the expected increase to a municipality's total solid waste budget when organics collection is added. That framing treats organics as a cost added in isolation, when in practice it is one stream in an integrated system, and several factors offset its cost when the three streams are optimized together rather than budgeted separately. The relevant comparison, then, is not what an organics program costs on its own, but what a well-integrated three-stream program costs relative to a two-stream program that has not been optimized. As the remainder of this section details, that gap is often relatively small and, in some cases, negligible.

The reason for this is straightforward: adding an organics program creates an opportunity to revisit the entire solid waste program structure. Collection frequency, route design, hauling contracts, processing relationships, billing administration, and enforcement mechanisms are all on the table. Communities that treat the launch of organics collection as a whole-program evaluation and improvement opportunity may find efficiencies unlocked across garbage and recycling that can partially or fully absorb the new service cost. **Implementing efficiency measures alongside an organics program launch can produce significant overall solid waste program savings, largely through reductions in trash collection frequency, administrative efficiencies, improved route density, and renegotiated contract terms.** An organics program can also extend the life of a landfill, creating additional potential cost savings. (See Appendix C for a more more details about costs.)

The rate data from peer cities bears this out. The table below includes the four communities profiled in this report that charge a solid waste fee for their three-stream program and their average monthly single-family residential solid waste fee. The table also shows the monthly solid waste fees from peer communities that offer only two of these three services (i.e. trash and recycling curbside collection).[b] While residents of the peer communities may receive a number of other solid waste services, including yard waste, household hazardous waste, and bulky waste collection, their fee does not cover organics collection that includes food waste. As this table indicates, the difference between two-stream and three-stream service, when the three-stream program has been designed efficiently, is minor. In some cases, detailed in the case-study section of this report, the addition of organics collection can be absorbed by existing routes and vehicles, meaning little to no additional cost to customers.

TABLE 3: COMPARATIVE SOLID WASTE FEES

Organics Curbside Community	Representative Monthly Solid Waste Fee[c] (Garbage, Recycling, Organics)	Peer Community	Monthly Solid Waste Fee (Garbage, Recycling)
Austin, TX	$28.50	Raleigh, NC	$28.50
Prince George's County, MD	$29.75	Germantown, TN	$51.85
Boise, ID	$27.30	Reno, NV	$25.64
Oakland, CA	$55.41	Miami, FL	$58.50

The practical implication for program planners is that the cost of adding organics collection is not predetermined. Rather it is a function of a variety of factors, including how the program is designed, when contracts are renegotiated, and how proactively the municipality pursues efficiency across all three service streams. Communities that approach organics as an add-on to an unchanged program will likely see costs rise. Communities that use the launch as an occasion to optimize their full program will often find that three-stream service costs their residents little more, and sometimes no more, than two-stream service before the addition of organics collection. **Several of the most consequential cost controls are within a community's influence:**

- **Higher participation and greater material volume** can improve economies of scale by spreading fixed program and administrative costs across more households and tons; this is meaningfully impacted by the customer participation model, which determines if residents choose to opt in to collection or if it is provided as a standard service, and whether policy makes organics source separation mandatory for customers.

a This 20-30 percent figure is based on the detailed cost-of-service budgets available from the City of Portland, OR and the city of Seattle, WA, which isolate the cost of operating their food waste collection program from the remaining solid waste services.

b Cities were selected as "peer communities" based on population size, density, median household income, and land area per the United States Census Bureau. The peer communities shown are meant to offer a close comparison to the case study communities, not to act as exact facsimiles in all metrics.

c Actual monthly fees may vary based on container size and other service factors.

- **Adjustments to garbage and/or recycling collection frequency** can offset the cost of weekly organics service.
- **Integrating organics into existing solid waste services** can reduce startup and operating costs by leveraging existing routes, vehicles, hauling contracts, billing systems, and processing relationships rather than establishing a standalone service.
- A **dedicated revenue stream**, such as a solid waste management fee, can provide predictable funding while reducing reliance on the general fund, and should be supported through efficient revenue collection, regular cost-of-service reviews, and rate adjustments as program costs change.
- **State and local policy**, including food waste bans and organics recycling incentives, can improve program economics by broadening participation and creating the scale and market certainty needed to support investment in organics collection and processing infrastructure.

Other cost controls depend on how a program is implemented and the conditions in which it operates. Thoughtful pilots and phased rollouts allow communities to test assumptions, calibrate costs, and refine service before committing to full-scale implementation, while sustained public education and meaningful enforcement can support the participation and low contamination rates necessary for long-term cost efficiency. Processing costs are also influenced by the volume and quality of material delivered, proximity to available processing capacity, and broader market conditions. At the state level, organics diversion requirements can further affect program economics by expanding the number of participating communities, encouraging investment in processing infrastructure, and creating greater scale across the organics market. Taken together, these factors reinforce the central finding of this analysis: communities that use the introduction of organics collection as an opportunity to optimize the full solid waste system are better positioned to control the incremental cost of expanded service.

The service delivery mode—whether collection is provided directly by the municipality, contracted to a private hauler, provided through a franchise agreement, or obtained by residents through an open market—affects capital requirements, operational risk, cost control, and the municipality's flexibility to modify service over time. No single model is inherently the most cost-effective. Public collection provides municipalities with greater control over routes, equipment, staffing, and service changes, but requires them to assume capital and operating costs directly. Contracted and franchise models can shift some costs and operational risks to private haulers, while potentially reducing municipal flexibility and incorporating private-sector operating margins into customer rates. Open-market systems place less direct financial responsibility on the municipality but generally provide less control over pricing, routing, and service standards. The cost implications of each model therefore depend on local conditions, including existing infrastructure and workforce capacity, competition in the hauling market, and procurement requirements, as well as the community's capacity and appetite for assuming operational risk.

These cost controls are closely interconnected and are most effective when considered as part of the full solid waste system rather than as isolated program elements. The following sections examine how whole-system integration, participation, existing contracts and infrastructure, processing conditions, and funding and billing structures influence the cost of organics service. This part then concludes with a comparison of customer costs across selected three-stream programs.

4.1. WHOLE-SYSTEM INTEGRATION

One of the clearest findings from the eight communities profiled in this report is that organics collection is most cost-effective when it is planned as part of the broader solid waste system rather than added as a standalone service. Adding organics collection to an existing garbage and recycling program allows communities to leverage existing route infrastructure, vehicles, administrative capacity, customer relationships, and billing systems. It also creates an opportunity to reconsider how garbage, recycling, and organics services operate together. By contrast, a standalone organics program may carry the full cost of new collection equipment, routes, contracts, billing systems, and customer engagement without creating corresponding efficiencies elsewhere in the solid waste system.

Collection frequency is one of the most direct opportunities for whole-system cost control. Diverting food scraps from the garbage stream reduces the volume and odor of remaining trash, creating an opportunity in some communities to reduce the frequency of garbage or recycling collection to every other week as weekly organics service is added. The resulting savings in collection costs can partially offset the cost of the new organics service. Edina, Minnesota provides a strong example: when the city introduced weekly food waste collection, recycling collection was shifted from weekly to every-other-week service, with savings from the reduced recycling frequency partially offsetting the cost of organics collection. Today, Edina provides weekly organics collection and every-other-week recycling to approximately 14,000 eligible residential accounts. Boise, Idaho and Austin, Texas also provide weekly organics and garbage collection, alongside every-other-week recycling collection. Hamilton, Massachusetts demonstrates a different configuration: the town provides weekly organics and recycling collection while garbage is collected every other week.

Whole-system integration can also occur through bundled service design. In Austin, Texas, organics collection is not offered as a separate subscription service; it is included as a standard component of residential solid waste service. All Austin

Resource Recovery curbside customers receive garbage, recycling, and organics collection as a unified service package billed through the city's utility billing system. This structure allows organics collection to function as one component of the city's overall residential waste service rather than as a distinct program layered onto the existing system. Austin's experience also demonstrates that whole-system integration does not require every community to reduce garbage collection frequency; the relevant objective is to design the three service streams together and identify efficiencies appropriate to local operating conditions.

Benson, Minnesota illustrates an even more direct operational integration. Rather than operating separate vehicle fleets for garbage and organics, Benson and Swift County use a source-separated organics system in which garbage and organics are collected simultaneously by the same vehicle and crew and separated following collection. (Residents are instructed to source separate and put food waste in untied clear plastic bags and garbage in sealed clear plastic bags, and to place both into their city-provided trash container.) This co-collection model is a built-in program efficiency because it reduces the capital and operating requirements associated with maintaining separate collection fleets for each waste stream.

Taken together, these communities demonstrate that there is no single model for whole-system integration. Communities can implement one or a combination of integration strategies, including:

- Adjust collection frequency across waste streams
- Redesign routes and collection geographies
- Right-size garbage service
- Bundle organics into existing residential solid waste service
- Incorporate organics into existing hauling contracts or franchise agreements
- Use existing vehicles, crews, and collection infrastructure
- Integrate food scraps into existing yard waste service
- Leverage existing processing infrastructure and relationships
- Use existing billing and administrative systems
- Integrate rate design, participation incentives, and enforcement with solid waste service

The common principle is that communities are better positioned to control costs when they consider how adding organics can change the operation of the entire solid waste system, rather than assuming that the existing garbage and recycling system must remain unchanged. The opportunity to revisit collection frequency, route design, service bundling, equipment and crew use, contract structures, processing relationships, billing systems, and other existing system resources can produce efficiencies across the solid waste system that help absorb the incremental cost of organics collection.

4.2. PARTICIPATION AND ECONOMIES OF SCALE

Participation has an important relationship with program cost because many of the costs associated with curbside organics collection do not increase proportionally with the number of households served. Carts, vehicles, route infrastructure, program administration, education, and contract management all include fixed or semi-fixed costs that must be supported regardless of whether a program serves just a few or nearly all eligible households. While serving more customers and collecting more tons increases total program expenses, higher participation spreads many costs across a broader customer base and greater material volume, reducing the cost per household and per ton. Greater volume can also provide additional leverage when negotiating a tipping fee with an organics processing facility. In programs funded through direct customer fees, greater participation can also broaden the revenue base without producing an equivalent increase in program costs. For these reasons, programs that achieve near-universal participation generally produce the most favorable cost-per-household figures and strongest diversion outcomes.

The participation model is therefore one of the most consequential choices a community makes when designing an organics program. The programs profiled in this report generally fall into three categories: opt-in, standard, and mandatory.

- **Opt-in** programs require households to actively enroll in organics collection.
- **Standard** programs provide organics service to all eligible customers without requiring enrollment, even though actual use of the service remains voluntary.
- **Mandatory** programs similarly provide universal service but also require households to separate organic material through ordinance or policy.

Across the communities examined, opt-in programs achieve lower participation, while standard and mandatory programs create a larger customer base. For instance, the village of Shorewood, Wisconsin illustrates both the advantages and limitations of an opt-in approach. The village's food waste collection program allows residents to voluntarily subscribe

directly with a private hauler, limiting the village's financial and operational exposure. The program has approximately 350 subscribers, representing roughly 7 percent of eligible households, and that customer count has remained relatively consistent over the life of the program, launched in 2018. The households that do enroll are highly engaged, with a 70 percent weekly set-out rate, but the small subscriber base limits the economies of scale available to the program. Shorewood demonstrates the tradeoff inherent in an opt-in model: it can allow a municipality to make organics service available with limited public-sector risk, but the resulting program may remain relatively small unless there is another mechanism to encourage broader enrollment.

Boise, Idaho demonstrates how rate design can produce much higher participation without a formal residential mandate. Organics collection is included as a base service within the city's solid waste program, and households that opt out of organics pay more than households that retain the service. This structure has produced an approximately 97 percent participation rate, effectively creating near-universal enrollment while maintaining a nominally voluntary program. The rate structure also functions as an ongoing compliance mechanism: households that repeatedly contaminate an organics cart can lose the cart and become subject to the higher opt-out rate. Boise therefore demonstrates how enrollment incentives, billing, and enforcement can work together to maintain the broad participation necessary to support favorable program economics.

Standard service models provide another pathway to high participation by removing the need for households to actively subscribe. Edina, Minnesota provides organics collection as a standard service to approximately 14,000 eligible residential accounts, with the organics fee applied universally regardless of whether a household uses the service. This effectively spreads program costs across the full eligible customer base rather than charging only participating households. Austin, Texas similarly provides organics collection as part of its standard residential solid waste package to more than 215,000 curbside customers; residents do not need to opt in or pay a separate organics fee, allowing the program to avoid the participation ceiling associated with voluntary subscription programs. Prince George's County, Maryland also transitioned from an initial 2,000-household opt-in pilot through several expansion phases to a standard program serving approximately 180,000 residential customers, while establishing explicit participation targets to monitor behavior as the program matures.

Mandatory programs can produce the highest participation when the requirement is paired with meaningful enforcement. Hamilton, Massachusetts reports an effective set-out participation rate of 100 percent under its mandatory townwide program. The town links organics participation directly to garbage service: garbage containers placed at the curb without an accompanying organics bin are not collected, nor are garbage containers found to contain food waste. This service-denial mechanism makes the participation requirement operational rather than merely regulatory. More broadly, mandatory programs without sufficient enforcement may achieve participation and cost efficiency closer to opt-in programs, because a mandate alone does not guarantee that households will actually separate and set out organic material.

High enrollment, however, should not be treated as synonymous with high material capture. Austin provides organics carts to all curbside customers and reports broad participation, yet its 2020 waste characterization study found that approximately 25 percent of material remaining in the garbage stream was compostable.[d] This distinction is important because the economic benefits of participation ultimately depend not only on the number of households receiving service but also on whether those households consistently divert material from the garbage stream. Sustained education, clear contamination rules, enforcement where applicable, and ongoing measurement of set-out and material capture are therefore important complements to the enrollment model itself.

Taken together, the communities profiled in this report demonstrate several strategies for increasing participation and achieving economies of scale:

- Provide organics as a standard residential service
- Spread program costs across the full eligible customer base
- Use rate structures that encourage households to retain organics service
- Pair mandatory participation requirements with meaningful enforcement
- Link organics compliance to existing solid waste service
- Expand service in phases while establishing participation benchmarks
- Maintain sustained public education and engagement
- Track set-out rates, material capture, contamination, and participation over time

The common principle is that participation affects both sides of the program's economics. Broad participation spreads fixed and semi-fixed costs across more households and more tons, while expanding the revenue base where dedicated fees are used. At the same time, participation must translate into actual use and material diversion to generate the operational benefits assumed in program planning. Communities that design enrollment, rate structures, education, and enforcement together are therefore better positioned to achieve the scale necessary to reduce per-unit costs while also maximizing diversion.

d Austin is undertaking another waste characterization study to determine program progress since this initial waste characterization was published.

4.3. CONTRACTS AND EXISTING INFRASTRUCTURE

Existing contracts and infrastructure can substantially affect the incremental cost of adding curbside organics collection. Communities that already have solid waste collection routes, vehicles, carts, billing systems, hauling relationships, or processing infrastructure may be able to build organics service onto those existing assets rather than creating a new system from scratch. By contrast, a standalone program may require new vehicles, equipment, contracts, billing systems, customer administration, and other startup investments. The relevant question is therefore not simply whether a community uses public or private collection, but how effectively its existing service structure can be adapted to accommodate an additional waste stream.

For communities that contract for collection, the terms and timing of an existing hauling agreement can be especially important. A municipality with an established solid waste contract may be able to add organics through an amendment or incorporate it into a broader contract renewal rather than conducting separate procurement. Contract renewal can also provide an opportunity to renegotiate routes, collection frequencies, service levels, and pricing across all three waste streams at the same time. In this way, the value of an existing contract is not limited to avoiding a new procurement process; it can also give a community an opportunity to restructure the overall hauling relationship so that the new service is incorporated at a lower marginal cost.

Boise, Idaho provides one of the best examples of this approach. All three residential waste streams are collected by a single hauler under an exclusive franchise agreement. Because the city already controlled the hauling agreement when organics collection was introduced, it was able to negotiate an incremental expansion of the existing scope rather than procure an entirely new service. The city initially reimbursed the hauler approximately $2.50 per customer per month for food waste hauling and processing; that amount has since increased to $6.81 per customer per month. Boise's existing relationship with the hauler, combined with the city's ability to incorporate organics into its existing customer rate structure, allowed the program to be added at a cost that the report finds would have been difficult to achieve through a standalone or open-market procurement.

Existing physical infrastructure can create similar advantages. Communities with established yard waste collection may already have carts, routes, vehicles, and hauling contracts that can potentially accommodate food scraps, reducing the upfront costs associated with creating a separate collection system. The extent of this opportunity depends on whether the existing processing system can also accept food waste; many facilities designed for yard waste alone require operational or permitting changes before they can accept a broader organics stream. Nevertheless, where collection and processing infrastructure are compatible, expanding an existing organics or yard waste system can be materially less capital-intensive than establishing a new food-waste-only service.

Publicly controlled infrastructure can also provide communities with greater control over portions of the organics cost structure. Boise owns its composting facility, which eliminates the need to pay a third-party market-rate tipping fee as a separate component of the hauling arrangement. Prince George's County, Maryland similarly processes organics at a county-owned composting facility. County-contracted residential haulers currently pay no tipping fee at the organics facility; processing costs are instead supported through the county's solid waste enterprise fund and residential solid waste charge. In both cases, publicly controlled processing infrastructure reduces exposure to some of the market uncertainty associated with relying on third-party processing. Broader implications of processing capacity, proximity, and market conditions are discussed in the following section.

Oakland, California demonstrates how organics collection can be incorporated into an existing franchise structure on a large-city scale. The city embedded organics collection into comprehensive franchise agreements that extended organics service to all residential accounts, included in the base residential service rate rather than charged as a separate service. Residential rates are established by city council ordinance as maximum allowable charges and periodically adjusted according to the terms of the franchise agreement. At the same time, Oakland illustrates an important limitation of long-term private hauling arrangements: the franchised hauler is not required to disclose its actual operating costs or profit margins, making it difficult for the city to independently determine whether established rates remain closely aligned with the underlying cost of service. Existing contracts can therefore provide a strong platform for adding organics, but long-term cost control also depends on maintaining sufficient contractual rights, transparency, and oversight.

Existing or new infrastructure does not necessarily need to be owned by a municipality. Shorewood, Wisconsin took a different approach by allowing residents to contract directly with a private food waste hauler while the village maintained its existing public garbage and contracted recycling systems. This arrangement allowed the village to make curbside organics available with no municipal capital investment and no changes to its existing garbage or recycling hauling arrangements. As discussed in the previous section, this approach limits municipal financial exposure but also results in a much smaller subscriber base than the standard and mandatory programs profiled in this report. Shorewood therefore demonstrates that leveraging existing conditions can mean either integrating organics into an established system or deliberately structuring the new service so that the existing system does not need to change.

The communities profiled in this report demonstrate several ways that contracts and existing infrastructure can be used to control the cost of organics collection:

- Add organics through an existing hauling contract
- Time organics implementation with contract renewal
- Negotiate garbage, recycling, and organics service together
- Use existing routes, vehicles, carts, and customer infrastructure
- Expand existing yard waste collection to include food scraps
- Leverage existing municipal billing and administrative systems
- Use publicly controlled collection or processing infrastructure where available
- Build organics into franchise agreements and existing rate structures
- Maintain contractual cost transparency and oversight
- Limit new capital investment by using existing private-sector capacity

The common principle is that communities do not begin an organics program with a blank slate. Existing contracts, equipment, facilities, service relationships, and administrative systems can either constrain program design or become assets that reduce the cost of implementation. Communities that inventory these resources before designing the program and align implementation with contract, procurement, and capital-planning opportunities are generally better positioned to minimize new investment and negotiate organics as an extension of the existing solid waste system rather than as an entirely new service.

4.4. PROCESSING ACCESS AND MARKET CONDITIONS

Processing access is one of the most geographically variable components of an organics program's cost. Unlike collection, which a municipality can often redesign through routes, service frequency, contracts, and equipment, processing options are constrained by the facilities available within a reasonable hauling distance and the capacity, pricing, and feedstock requirements of those facilities. Organics tipping fees in the markets examined in this report range from effectively $0 per ton under some publicly controlled arrangements to more than $100 per ton in constrained private markets. As a result, two communities with otherwise similar collection programs may face substantially different costs simply because one has nearby, competitively priced processing capacity and the other does not.

Proximity matters because processing and transportation costs are closely linked. Longer distances to a composting or other organics processing facility increase fuel use, vehicle hours, and hauling costs and can reduce a municipality's negotiating leverage if few alternative facilities are available. Conversely, access to multiple nearby facilities can introduce competition and provide greater operational flexibility. Austin, Texas illustrates this advantage. Following a competitive procurement, Austin awarded processing contracts to two providers and now allocates material between them. This structure increases available capacity and allows material to be directed to the closest appropriate facility, reducing travel time and fuel consumption while also reducing Austin's dependence on a single processor.

Processing capacity must also grow with the collection program. Austin's experience demonstrates that successful diversion can place pressure on the infrastructure designed to receive the material; the city has planned for an increase in processing capacity from approximately 44,700 to 60,000 tons annually. More broadly, municipalities purchasing short-term or "spot" processing capacity may be exposed to both higher market-rate tipping fees and availability constraints, while programs able to commit to predictable volumes through longer-term agreements may have greater negotiating leverage. This makes expected tonnage and future program growth important considerations when establishing processing relationships, rather than issues to address only after collection has begun.

The type of processing available can also shape the collection program itself. Composting technologies differ in their acceptable feedstocks, capital and operating costs, capacity, and sensitivity to contamination. Anaerobic digestion presents a different set of opportunities and constraints: because organic material can be used to produce energy as well as digestate, some facilities may offer comparatively favorable tipping arrangements, but anaerobic digesters generally require cleaner and more homogeneous feedstocks and are poorly suited to significant quantities of woody yard waste. A community's decision to collect food waste separately or commingle it with yard waste therefore cannot be made independently of the facilities available to receive that material. Existing yard waste processing infrastructure may reduce collection-side costs but provide little benefit if the facility is not permitted or equipped to accept food scraps.

Material quality is another important part of the processor relationship. Contamination affects processing requirements, finished compost quality, and potentially the tipping fee or contractual terms available to a municipality. Durham, North

Carolina demonstrates the connection between collection behavior and processing economics. The city's pilot has experienced low contamination and no rejected loads, and Durham reports that clear instructions and strict contamination controls help its contractor produce a higher-quality compost product that can be sold into established markets. In this sense, education and contamination management are not only diversion strategies; they can also help maintain a more favorable processing relationship by preserving the value of the material delivered.

The economics of processing should ultimately be considered relative to the alternative disposal pathway. If organics tipping fees are lower than local landfill or incinerator tipping fees, avoided disposal costs can help offset the added expense of separate organics collection. There is also substantial regional variation in disposal costs, meaning the financial value of diversion will differ by market. Processing economics therefore depend not simply on the price charged by a composting facility, but on the combined relationship among organics tipping fees, transportation distance, available processing capacity, feedstock quality, and the cost of disposing of the same material as garbage.

Altogether, this report identifies several processing-related strategies for controlling organics program costs:

- Prioritize nearby processing capacity
- Maintain access to multiple processors where feasible
- Secure sufficient processing capacity before program expansion
- Use long-term processing agreements to improve pricing stability
- Match collection design to processor feedstock requirements
- Maintain low contamination and high material quality
- Evaluate organics processing costs against avoided disposal costs
- Support regional processing capacity where local options are limited

The common principle is that processing should be treated as a core program-design consideration rather than a downstream destination for collected material. A community's available processors, transportation distance, feedstock requirements, market competition, and disposal alternatives can materially influence both the cost and design of curbside organics service. Communities that establish processing relationships early and plan collection around realistic local market conditions are better positioned to manage costs as their programs grow.

4.5. FUNDING AND BILLING

Funding refers to the source and structure of the revenue used to pay for solid waste and organics services, such as user fees, allocation from the general fund, or a franchise arrangement. Billing refers to how those costs are charged to and collected from customers, such as through a utility bill, property tax bill, direct hauler invoice, or no separate bill at all. A community's funding mechanism for solid waste services is often shaped by how the program is administratively organized. Solid waste may be managed by a department of public works, a standalone solid waste department, a municipal utility, or a regional authority, each of which tends to align with a distinct funding structure, from general fund appropriations to dedicated enterprise funds to franchise fee arrangements. Some solid waste programs have a dedicated revenue stream, while others rely either partially or fully on general tax revenues such that the cost of solid waste services is absorbed into the broader municipal budget alongside other public services such as parks, roads, and public safety, with no direct charge to residents for collection.

The most common **funding structures** for solid waste services are:

- **Solid waste management fee:** A revenue stream dedicated to funding solid waste services that is charged directly to customers is most often referred to as a solid waste management fee (or charge). This user fee can be set by a rate that is structured to recover the fixed and variable costs of providing collection, processing, and disposal across the full customer population. The charge may be a flat monthly fee, or variable by cart size or service level (often referred to as pay-as-you-throw). The choice of structure directly affects how fixed program costs are spread across customers. A solid waste management fee is typically designed to cover the cost of the entire solid waste management program, with a certain fee portion dedicated to organics collection (where applicable).
- **Enterprise fund:** In this self-supporting fund, structured similarly to a water or sewer utility, the solid waste program's costs are recovered entirely through user fees. Enterprise funds isolate the full cost of service, including capital and overhead, from the general fund and require that rates be set to cover program costs directly, which increases transparency around what the service actually costs, and means that rate increases are more directly and visibly tied to program expenses.

- **Special purpose fund:** This dedicated fund is fed by an earmarked revenue source, such as a solid waste fee or tax, but does not have the full cost-recovery and rate-setting requirements of an enterprise fund. This structure allows jurisdictions to set aside solid waste revenue for solid waste purposes without fully separating the program's financial management from the broader municipal budget.
- **General fund:** Solid waste programs without a dedicated revenue stream rely on an annual allocation from the jurisdiction's primary operating fund, which is supported by broad tax revenues such as property and sales taxes and used to finance a wide range of municipal services. General fund-supported programs compete annually with other municipal priorities for budget allocation, which can at times create funding uncertainty and limit a program's ability to plan and invest over a multi-year horizon. In some jurisdictions, a dedicated solid waste revenue stream provides the primary revenue source but is supplemented by a general fund contribution when costs exceed that revenue.
- **Franchise fee arrangement:** Rather than paying waste haulers for collection services, some municipalities grant one or more private haulers an exclusive franchise to serve residents within a defined area. The hauler usually bills customers directly, bears all operational costs, and pays the municipality a franchise fee for the right to operate, effectively converting the solid waste program from a municipal expenditure into a revenue source.

The communities profiled in this report use a range of funding structures, including enterprise funds, general fund appropriations, dedicated solid waste fees, and franchise arrangements. However, a program supported by a dedicated revenue stream can generally adjust revenue as service costs change and can more clearly track whether rates are sufficient to cover program expenses. By contrast, a program funded through the general fund may avoid the administrative cost of a separate billing system but may need to compete with other municipal priorities for annual appropriations and may have less flexibility to respond to changing solid waste costs. For this reason, the report identifies a dedicated revenue stream as a key component of long-term financial sustainability.

The **billing mechanism** is related to, but distinct from, the funding structure. Solid waste charges may be collected through a utility bill, property-tax bill, standalone invoice, or direct billing by a private hauler. Using an existing billing system can reduce administrative costs, while direct hauler billing shifts that responsibility to the private provider.

The communities profiled illustrate several approaches. Austin bills bundled garbage, recycling, and organics service through its utility system; Prince George's County uses a dedicated charge on the property-tax bill; Edina bills organics and recycling through the utility bill; and Oakland's franchise haulers bill customers directly, subject to city-established maximum rates. Hamilton funds service through the general fund with no separate customer bill, while Shorewood combines general fund support for garbage and recycling with direct private-hauler billing for organics. These examples demonstrate that billing structure affects administrative burden, rate transparency, and how directly residents perceive the cost of organics service.

Overall, the report identifies several funding and billing strategies that can support the financial sustainability of organics collection:

- Establish a dedicated solid waste revenue stream
- Bundle organics costs into the overall solid waste rate
- Use existing utility or property-tax billing systems
- Spread program costs across the eligible customer base
- Align rates with the full cost of service
- Review and adjust rates as program costs change
- Maintain accurate billing and revenue collection
- Track costs and revenues separately enough to support transparency
- Preserve municipal oversight of customer rates
- Maintain access to contractor cost-of-service information

The common principle is that funding and billing should be designed to provide sufficient, predictable revenue while minimizing unnecessary administrative costs and preserving the ability to respond as program expenses change. The most effective structure will vary by community, but the distinctions between what a program costs, how that cost is funded, and what residents see on their bill are important. A well-designed funding structure generally does not make the underlying service free; rather, it provides a stable mechanism for recovering and managing those costs while allowing organics to function as part of the broader solid waste system.

5. IMPLEMENTING CURBSIDE ORGANICS PROGRAMS

The community profiles and cost analysis in this report point to a consistent finding: the difference between a well-designed organics program and a costly one is rarely the service itself, it is the deliberateness of the implementation process.

The following framework for implementing curbside organics collection reflects this approach of evaluating and optimizing the entire solid waste program rather than simply adding a new service line. The framework is organized around three phases: evaluating the current solid waste program, designing and running a pilot curbside organics collection program, and executing a full-scale curbside organics collection rollout. Appendix E provides a sample Scope of Work that communities can adapt when procuring outside support through a request for proposals or use as a planning framework when designing, implementing, or expanding a curbside organics collection program in-house.

5.1. PHASE 1: EVALUATE THE CURRENT SOLID WASTE PROGRAM

Before designing an organics program, a community should take stock of what it already has. This evaluation serves two purposes: it identifies the efficiency savings that can help offset the cost of a new service, and it surfaces the structural conditions, such as contract terms, billing infrastructure, and processing relationships, that will shape program design options.

Establish a dedicated revenue and funding structure. A dedicated revenue stream, whether a utility fee, a solid waste fee, or a dedicated charge on the property tax bill, is the foundation of a financially sustainable organics program. Communities that fund solid waste through the general fund often have less flexibility to adjust rates in response to program cost changes and may find it harder to isolate and communicate the cost of new services to residents. Where a dedicated revenue mechanism does not yet exist, establishing one may be the first step.

Review hauler oversight and contract. The existing hauling contract is one of the most important variables in determining program cost. Communities should review their current contract terms (remaining term, amendment provisions, unit pricing by service type, and renewal timeline) before designing an organics program. A contract approaching renewal is an opportunity to negotiate organics collection into an extended term at favorable pricing, potentially absorbing the new service at low or no net rate increase. Insufficient contractor oversight, meanwhile, can leave revenue uncollected and program costs unverified, both of which should be addressed before adding service complexity.

Identify efficiencies. Implementing efficiency measures alongside an organics program launch can produce meaningful overall solid waste program savings. Communities should systematically evaluate collection frequency, route design, billing administration, and processing relationships for cost reduction opportunities. Shifting trash collection from weekly to every-other-week service, made more feasible when food scraps are diverted, is among the highest-impact levers available. These savings should be quantified and factored into the program's financial model before a budget request is submitted.

Develop an implementation plan. The evaluation phase concludes with a preliminary implementation plan that includes a budget allocation, staff time estimate, and a timeline. This plan does not need to be final, as the pilot phase will refine it, but it should be specific enough to demonstrate financial feasibility and secure the organizational commitment needed to move forward. The plan should also align with other relevant community plans and goals, including greenhouse gas emissions and sustainability targets, the climate action plan, and the solid waste management plan.

5.2. PHASE 2: DESIGN AND IMPLEMENT A PILOT CURBSIDE ORGANICS COLLECTION PROGRAM

A well-structured pilot can help reduce the financial and operational risk of a full-scale program launch. It allows a community to calibrate costs, test assumptions, identify operational problems, and build public support before committing to a full-scale rollout.

Allocate resources. The pilot requires dedicated funding and staff time. Pilot budgets should account for cart procurement and distribution, hauler contract costs, processing fees, public education and outreach, and program evaluation. Grant funding from state environmental agencies, the U.S. Environmental Protection Agency, private foundations, and nonprofit organizations such as NRDC has supported pilots in several of the communities profiled in this report and should be actively pursued to reduce general fund exposure during the evaluation phase.

Implement, evaluate, and iterate. Pilot geography should be selected to reflect the diversity of the broader community rather than choosing the easiest or most receptive neighborhood. A pilot that succeeds in a self-selected high-engagement area tells a community little about how the full program will perform. Key metrics to track during the pilot include cart set-out rate, contamination rate, tons collected, cost per ton, and resident feedback. These metrics should be evaluated at regular intervals and used to refine program design before full-scale rollout. Enrollment model, cart size, collection frequency, and processing arrangements are all variables that can be adjusted based on pilot lessons.

Engage continuously. Public education is not a launch activity; it is an essential program function. The communities in this study with the strongest participation and lowest contamination rates are those that maintain sustained outreach well beyond the initial rollout period. Pilot design should include an ongoing engagement plan with defined staffing, budget, and communication channels, and that plan should be built into the full-scale program budget from the start.

5.3. PHASE 3: ROLL OUT A FULL-SCALE CURBSIDE ORGANICS COLLECTION PROGRAM

Full-scale rollout should follow a phased geographic approach that incorporates lessons from the pilot and manages operational risk. Key decisions to finalize before rollout include the participation model (opt-in, standard, or mandatory), the billing mechanism, the processing contract, and the enforcement framework.

The participation model is the single most consequential design decision at this stage. As this report's community profiles demonstrate, standard and mandatory models consistently outperform opt-in models on participation rate and per-unit cost efficiency. Communities that have completed a successful pilot and secured a processing relationship are well positioned to launch with a standard or mandatory model rather than defaulting to opt-in.

Rollout should be accompanied by a multi-year financial monitoring plan that tracks program cost per ton, cost per household, participation rate, and contamination rate against benchmarks established during the pilot. These metrics provide the basis for ongoing contract management, rate adjustments, and program improvement, and they are the foundation of the kind of transparent public reporting that builds long-term community support for the program.

The implementation framework described here is not a guarantee of a low-cost program—local conditions, processing market dynamics, and political context all shape outcomes. But the evidence from the communities profiled in this report is consistent: programs that are designed deliberately, launched with adequate resources, and managed with discipline over time deliver meaningful food waste diversion at costs that are competitive with what communities already pay for two-stream service today.

6. CONCLUSION

The central finding of this report is that the cost of curbside organics collection is not predetermined. Adding weekly organics collection to an otherwise unchanged garbage and recycling system will generally add cost. But the communities profiled in this study demonstrate that organics collection can be introduced much more affordably when it is treated as an opportunity to reconsider and optimize the whole solid waste system. Collection frequency, participation, routes, contracts, existing infrastructure, processing relationships, and funding structures all influence the ultimate cost to the community and its residents.

There is no single program model that will work everywhere. Local processing markets, existing service delivery systems, population density, state and local policy, and community priorities all shape the available options. What the case studies do show consistently is that deliberate program design matters: higher participation can create economies of scale; existing contracts and infrastructure can reduce incremental costs; reliable processing relationships can improve cost stability; and thoughtful funding and billing structures can support long-term financial sustainability. Programs should therefore be evaluated not on the standalone price of an organics collection route, but on the cost and performance of the integrated three-stream solid waste system that results.

Organics collection also creates benefits that extend beyond the immediate collection budget, including reduced reliance on landfill and incinerator disposal and the potential to extend remaining disposal capacity. Some of these longer-term financial benefits are difficult to quantify with the data currently available and warrant additional analysis. The evidence from the communities examined in this report suggests that municipalities that plan deliberately, invest adequately in implementation, and continue to monitor and refine their programs can achieve meaningful organics diversion while maintaining costs that are competitive with conventional solid waste service.

7. ADDITIONAL RESEARCH

This analysis also identified several areas where additional research may help communities make better-informed program design and investment decisions:

- **State and local policy design.** Evaluate which provisions within organics diversion mandates, incentives, and related policies most effectively enable successful local programs.
- **Equity and multifamily service**. Examine how funding structures, flat fees, and other rate designs affect lower-income households; identify opportunities for targeted assistance; and evaluate collection approaches appropriate for dense multifamily housing.
- **Processing access and regional solutions**. Quantify the cost impact of limited or distant processing capacity and evaluate how regional partnerships and intergovernmental agreements can support shared infrastructure and reduce dependence on a single processor.
- **Education and enforcement**. Assess the long-term efficacy and cost of different education, contamination-control, and enforcement approaches, including how participation and contamination change as programs mature.
- **Long-term avoided disposal costs and greenhouse gas emissions**. Better quantify the financial value of landfill and incinerator diversion, including landfill-life extension, avoided future disposal costs, post-closure liabilities, and associated climate benefits.
- **Funding transitions**. Explore how communities that currently provide solid waste service without a visible customer fee can establish transparent, sustainable funding mechanisms as organics and other services expand.

8. APPENDIX A: METHODOLOGY

In winter 2026, NRDC engaged Raftelis to conduct this comparative cost analysis of residential curbside organics collection programs. Raftelis is a management consulting firm that works with public-sector and non-profit clients on financial planning and policy analysis intended to support the long-term health of the communities they serve.

This analysis profiles ten communities: eight established curbside organics collection programs (Benson, Minnesota; Hamilton, Massachusetts; Shorewood, Wisconsin; Edina, Minnesota; Boise, Idaho; Oakland, California; Prince George's County, Maryland; and Austin, Texas) and two pilot programs, (Nashville, Tennessee, and Durham, North Carolina). These communities were selected to reflect variation in population size, density, geography, and program maturity.

Between winter and summer 2026, Raftelis relied primarily on publicly available information, including municipal ordinances, rate schedules, program budgets, and published reports. These were supplemented by structured interviews with government officials and private haulers representing each of the profiled communities with the exception of Benson and Prince George's County where government officials were unable to be reached. Interview findings were used to clarify and corroborate cost drivers identified in the public record rather than as a standalone data source.

9. APPENDIX B: KEY TERMS

9.1. RESIDENTIAL SERVICE

This report focuses on residential curbside organics collection programs, which are typically designed to serve single-family properties. While each jurisdiction determines the number of units that classify a "single-family" dwelling, the term most often refers to dwellings with one to four units. Multifamily properties are more commonly classified as commercial properties and are served through separate commercial waste hauling contracts.

9.2. ORGANICS COLLECTION

This report uses the term "organics" to refer to both standalone food waste collection programs and combined food and yard waste collection programs.[e] The discussion does not focus on food waste drop-off sites, nor on standalone yard waste programs.

9.3. TIPPING FEES

The per-ton charge assessed by a processing or disposal facility, such as a composting facility or landfill, to accept incoming material. At publicly owned facilities, tipping fees are generally established through a formal rate-setting process and posted publicly. At privately owned facilities, tipping fees are negotiated between the facility and the municipality and are not typically disclosed publicly, making cross-jurisdictional cost comparison difficult. Municipalities holding long-term contracts with processing facilities generally negotiate to pay the lowest and most stable fee possible.

9.4. CUSTOMER PARTICIPATION MODELS FOR ORGANICS COLLECTION

The model through which residents access and engage with curbside organics programs varies significantly across jurisdictions. Three participation models are in common use, each with distinct implications for program cost, diversion outcomes, and administrative complexity. They are listed below in order of the lowest to highest participation rate:

9.4.1. Opt-in. Households must actively opt in to and sign up for organics collection service. Participation is voluntary and generally incurs an additional cost in the form of a monthly subscription fee. Opt-in programs tend to attract self-selected, highly motivated participants, producing strong engagement among enrollees as well as low contamination rates, but limiting the program's ability to achieve the economies of scale that reduce per-unit cost. As the program profiles in this report demonstrate, opt-in models reliably produce the lowest participation rates of the three models.

e The terms "yard waste" and "green waste" are used interchangeably throughout the industry and refer to the same category of material (grass clippings, leaves, prunings, and garden debris). "Yard waste" is generally the prevailing term in the Midwest, Mid-Atlantic, and Northeast, while "green waste" is more standard in California and Western states.

9.4.2. Standard. Organics collection is provided as part of the standard municipal solid waste program. Households are either issued a dedicated food scraps cart or given the option to add food scraps to an existing yard waste cart. Participation is optional, but service is universal such that all eligible households receive access without enrolling. This model produces materially higher participation rates than opt-in programs, particularly when paired with a universal fee structure that applies regardless of cart usage.

9.4.3. Mandatory. Organics collection is offered alongside garbage and recycling, same as a standard model, but participation is required by ordinance or policy. Enforcement of mandatory programs varies considerably and has a significant impact on the tons of food waste collected. Where participation is measured by cart set-out rate, a household may satisfy the requirement by placing the organics cart at the curb without consistent full source separation, placing food waste in garbage bins (or vice versa) and thus complicating the assessment of true food waste diversion. Meaningful enforcement typically requires an active monitoring mechanism, such as service-denial for non-compliant households, and sustained public education to produce the behavioral change that the mandate is designed to achieve.

9.5. SOLID WASTE SERVICE MODELS

Municipal solid waste collection programs are delivered through a range of service models. The four most common models are defined below, though many programs combine elements of more than one.

9.5.1. Public. The municipality directly employs collection staff, owns and operates vehicles and equipment, and manages all aspects of service delivery in-house. This model gives the jurisdiction maximum operational control and requires direct capital investment in fleet and facilities.

9.5.2. Contracted. The municipality competitively procures collection services from a private hauler under a service contract. The hauler bears operational responsibility and fleet costs; the municipality pays the contractor and retains oversight and contract management responsibility. This is the most common model for solid waste collection in the United States.

9.5.3. Franchise. The municipality grants one or more private haulers an exclusive franchise agreement to provide service within a defined geographic area. The hauler typically bills customers directly, bears all operational costs, and pays the municipality a franchise fee for the right to operate.

9.5.4. Open market. There is no public intermediary and residents contract directly with whichever hauler they choose or haul their own materials to the transfer station or landfill. Jurisdictions may choose to implement hauler permits or requirements to maintain some level of service and oversight. The open market subscription model is particularly common in rural communities.

Many communities take a hybrid approach to providing solid waste services, implementing a combination of these models and applying them across different service streams or geographic areas. Common examples include a municipality that collects trash in-house while contracting recycling and organics to private haulers, or a franchise arrangement for residential service paired with a direct contract for commercial service.

The service model typically determines which entity owns the equipment, employs the workforce, and bears financial and operational risk. In addition to these service models, there are many communities in the United States that jointly procure or operate solid waste services through a shared authority or inter-municipal agreement, achieving economies of scale that individual jurisdictions could not reach alone.

9.6. SOLID WASTE FUNDING MODELS

There are numerous approaches that communities use to pay for solid waste collection services, and the funding mechanism is often shaped by how the program is administratively organized. Solid waste may be managed by a department of public works, a standalone solid waste department, a municipal utility, or a regional authority, each of which tends to align with a distinct funding structure, from general fund appropriations to dedicated enterprise funds to franchise fee arrangements. Some solid waste programs have a dedicated revenue stream, while others rely either partially or fully on general tax revenues such that the cost of solid waste services is absorbed into the broader municipal budget alongside other public services such as parks, roads, and public safety, with no direct charge to residents for collection.

The most common funding structures for solid waste services are:

9.6.1. Solid waste management fee: A revenue stream dedicated to funding solid waste services that is charged directly to customers is most often referred to as a solid waste management fee (or charge). This user fee can be set by a rate that is structured to recover the fixed and variable costs of providing collection, processing, and disposal across the full customer population. The charge may be a flat monthly fee, or variable by cart size or service level (often referred to as pay-as-

you-throw). The choice of structure directly affects how fixed program costs are spread across customers. A solid waste management fee is typically designed to cover the cost of the entire solid waste management program, with a certain fee portion dedicated to organics collection (where applicable).

9.6.2. Enterprise fund: In this self-supporting fund, structured similarly to a water or sewer utility, the solid waste program's costs are recovered entirely through user fees. Enterprise funds isolate the full cost of service, including capital and overhead, from the general fund and require that rates be set to cover program costs directly, which increases transparency around what the service actually costs, and also means that rate increases are more directly and visibly tied to program expenses.

9.6.3. Special purpose fund: This dedicated fund is fed by an earmarked revenue source, such as a solid waste fee or tax, but does not have the full cost-recovery and rate-setting requirements of an enterprise fund. This structure allows jurisdictions to set aside solid waste revenue for solid waste purposes without fully separating the program's financial management from the broader municipal budget.

9.6.4. General fund: Solid waste programs without a dedicated revenue stream rely on an annual allocation from the jurisdiction's primary operating fund, which is supported by broad tax revenues such as property and sales taxes and used to finance a wide range of municipal services. General fund-supported programs compete annually with other municipal priorities for budget allocation, which can at times create funding uncertainty and limit a program's ability to plan and invest over a multi-year horizon. In some jurisdictions, a dedicated solid waste revenue stream provides the primary revenue source but is supplemented by a general fund contribution when costs exceed that revenue.

9.6.5. Franchise fee arrangement: Rather than paying waste haulers for collection services, some municipalities grant one or more private haulers an exclusive franchise to serve residents within a defined area. The hauler usually bills customers directly, bears all operational costs, and pays the municipality a franchise fee for the right to operate, effectively converting the solid waste program from a municipal expenditure into a revenue source.

9.7. CUSTOMER BILLING METHODS

There are a variety of ways that single-family customers are billed for solid waste and organics collection services. The billing method is shaped by the program's funding structure, service model, and local policy choices, and can significantly affect how visible and transparent the cost of service is to residents.

9.7.1. No direct charge: In jurisdictions that fund solid waste through the general fund, residents pay no direct solid waste fee. The cost of collection is embedded in the general property tax levy alongside other municipal services, with no itemized charge. In these communities, residents may be unaware of what their solid waste services actually cost.

9.7.2. Utility bill: Solid waste fees commonly appear as a line item on the municipal utility bill, alongside water and sewer charges. This structure is typical of enterprise fund programs and gives the jurisdiction flexibility to adjust rates through the utility rate-setting process.

9.7.3. Property tax bill: Some jurisdictions place solid waste charges on the annual property tax bill as a dedicated fee or special assessment, distinct from the general tax levy. This method is most common for special purpose funds and county-level programs, and can be administratively efficient.

9.7.4. Separate solid waste invoice: Less common, but used by some programs, is a standalone solid waste bill issued separately to customers. This approach provides maximum transparency about solid waste costs but adds administrative overhead.

9.7.5. Direct hauler billing: In most franchise and all open market systems, haulers invoice customers directly. In typical franchise systems, the municipality establishes a maximum rate schedule that the hauler cannot exceed, providing a degree of consumer protection even though billing flows directly between the hauler and the customer. In open market systems, rates are generally set competitively by the market, and the municipality typically does not cap what haulers may charge, though it may require rate transparency as a condition of the hauler's operating license.

10. APPENDIX C: COST DRIVERS

This appendix expands on Section 4, Cost Controls in the primary report with additional details on cost drivers. The cost of a municipal organics collection program is shaped by a constellation of factors spanning program design, service delivery, infrastructure, policy, and geography. Not all factors carry equal weight. The discussion below organizes these drivers into three tiers:

1. **Structural**: high impact factors that fundamentally determine program cost.
2. **Operational**: logistic factors that can be managed and optimized over time.
3. **Contextual**: situational factors that vary by region and are largely outside a municipality's direct control.

This tiered structure helps to demonstrate the tools that solid waste programs can use to optimize efficiency, expand services to include organics collection, and maintain affordability.

10.1. STRUCTURAL FACTORS

The following factors have the greatest influence on program cost and are typically determined at the point of program design.

10.1.1. SERVICE MODEL AND PROGRAM TYPE

10.1.1.1. Public, contracted, franchise, or open market. The choice of service model shapes virtually every downstream cost. Contracted and franchise models tend to transfer operational risk to the hauler but can limit the municipality's flexibility to modify service terms and control costs. Public in-house programs offer more control but require capital investment in vehicles and facilities and carry direct labor obligations. Hybrid public-private models can unlock cost-sharing arrangements and reduce public-sector exposure to processing costs but depend on the availability and reliability of a willing private partner. Service model selection is also based on a variety of local conditions and factors, including the jurisdiction's existing solid waste infrastructure and workforce capacity, the competitiveness of the local hauling market, state and local procurement requirements, and the community's appetite for public-sector operational risk. In some jurisdictions that use the franchise model, the agreement with the hauler(s) effectively converts the solid waste program from a municipal cost into a revenue source. At the same time, as private haulers must build in profit margins, cost saving to the municipality may be a cost burden to individual customers, resulting in higher costs to residents. No single model is universally preferable; the right choice depends on the specific financial, operational, and political conditions of each community.

10.1.1.2. Standalone service or add-on service. Whether a program is a standalone launch or an add-on to an existing garbage and recycling program carries significant cost and operational implications. Adding organics collection to an existing solid waste and recycling collection program allows municipalities to leverage established route infrastructure, administrative capacity, and customer billing relationships, reducing marginal cost significantly. A standalone program built from scratch carries full startup costs such as new vehicles, contract amendments, billing systems, and customer engagement.

10.1.1.3. Expansion of yard waste. Whether food waste is collected separately or commingled with an existing yard waste program has meaningful implications for program cost, processing requirements, and resident adoption. Where a yard waste cart program already exists, a municipality can leverage established collection routes, existing hauling contracts, and carts already in residents' possession, reducing upfront procurement and distribution costs. However, the most significant potential cost lies at the processing facility, as many yard waste composting facilities were designed and permitted for plant-based feedstocks only and are not equipped to receive food waste, which requires different processing methodologies and, in some states, separate permitting. Where existing processing infrastructure cannot be readily adapted, a municipality may need to develop new processing capacity or secure a separate food waste processing contract, partially or fully offsetting the collection-side savings of building on an existing yard waste program.

10.1.2. TIPPING, TRANSPORTATION, AND PROCESSING FEES

Processing costs are among the most significant and variable line items in any organics program budget. Tipping fees for organics vary widely and can range from $0 per ton at publicly owned or contracted facilities that subsidize the tip fee to encourage organic waste diversion, to well over $100 per ton at composting facilities in constrained markets. The factors that drive this cost variation include the following:

10.1.2.1. Proximity. Route distance to the compost processor directly affects both hauling cost (fuel, vehicle hours) and tipping fee negotiation leverage. Jurisdictions within close range of a regional composting facility benefit from lower transportation costs and, often, more competitive tipping fees. Where no facility exists nearby, municipalities may face long hauls or must develop local processing infrastructure, which are both costly options.

10.1.2.2. Ownership and relationship. Municipalities that own and operate their own composting facility or that have a long-term contractual relationship with a public regional processor generally pay substantially lower tipping fees than those purchasing processing capacity on the open market. By contrast, municipalities in markets without public processing infrastructure face market-rate fees and less pricing stability.

10.1.2.3. Volume and quality. The amount of organic material that a municipality brings to a processing facility and the contamination level both impact the tipping fee. Municipalities generating sufficient organics tonnage to fill dedicated processing windows, or to anchor a multi-year supply agreement, consistently negotiate lower per-ton rates than smaller programs purchasing spot capacity.[f] Volume also enables internal economies of scale: as tonnage grows, fixed program costs such as billing administration, public education, and contract management are spread across more tons diverted, reducing the overhead cost per ton. This dynamic rewards program expansion and phased rollout strategies that prioritize growing the participation base, even when early-phase unit costs appear high. Conversely, small pilots or low-participation programs should anticipate above-average per-ton costs that may not reflect the program's long-term cost trajectory once it reaches scale.

10.1.2.4. Processing technology. The type of facility a municipality relies on for organics processing has direct implications on tipping fees, acceptable feedstocks, finished product quality, and revenue potential. At the lower end of capital intensity, open windrow composting facilities typically accept a wide range of organic materials at relatively low cost but are land-intensive, weather-dependent, and may face odor-related siting constraints. Aerated static pile systems offer faster throughput and better odor control but still produce a compost product whose market value depends on feedstock quality and regional demand. In-vessel composting systems, including tunnel and drum composting technologies, offer year-round operation and tighter process control but carry higher initial capital and ongoing operating costs.

Anaerobic digestion (AD) facilities represent a distinct category. AD systems produce digestate and capture biogas from the decomposition of organic material, generating energy that can be sold to the grid or converted to compressed natural gas for fleet fueling. Because incoming organic material has energy value, AD facilities often offer tipping fees below conventional composting rates or, in some cases, pay the municipality for feedstock. AD facilities generally require cleaner, more homogeneous feedstock than composting facilities, meaning source-separation quality and contamination rates are more consequential to the processing relationship. Beyond contamination, AD systems are poorly suited to feedstock with high lignocellulosic content because woody and fibrous plant material resists microbial breakdown in anaerobic conditions and contributes little to biogas yield. This makes AD largely incompatible with programs that commingle food scraps and yard waste in a single collection stream, unless a downstream sorting or separation step is available. A municipality with access to a regional AD facility may therefore face a fundamentally different cost structure than one served by conventional composting infrastructure.

10.1.2.5. Comparative cost. The cost of processing organic material is not evaluated in isolation from the cost of the alternative. Landfill disposal of municipal solid waste carries a tipping fee that has risen sharply in recent years, reaching a national average of $62.28 per ton in 2024, a 10 percent increase from $56.80 in 2023 and nearly 30 percent increase since 2016 in inflation-adjusted terms. Regional variation is wide: the Northeast averages $80.67 per ton while the South Central region averages $44.87 per ton, and in constrained markets the gap between landfill disposal and organics processing costs is narrowing or has closed entirely.[3] Rising landfill and incinerator fees reflect inflationary pressures, higher labor costs, and stricter operational requirements as well as finite airspace: as existing facilities approach capacity and new siting faces increasing community and regulatory resistance, disposal costs are expected to continue rising. When the tipping fee at a food waste processing facility is lower than the tipping fee at the local landfill or incinerator, this cost savings may help to offset the additional cost for separate collection. This depends on local tipping fees as well as availability of and proximity to an organic waste processing facility.

10.1.3. PARTICIPATION RATE

The participation rate (i.e. number of customers served) has an important relationship with program cost and design, as serving more customers and collecting more tons does incur more expenses, but the per-ton cost decreases with economies of scale. While greater participation increases overall program cost, low participation means fixed costs such as carts, vehicles, and route infrastructure are spread across fewer contributing households, driving up per-unit cost. High participation improves cost efficiency and, in programs funded through direct fees, broadens the revenue base. For instance, doubling the number of participants could double the revenue without doubling the cost. Participation is heavily determined by the enrollment model. Opt-in programs typically achieve the lowest participation rates and the highest per-participant costs, as residents who opt in are generally self-selected for motivation, but the program cannot achieve the economies of scale

f "Spot capacity" refers to processing capacity purchased on a short-term or as-needed basis, without a long-term supply agreement. Municipalities purchasing spot capacity are subject to market-rate tipping fees and availability constraints at the processing facility and lack the negotiating leverage that comes with a committed, multi-year tonnage-based feedstock supply agreement.

necessary to reduce unit costs. Standard programs achieve materially higher participation by defaulting all eligible households into service, and mandatory programs tend to achieve the highest participation rates but depend heavily on enforcement mechanisms related to resident behavior for contamination and set-out. Programs that achieve near-universal participation generally produce the most favorable cost-per-household figures and the strongest diversion outcomes.

10.2. OPERATIONAL FACTORS

The following operational factors can be actively managed and optimized over time and represent meaningful levers for cost control.

10.2.1. HAULER CONTRACTS

For municipalities with an existing solid waste collection contract, the structure and remaining term of that contract may determine whether organics collection can be added at a low or no marginal cost. A contract amendment negotiated at renewal, particularly one that bundles organics into an extended term, can allow a municipality to add service without a corresponding rate increase. Route optimization during this renegotiation can further reduce costs by redesigning collection geographies to account for the new service stream. Collection frequency could potentially be reduced on trash or recycling routes to offset organics collection costs, or individual trucks could collect trash from more houses as the volume is reduced.

10.2.2. COLLECTION FREQUENCY ADJUSTMENTS

Reducing the frequency of garbage or recycling collection is a common cost-offset strategy when organics collection is introduced. The logic is straightforward: if food scraps are being composted separately, the remaining trash is drier, less odorous, and lower-volume, making less frequent collection more acceptable to residents. The cost savings from reduced trash collection frequency can partially or fully offset the cost of weekly organics collection, producing a cost-neutral collection program launch.

10.2.3. REVENUE COLLECTION AND BILLING ADMINISTRATION

Program billing determines both administrative cost and revenue capture. When organics program costs are drawn from the general municipal tax levy alongside all other general government expenses, this requires no separate billing infrastructure, but the program has no dedicated funding stream: it competes with other budget priorities each year and is subject to statutory levy caps (limits on how much a municipality can raise through property taxes annually). This may constrain a community's ability to increase revenue when program costs rise. A dedicated fee is generally preferable because it creates a predictable funding stream that can be adjusted to reflect actual program costs. That fee can be collected in several ways:

- Placing it as a **line item on the property tax bill**, sometimes called a "special assessment" or "service charge on the tax bill," preserves low administrative costs by piggybacking on existing billing infrastructure.
- Collecting the fee on the **utility bill or through direct hauler invoicing** allows for tiered or volume-based rate structures. This method may provide an efficient billing solution and may also carry its own billing infrastructure costs. In renter-heavy markets, utility and hauler billing can also create equity and collection challenges when the responsible party (tenant versus property owner) is ambiguous.
- Sending customers a standalone **solid waste management charge** can provide the greatest level of control and oversight but also carries the highest administrative burden.

Regardless of collection method, effective fee administration is critical, as revenue gaps can persist when all customers are not billed or all revenues due are not collected.

10.2.4. PILOTS, PHASING, AND PUBLIC EDUCATION

Effective program management, including a well-structured pilot phase, a thoughtful geographic rollout, and sustained public education, is among the highest-return investments a municipality can make. Pilots allow cost calibration before full deployment, reducing the risk of budget overruns. Phased rollouts allow lessons from early service areas to be incorporated before scale. Ongoing public education can help control for contamination, increase participation, and reduce enforcement costs.

10.2.5. ROUTE EFFICIENCY AND DENSITY

Collection density (households per route mile) can be a significant driver of per-unit cost. Dense urban and suburban geographies support efficient routes with low cost-per-stop. Low-density rural and exurban communities pay a structural premium for collection regardless of program design. While household density cannot be easily altered, this factor interacts with participation rate: in opt-in programs, low sign-up rates can produce low effective density even in dense neighborhoods, as haulers must skip non-participating households on routes that would otherwise be efficient.

10.2.6. SOURCE SEPARATION VERSUS MIXED-WASTE PROCESSING

Programs that rely on residents to source-separate organics at the curb generally have lower processing costs but higher hauling, education, and enforcement costs. Mixed-waste processing systems, such as Oakland's organic materials recovery facility (O-MRF) at Davis Street, can recover some organics from unseparated garbage without depending on resident behavior change, although residents are also given organics carts to enable source separation. These systems carry higher capital and operating costs for the processing facility and produce lower-quality compost that commands a lower or negative market price and its use may be more restricted due to higher contamination rates (e.g., mixed waste-derived compost might not be eligible for agricultural lands).[g]

10.3 CONTEXTUAL FACTORS

The following factors are largely outside a municipality's direct control but must be accounted for in program planning and cost projections.

10.3.1. REGIONAL CLIMATE AND YARD WASTE VARIABILITY

Local weather conditions affect program costs in multiple ways, including:

- **Temperature influences collection frequency**. In hot climates, potentially odorous waste that cannot be placed in the food waste bin (e.g. soiled diapers or non-compostable food packaging) makes frequent garbage collection a practical necessity and creates pressure against the every-other-week garbage schedules that can offset organics collection costs.
- **Variability in yard waste volume.** Depending on climate, seasonality creates significant variations in tons collected for programs with commingled yard and food waste. This can be a challenge for route planning, contracting, and budgeting. Tree canopy density, storm frequency, and an extended growing season all contribute to yard waste volume variability and can be increasingly difficult to predict as a result of climate change.

10.3.2. STATE POLICY AND MANDATES

State-level policy is a significant driver of program adoption and therefore of program cost timelines and structures. For example, California's SB 1383 created a statewide mandate requiring jurisdictions to offer organics collection service to all customers, driving widespread municipal program launches regardless of local cost-readiness. States with landfill bans on organic materials (e.g., Massachusetts, Connecticut, and Vermont) create pressure toward diversion that effectively makes non-collection of organics more expensive than collection in the long run, particularly when adequate enforcement creates cost implications for the waste generators that do not comply. Widespread adoption across a state also carries cost advantages beyond the individual mandate: with more jurisdictions operating programs, communities and haulers have a larger base of comparable experience to draw on, so lessons learned around route design, contamination management, and container procurement can be applied more readily and with less trial-and-error expense than in a state with only a handful of programs. This scale of adoption also drives investment in processing capacity, as composting facilities become more economically viable to site and expand when a steady, state-wide volume of feedstock is assured, which in turn can reduce per-ton processing and hauling costs as facilities are sited closer to more communities.

10.3.3. ENFORCEMENT AND POLICY TOOLS

The presence or absence of meaningful enforcement mechanisms is a key cost variable, as enforcement itself is a cost, and weak enforcement can produce low participation, which drives up per-unit cost. Fines, mandatory participation rules, and service-linkage mechanisms that tie organics services to garbage recycling collection all reduce the per-unit cost of the program by broadening the denominator across which fixed costs are spread. Jurisdictions that launch mandatory programs without enforcement infrastructure often see participation rates, and therefore cost efficiency, closer to those of opt-in programs than to true mandatory programs.

g As a rural example, Delaware County in New York State has been operating a municipal mixed-waste composting facility (one of the few operating in the US) since the 1990s.

11. APPENDIX D: COMMUNITY PROFILES

This study examines eight residential organics collection programs. Each profile includes the following information:

COMMUNITY CHARACTERISTICS

- Community type (urban, suburban, or rural)
- Population
- Population density

PROGRAM STRUCTURE

- Service model (public, contracted, franchise, or open market)
- Participation model (opt-in, standard, or mandatory)
- Food waste only or combined with yard waste
- Collection frequency (trash, recycling, and organics)
- Program start (year of pilot and year of full-scale rollout)

SCALE

- Single-family solid waste customer count
- Organics collection program customer count
- Tons of organic material collected annually

FINANCIALS

- Funding model (fee to jurisdiction, fee to hauler, general fund)
- Customer charge (charging mechanism and monthly dollar amount)

KEY INSIGHTS

- Distinctive program elements
- Lessons applicable to other communities

11.1. SUMMARY OF ESTABLISHED PROGRAMS

LOCATION AND POPULATION					PROGRAM DETAILS			ORGANIC MATERIAL COLLECTED			CHARGE TO CUSTOMER (USD/MONTH)			COLLECTION FREQUENCY		
Jurisdiction	Population	Density (Pop./Sq. Mile)	Residential Solid Waste System Customer Count	Organics Collection Customer Count	Participation (Opt-In, Standard, Mandatory)	Pilot Year	Full Roll-Out Year	Food Waste Only (tons/ year) *	Combined Food Waste & Yard Waste (tons/ year)	Per Capita Material Capture (pounds customer/ week)**	Garbage	Recycling	Organics	Garbage	Recycling	Organics
Shorewood, WI	13,521	8,716	4200	350	Opt-In		2018	66		7.3	General Fund (taxes)		$12.25–$14.75	Weekly	Weekly	Every other week
Edina, MN	53,564	3,461	14000	14000	Standard		2020	980		2.7	Varies (open market)	$5	$5.63	Weekly	Every other week	Weekly
Boise, ID	237,963	2,804	80,080	77,678	Standard		2017	6224*	31,121	3.1	$27.30			Weekly	Every other week	Weekly
Austin, TX	993,588	3,006	215,723	215,723	Standard	2012	2020	8543*	42,716	1.5	$28.50–$64.10			Weekly	Every other week	Weekly
Prince George's County, MD	966,629	2,004	180,000	180,000	Standard	2017	2024	17345*		3.7	$29.75			Weekly	Weekly	Weekly
Oakland, CA	443,554	7,878	83,664	83,664	Mandatory		2015	9,545	47,726	4.4	$55.41–$165.42			Weekly	Weekly	Weekly
Hamilton, MA	7,670	533	3000	3000	Mandatory		2012	437		5.6	General Fund (taxes)			Every other week	Weekly	Weekly
Benson, MN	3,480	1,123	2800	2800	Mandatory		1992	140*	700	1.9	$14–$24			Weekly	Weekly	Weekly

* Where a program collects food waste and yard waste in a combined stream, food-waste-only tonnage was not available from program-reported data. In these cases, food waste tonnage is estimated by applying a 20% food/ 80% yard waste allocation ratio derived from Prince George's County, Maryland's FY2024 composting facility data, which is the only program in this study that separately tracks and publicly reports both streams. This ratio is consistent with the range reported in national waste composition studies, which generally place food scraps at 15-30% of combined residential organics tonnage. This allocation is subject to meaningful uncertainty: the food-to-yard-waste ratio varies by climate and season, program maturity, and region. Tonnage figures marked with an asterisk (*) in the program profiles are estimates derived from this methodology, were not directly reported by the jurisdiction, and are for illustrative purposes only.

** Food Waste Only divided by Organics Collection Customer Count, multiplied by 2,000 to convert tons to pounds, and divided by 52 to arrive at the per week figure.

11.2. CASE STUDIES

Communities are listed in order by enrollment model, beginning with opt-in subscription, followed by standard, and concluding with mandatory. Please note that population figures and customer counts are rounded to serve a high-level profile and analysis.

11.2.1. SHOREWOOD, WISCONSIN

Shorewood is a residential village immediately north of Milwaukee's city limits, characterized by walkable neighborhoods, a high proportion of single-family and small multifamily properties, and limited commercial land use. Its density and compact geography make it broadly comparable to other first-ring suburbs in the upper Midwest.

Residential garbage is collected by the village department of public works (DPW) employees as an in-house public model, while recycling is handled under a village-negotiated contract with a single private hauler. The village also offers a long-standing yard waste collection program, with seasonal weekly pick-up and periodic brush and bulky yard waste collection throughout the year. Customers are not charged for these solid waste services directly, as the DPW budget comes from the general fund, with four cents of every tax dollar collected by the village allocated to the DPW.

Food waste collection operates on an entirely separate track: residents can opt-in and subscribe for food waste collection directly with a private food waste hauler. Residents pay the hauler directly based on the size of their collection cart, and the village pays the food waste hauler an additional $1.20 per customer per month as a subsidy.[h] This split between the customer and the village was a deliberate design choice that allowed the village to launch organics collection with no capital investment, no change to existing hauling contracts, and without imposing a new fee on the full residential base, as the food waste collection fee is paid on a voluntary basis by subscribers only.

TABLE 4: FOOD WASTE COLLECTION COST TO SHOREWOOD CUSTOMERS, 2025

Bin Size	Resident Quarterly Pricing Plan	Resident Yearly Pricing Plan	Village Subsidy
32-gallon cart	$36.75 per quarter	$140 per year	$1.20 per house per month
64-gallon cart	$44.25 per quarter	$164 per year	$1.20 per house per month
Starter Kit A with Cart Delivery (2 gallon bucket and bags)	$19 - one time	$19 - one time	$0
Starter Kit B with Cart Delivery (7 landscape bags)	$14 - one time	$14 - one time	$0
Starter Kit C with Cart Delivery (5 gallon bucket with bags)	$12 - one time	$12 - one time	$0

Community Characteristics

Community Type	Suburb
Population	13,500
Population Density (Person/Square Mile)	9,000

Program Structure

Service Model

Three distinct service delivery mechanisms across three waste streams:

- Garbage: Public (village DPW)
- Recycling: Contracted (village contract with private hauler)
- Organics: Opt-in (private hauler)

Participation Model

Opt-in

Food Waste Only or Combined Food and Yard Waste

Food waste only

Collection Frequency

- Trash: Weekly
- Recycling: Every other week
- Organics: Every other week

Program Start Year

2018

h While this subsidy has been in place since the start of the food waste collection program in 2018, there was no information available pertaining to the logic or calculation used to establish this specific rate.

Scale

Single-Family Solid Waste Customer Count
4,800
Organics Collection Program Customer Count
350
Tons of Organic Material Collected Annually
66

Financials

Funding Model
Fee to hauler: Customer pays subscription fee to private hauler directly, with a municipal subsidy from the general fund of $1.20/household/month
Customer Charge
■ Trash and recycling: No direct customer fee, funded through general fund ■ Organics: $12.25-$14.75/month (depending on container size; billed directly by private hauler to opt-in subscribers only)

Key Insights

Shorewood represents the minimum viable municipal organics model: a program that helps provide organics collection with minimal direct municipal cost exposure. The program was launched voluntarily and sustained through a public-private partnership rather than regulatory pressure. By routing billing and operational responsibility to the hauler, the village avoided the capital and administrative investment that typically accompanies a new solid waste service line.

The private food waste hauler works closely with village DPW, using the village scale house to weigh material collected and reporting those results on a regular basis. The relationship between the DPW and the hauler is a positive one, but the challenges of expanding the program include the potential public reticence to pay more for additional service, as well as a hard limit on space at the village transfer station to manage additional organic material.

Shorewood's experience reflects a pattern consistent with opt-in organics programs nationally: participation rates tend to stabilize at a relatively modest share of eligible households absent a universal fee or enrollment incentive. As approximately 7 percent of eligible households opt in to the food waste collection service, Shorewood's subscriber base is small in absolute terms, though the program's weekly set-out rate of 70 percent among enrolled households suggests strong commitment from those who do participate. The customer count (350) has been consistent over the course of the program's eight years.

11.2.2. EDINA, MINNESOTA

Edina is a fully developed first-ring suburb immediately southwest of Minneapolis, characterized by stable single-family neighborhoods, strong civic engagement, and a well-established municipal utility infrastructure. Its housing stock skews heavily toward owner-occupied single-family and small multifamily properties, making it well-suited to a cart-based curbside organics model.

The city maintains three waste collection programs for its residents: it contracts directly with a hauler for organics collection, and contracts with another hauler for recycling collection. Trash collection is open market, so residents contract directly with waste haulers. Recycling was shifted from weekly to every-other-week collection when organics (food waste only) collection was introduced, with the cost savings from reduced recycling collection frequency partially offsetting the new organics collection cost. The organics collection program fee appears on quarterly utility bills with traditional recycling, and is a standard service, such that this universal fee applies to all eligible accounts regardless of participation.

Community Characteristics

Community Type	Suburb
Population	53,600
Population Density (Person/Square Mile)	3,500

Program Structure

Service Model
■ Trash: Open market (residents contract directly with haulers) ■ Recycling and organics: Contracted (city contracts with haulers and charges customers on utility bill)
Participation Model
Standard
Food Waste Only or Combined Food and Yard Waste
Food waste only
Collection Frequency
■ Trash: Weekly ■ Recycling: Every other week ■ Organics: Weekly
Program Start Year
2020 (full program rollout)

Scale

Single-Family Solid Waste Customer Count
14,000
Organics Collection Program Customer Count
All solid waste customers
Tons of Organic Material Collected Annually
1,218.4 (2022); 980.5 (2023)

Financials

Funding Model
Fee (on utility bill)
Customer Charge
■ Trash: varies based on open market ■ Recycling: $5/month ■ Organics: $5.63/month

Key Insights

Edina is a useful suburban benchmark because it treats organics collection as a standard utility service rather than a voluntary subscription, even though households may return the cart. Minnesota has a state statute (115A.93) requiring that residents who participate in an organics program are not charged more than those who do not participate. This is a critical policy constraint: unlike Boise's opt-out penalty model, Minnesota law prohibits charging organics participants more than non-participants, effectively requiring universal fee-spreading.

In response to the state of Minnesota directing counties to reduce the amount of waste that goes to a landfill[4], Hennepin County implemented an ordinance to require cities in the county to make organics collection available to the residents by January 1, 2022.[5] According to the county's 2024-2025 budget, the organics program is administered by the Fire Department (under Public Health).

11.2.3. BOISE, IDAHO

Boise is the capital of and largest city in Idaho, located in Ada County in the Treasure Valley. It is among the fastest-growing cities in the United States over the past decade, characterized by a mix of established single-family neighborhoods and rapidly expanding new residential development.

All three residential waste streams are collected by a single hauler under an exclusive franchise agreement. Residential customers pay a monthly solid waste management fee to the city, and the city in turn pays the contracted hauler a per-customer amount for each of the three services. The city currently pays the hauler $6.81 per customer per month for organics hauling and processing. While Boise refers to its solid waste services model as a franchise system, it operates similarly to a contracted system, as there is a single hauler that holds a contract with the city, and customers pay the city rather than being billed by the hauler. Furthermore, the hauler serving Boise does not pay the city a franchise fee.

Boise's program is notable for its funding model in which food waste collection is provided as a base service and part of the fee, and customers are charged more if they opt out.

TABLE 5: BOISE RESIDENTIAL SOLID WASTE FEE

Regular Service**

Setup New Account	$14.10
Account Reinstatement	$25.85

Service Name	Fee Per Month
95 Gallon Trash, Recycling, and Compost (Standard)	$27.30
95 Gallon Trash / Recycling or Trash / Compost (Standard)	$34.73
95 Gallon Trash Only	$42.16
65 or 48 Gallon Trash, Recycling and Compost (Small)	$25.70
65 or 48 Gallon Trash / Recycling or Trash / Compost (Small)	$33.10
65 or 48 Gallon Trash Only	$40.54

** Monthly trash Fees are based on a 30.4167 day billing cycle. Your bill may vary depending on if the month is 28, 30, 31 days.

The opt-out financial penalty structure is central to the program's success. Rather than mandating participation through ordinance, Boise designed its rate structure so that removing organics service from a household account costs more than retaining it. This behavioral economics approach produces a near-mandatory participation rate of 97 percent without the potential political friction of a formal mandate.

Community Characteristics

Community Type	Urban (mid-sized)
Population	238,000
Population Density (Person/Square Mile)	2,800

Program Structure

Service Model
Franchise
Participation Model
Standard
Food Waste Only or Combined Food and Yard Waste
Combined food and yard waste
Collection Frequency
■ Trash: Weekly ■ Recycling: Every other week ■ Organics: Weekly
Program Start Year
2020 (full program rollout)

Scale

Single-Family Solid Waste Customer Count
80,000
Organics Collection Program Customer Count
97% of solid waste customers
Tons of Organic Material Collected Annually
31,000 (combined food and yard)

Financials

Funding Model
Fee (to municipality)
Customer Charge
Trash, Recycling, Organics: $27.30/month (charged on utility bill)

Key Insights

While participation in organics collection is not mandatory in Boise, the city charges an opt-out financial penalty, such that food waste collection is included as a standard service, and opting out of the service (choosing not to receive either the recycling or composting bin) incurs an additional fee. This default enrollment combined with a financial opt-out disincentive leads to a high participation rate. The city-owned composting facility eliminates one of the single largest variable costs in most organics programs: the third-party tipping fee. By internalizing processing costs within the fee-based enterprise fund, Boise avoids market-rate fee exposure and retains control over compost quality and end-market relationships. The free compost give-back program, which distributes finished product directly to residents, closes the loop visibly and reinforces the program's community value in a way that few other programs achieve.

The ability to add organics collection at a relatively low cost per customer traces directly to the city's existing exclusive franchise relationship with a private hauler. Because the city already controlled the service contract, it was able to negotiate an incremental expansion of scope rather than bid a new program from scratch. The city set the reimbursement rate to the private hauler on its own terms, and the exclusive arrangement gave Boise meaningful negotiating leverage, as the hauler had every incentive to retain and grow the franchise relationship rather than risk losing it. That dynamic, combined with a city-owned composting facility that eliminated a third-party tipping fee, allowed Boise to absorb the program into the existing rate structure at a per-customer cost that would have been difficult to achieve through a standalone or open-market procurement. The city began the food waste collection program by reimbursing the hauler approximately $2.50 per customer per month for hauling and processing food waste; that figure has since increased to $6.81. However, this per-customer cost

does not necessarily represent the true cost to the hauler, as the hauler may be operating this service at a loss, while the entire hauling contract with the city is still financially advantageous. For Boise, the economics of adding organics collection were substantially better with the franchise agreement and a strong relationship with the hauler already in place.

It is also worth noting that the city's billing and rate structure doubles as a compliance mechanism. Boise administers the billing system directly, which gives it direct control over the financial relationship with each customer. If a household repeatedly misuses its organics cart, the city can remove the cart, which automatically triggers the higher opt-out rate for that account. This means the rate structure is not just an enrollment incentive at the front end; it is also an ongoing contamination management and enforcement tool. A customer who contaminates their cart so frequently that they lose it faces a financial consequence, not merely an educational outreach visit. This integration of rate design and behavioral enforcement is unusual among peer programs and may contribute to the program's relatively low contamination profile.

11.2.4. AUSTIN, TEXAS

Austin is the capital of Texas and the fourth-largest city in the state, located in Travis County in central Texas. It is one of the fastest-growing large cities in the United States, characterized by a mix of established urban neighborhoods, rapidly expanding suburban development, and a large university population. Austin's solid waste program is managed by Austin Resource Recovery (ARR), a city department that administers collection services for single-family homes.

While the city's Universal Recycling Ordinance requires that commercial business owners and multifamily properties ensure that all commercial tenants, multifamily residents and employees have access to recycling, there is no comparable mandate for single-family residents. Rather, the Austin waste collection program is built on a bundled service model in which organics collection is included as a standard component of the city's residential solid waste service, such that residents do not opt in or pay separately for the green organics cart, and the base fee remains even if a customer does not use the service. All ARR curbside customers receive trash, recycling, and organics collection as a unified service package billed through the city of Austin utility statement, although participation in organics recycling is not mandatory. The pay-as-you-throw model means that the fee paid by customers is volumetric, based on the size of the garbage container.

TABLE 6: AUSTIN RESIDENTIAL SERVICES RATES AND FEES

Trash cart size	Monthly rates
Small (24-gallon)	$28.50*
Medium (32-gallon)	$30.05*
Large (64-gallon)	$36.30*
Extra Large (96-gallon)	$64.10*

*Includes a base fee of $23.80

The organics processing relationship has been an area of active management. The city's contract with Organics by Gosh, a local processor, was approved by city council at $1.51 million for a three-year term in 2017. By late 2024, the Zero Waste Advisory Commission raised concerns about a significant proposed cost increase from Organics by Gosh during re-solicitation, noting that an alternative vendor, Texas Disposal Systems (TDS), would provide savings of $4.5 million over the life of the contract. The solicitation process is now completed and contracts were awarded to both Organics by Gosh and TDS, the two lowest bidders. ARR utilizes both processors under a 60-40 allocation model.

By splitting processing between two organizations, ARR has increased processing capacity and flexibility while improving efficiency. Material can be funneled to the closest of a few different processing facilities around the city, reducing travel time and fuel consumption.

Community Characteristics

Community Type	Urban
Population	994,000
Population Density (Person/Square Mile)	3,000

Program Structure

Service Model

Public, provided by city department ARR

Participation Model

Standard

Food Waste Only or Combined Food and Yard Waste

Combined food and yard waste

Collection Frequency

- Trash: Weekly
- Recycling: Every other week
- Organics: Weekly

Program Start Year

- 2012 (pilot)
- 2020 (full program rollout)

Scale

Single-Family Solid Waste Customer Count

215,700

Organics Collection Program Customer Count

All solid waste customers

Tons of Organic Material Collected Annually

42,700 (combined food and yard)

Financials

Funding Model

Fee; enterprise fund

Customer Charge

Garbage (volumetric), recycling, organics: $28.50–$64.10/month

Key Insights

Austin's experience reinforces two findings from the broader study. First, bundled service models produce near-universal participation, such that when organics collection is simply part of the standard service package, residents do not need to opt in, and the program avoids the participation ceiling that constrains voluntary programs. Second, according to the *2020 Waste Characterization, Capture Rate and Diversion Study*, 25 percent of ARR collected trash was compostable, suggesting that while nearly all residents were setting out their food waste bins, a significant tonnage of food waste was still ending up in the landfill. This figure may change based on an imminent update to waste characterization and may also be a result of the program structure: while food waste containers are offered to all residents, there is no policy compelling residents to compost.

Another important takeaway from Austin is that processing capacity must scale with program ambition: Austin's expansion plans, from 44,722 to 60,000 tons of annual processing capacity, underscore that a successful collection program can quickly outpace the processing infrastructure built to receive it. ARR's use of multiple processors also speaks to the city's commitment to efficiency, saving time and resources, while also reducing emissions.

11.2.5. PRINCE GEORGE'S COUNTY, MARYLAND

Prince George's County is a large suburban county immediately east of Washington, D.C. and is one of the most populous counties in Maryland. The state of Maryland enacted a commercial organics diversion mandate in 2023, which requires businesses generating one ton or more of food waste per week and located within 30 miles of a processing facility to divert that material from disposal. While this does not apply to residential households, it may provide an important structural benefit to Prince George's County's program by guaranteeing a consistent commercial feedstock stream to processors in the region, thus potentially strengthening the financial viability of the composting and other organics processing facilities throughout the state.

Prince George's County housing stock spans dense inner-ring suburbs adjacent to Washington, mid-density residential communities, and lower-density exurban areas near its eastern and southern boundaries. Solid waste services are administered by the county's Sustainable Waste Management Division, which provides residential curbside garbage and recycling collection services to approximately 180,000 single-family homes and properties receiving county-contracted collection.[i] All residents pay a solid waste fee; a typical annual total solid waste service charge for a single-family home or townhome is $357.[6] All residents that receive county-provided hauling services receive a food waste bin and can participate at no additional charge.

Curbside organics collection in the county is handled by a private hauler under county contract, while organics processing is performed at a county-owned composting facility operated by Maryland Environmental Services, which is a state agency with a relationship with the county dating back to 1991. This vertical integration on the processing side gives the county significant cost control over tipping fees: county-contracted residential haulers pay $0 per ton to tip at the organics composting facility, with processing costs paid for by the county's solid waste enterprise fund rather than the tipping fee. This means residents effectively pre-pay for composting through their annual solid waste charge rather than having per-ton processing costs passed through as a variable, market-rate fee.

The fixed Monday collection schedule for organics, applied countywide regardless of each household's trash and recycling day, is a distinctive operational design choice that enables a dedicated organics route structured separately from trash and recycling routes. The county's public education campaign reflects this design: "Every meal. Every scrap. Every Monday."

Community Characteristics

Community Type	Suburban
Population	967,000
Population Density (Person/Square Mile)	2,000

Program Structure

Service Model
Contracted
Participation Model
Standard
Food Waste Only or Combined Food and Yard Waste
Combined food and yard waste
Collection Frequency
■ Trash: Weekly ■ Recycling: Weekly ■ Organics: Weekly
Program Start Year
■ 2017 (pilot) ■ 2024 (full program rollout)

i Some municipalities within the county operate their own separate solid waste programs and are not served by the county's curbside organics program.

Scale

Single-Family Solid Waste Customer Count
180,000
Organics Collection Program Customer Count
All solid waste customers
Tons of Organic Material Collected Annually
17,345 (food); 69,625 (yard); 86,970 (combined)

Financials

Funding Model
Fees; enterprise fund
Customer Charge
$29.75 (trash, recycling, organics)/month ($357 annual charge on the property tax bill)

Key Insights

The county used a multi-phase approach prior to full-scale rollout in order to obtain critical data and feedback to help ensure program success. The organics collection program launched as an opt-in pilot for 2,000 households in 2017, with two additional expansion phases with a total of 22,000 enrolled households, prior to full-scale rollout in 2024. The county's phased participation strategy, with explicitly stated milestones of 40 percent participation within two to four years and 85 percent ultimately, is one of the more transparent performance frameworks in this study. Rather than reporting a single participation rate, the county acknowledges where it is in the behavioral change curve and sets public benchmarks against which progress can be measured.[7]

Prince George's County has developed a slogan to help customers remember the set-out day for collections: "PGC Composts: Every Meal, Every Scrap, Every Monday." This simple message, alongside composting guides in English and Spanish, are shared broadly with the public. The county has also established a food scraps collection program at 24 K-12 schools, helping students reinforce behavioral changes that can be implemented at home as well.

11.2.6. OAKLAND, CALIFORNIA

Oakland is a large, dense West Coast city that represents one of the most mature and structurally complex residential organics programs in the country. The city of Oakland adopted a Zero Waste Strategic Plan in 2006, establishing a policy framework that has shaped its waste services for nearly two decades. Oakland is a commonly cited jurisdiction for organics recycling; the city has offered residential green waste collection since the mid-1990s and began allowing the co-collection of food scraps in 2015. Oakland's program is a mature, mandatory, citywide system embedded in the franchise structure, and it is best understood as a model of what full-scale organics integration looks like at large-city scale, along with the governance complexity that comes with it.

Oakland sits within Alameda County and is subject to a layered regulatory environment. Effective January 1, 2022, all California businesses, multifamily complexes, and residences are required to sort food scraps from trash and recycling and subscribe to organics collection service per state law SB 1383. Oakland was already well ahead of this mandate, having operated organics collection for over a decade before SB 1383 took effect. The city's 2030 Equitable Climate Action Plan establishes composting and increasing the recovery of edible food as key strategies to minimize climate change, and the Alameda County Waste Management Authority (StopWaste) leads enforcement of SB 1383 and the county's Organics Reduction and Recycling Ordinance.

Oakland's residential organics program is a mandatory, citywide, co-collection model that combines food scraps, food-soiled paper, and green waste in a single cart, collected weekly. The program is not funded through a general fund; it operates entirely through the franchise fee structure. Residential garbage, compost, bulky pickup, and billing services are provided by a single private hauler, while recycling services are provided by another private hauler. Residential service rates are established by city council ordinance as maximum allowable charges, set within the terms of the franchise agreement and subject to periodic adjustment through a contractually defined indexing formula. Organics collection is incorporated into the base residential service rate with no separate food waste collection charge to the customer, effectively removing cost as a barrier to participation. (This contrasts with opt-in fee models, where the incremental cost of organics service is visible on the customer bill and can suppress enrollment.)

TABLE 7: OAKLAND WASTE COLLECTION RATES

CITY OF OAKLAND

City of Oakland

Monthly Collection Service Rates for Single Family Dwellings

July 1, 2025 - June 30, 2026 *(published 5/22/25)*

Residential collection services are *exclusive franchise services* . Trash, Compost, Bulky Pickup, and Billing services are provided by **Waste Management of Alameda County, Inc. (WMAC)**. Recycling services are provided by **California Waste Solutions (CWS)**. For questions about Trash, Compost, Bulky Pickup, or Billing, contact WMAC (510-613-8710). For questions about Recycling Service, contact CWS (510-625-5263). For unresolved issues after you have contacted WMAC or CWS, contact the **City of Oakland** at 510-238-SAVE (7283) or recycling@oaklandca.gov.

Trash collection rates include once per week collection of one Compost cart plus any additional properly prepared compost materials, and Bulky Pickup services. Trash collection rates include once per week collection of Recyclable Materials for one dwelling unit in one cart at a cost of $19.55, plus all additional properly prepared recyclable materials.

2-4 unit homes will be charged an additional $19.55 for each dwelling unit for recyclable materials collection, and are entitled to one recycling cart per dwelling unit or one cart with equivalent capacity.
2-4 unit homes are required to have the equivalent of 20 gallons per unit of trash service per unit, which may be in individual or shared carts.

OAKLAND RECYCLES
YOUR RECYCLING TEAM
WASTE MANAGEMENT
CALIFORNIA WASTE SOLUTIONS

Trash Cart Size	**20 Gallon**	**32 Gallon**	**64 Gallon**	**96 Gallon**
Curbside Collection	$55.41	$62.83	$110.31	$165.42
Backyard Collection	$111.56	$118.98	$166.46	$221.57
Curbside Collection - Additional Cart	$26.48	$33.90	$81.38	$136.49
Backyard Collection - Additional Cart	$60.34	$67.76	$115.24	$170.35
Compost Cart Size	**20 Gallon**	**32 Gallon**	**64 Gallon**	**96 Gallon**
Curbside Collection - Additional Cart	$20.33	$20.33	$20.33	$20.33
Backyard Collection - Additional Cart	$54.20	$54.20	$54.20	$54.20
Recycling Cart Size	**20 Gallon**	**32 Gallon**	**64 Gallon**	**96 Gallon**
Curbside Collection - Additional Cart	$17.94	$17.94	$17.94	$17.94
Compost and Recycling Contamination Surcharge				
1st and 2nd Incidents	Warning			
3rd Incident if Within 6 Months of 1st Incident	$25.00			
4th Incident if Within 6 Months of Previous Incident	$50.00			
Trash and Compost Additional Services and Charges				

A notable feature of Oakland's processing infrastructure is the O-MRF. The facility can process 100 tons of municipal solid waste per hour and handles all 150,000 tons per year of landfill-destined municipal solid waste generated by Oakland. It is estimated to extract approximately 60,000 tons of organics and 31,000 tons of recyclables per year, diverting 61 percent of the garbage stream from landfill. The O-MRF supplements, rather than replaces, source-separated organics (SSO) collection; it captures residual organics from the trash stream that were not properly sorted at the curb.

Free compost giveaway events twice a year provide residents with a water-retaining soil amendment produced from Oakland's discarded food scraps and yard trimmings, closing the product loop for customers.

Community Characteristics

Community Type	Urban
Population	440,000
Population Density (Person/Square Mile)	7,900

Program Structure

Service Model

- Garbage and organics: franchise agreement with single private hauler
- Recycling: franchise agreement with single private hauler

Participation Model

Mandatory

Food Waste Only or Combined Food and Yard Waste

Combined food and yard trimmings

Collection Frequency

Trash, recycling, organics: Weekly

Program Start Year

2015

Scale

Single-Family Solid Waste Customer Count
84,000
Organics Collection Program Customer Count
All solid waste customers
Tons of Organic Material Collected Annually
47,726 (food and yard trimmings)

Financials

Funding Model
Franchise fee (paid by customer to hauler)
Customer Charge
$55.41-$165.42/month (volumetric based on 20-96 gallon trash cart size). City sets maximum rate; haulers bill customers directly; haulers pay the city a franchise fee.

Key Insights

Oakland is one of the most mature large-city organics programs in the country, but its maturity comes with structural complexity that limits direct replication. The city has operated residential organics collection since 2015, when new franchise agreements took effect and extended organics collection service to all residential accounts, including apartments and condominiums. That decade-plus of operational experience is instructive but should be read alongside the franchise structure and regulatory environment that made it possible. Oakland did not build this program from a standing start through a budget appropriation; it embedded organics collection into a comprehensive franchise agreement renegotiated under a zero waste mandate, with SB 1383 later reinforcing what was already mandatory citywide. Because organics collection is included in the base trash service rate rather than billed as a separate organics fee, residents do not experience organics collection as an add-on cost. This eliminates the fee-sensitivity problem that many other communities are navigating.

Oakland's investment in mixed-waste organics recovery at its materials recovery facility reflects a recognition that source-separated collection alone will not capture all compostable material from a large, dense city. The facility is intended to augment, not replace, SSO programs, with source separation continuing to be the primary focus for outreach.

A material governance risk in Oakland's model is hauler cost opacity. The franchised hauler is not required to disclose its actual costs or profit margins under the current franchise agreement, which makes it difficult for the city to independently verify whether the rates it sets are well-calibrated to actual service costs. Municipalities designing their own franchise structures may consider embedding organics collection into a franchise agreement at favorable initial terms as a strong enabling strategy, but the long-term ability to right-size costs depends on maintaining contractual rights to cost-of-service data.

11.2.7. HAMILTON, MASSACHUSETTS

Hamilton is a town in the North Shore region of Massachusetts in Essex County. The Commonwealth of Massachusetts implemented its Commercial Food Material Disposal Ban in 2014 and expanded it in 2022. While it does not extend to residential households, it may benefit Hamilton's program by incentivizing a robust statewide network of composting infrastructure, which in turn can make it easier and more affordable for municipalities to divert food waste. The commercial food waste ban also helps to raise general awareness that organic material has value and does not belong in the trash.

The town's curbside organics collection program was one of the earliest mandatory, full-community residential programs in Massachusetts. The Hamilton waste collection program includes mandatory townwide curbside organics collection that began in April 2012. The program is separate from yard waste collection and is designed to collect food waste and other non-yard compostables. A private hauler is contracted to provide townwide hauling, and a private compost facility is contracted to handle processing.

The town's organics collection program has an effective set-out participation rate of 100 percent due to its mandatory nature. Black trash bins unaccompanied by a green organics bin are left uncollected; as are trash bins that contain errant food waste. The core services of trash, recycling, and compost are included in property taxes with no separate bill.

Community Characteristics

Community Type	Town
Population	7,760
Population Density (Person/Square Mile)	533

Program Structure

Service Model

Contracted

Participation Model

Mandatory

Food Waste Only or Combined Food and Yard Waste

Food waste only

Collection Frequency

- Garbage: Every other week
- Recycling: Weekly
- Organics: Weekly

Program Start Year

2012 (curbside food waste collection for all single-family homes)

Scale

Single-Family Solid Waste Customer Count

3,300

Organics Collection Program Customer Count

All solid waste customers

Tons of Organic Material Collected Annually

437

Financials

Funding Model

General fund

Customer Charge (monthly)

None

Key Insights

Hamilton is especially useful as a small-town mandatory benchmark because it pairs a long operating history with public annual organics tonnage reporting. Hamilton was the first community in Massachusetts to implement a townwide composting program. The program's mandatory structure and bundled funding model support high participation and stable program revenue.

11.2.8. BENSON, MINNESOTA

Benson is the county seat of Swift County in western Minnesota. With a population of 3,480 and low population density, Benson is a primarily agricultural community. Benson's curbside organics collection program began through a phased rollout in the 1990s when Swift County opened its municipal solid waste compost and recycling facility in Benson. In 1992, Benson and the surrounding county areas began curbside collection of a three-bin system with recycling, trash, and organics collection for residential customers. In 2000, Swift County shifted its program to its current SSO model where trash and organics bins are hauled simultaneously by the same vehicle each week in Benson and other Swift County municipalities.

The curbside organics collection system relies on residents to source separate food and yard waste into clear plastic bags and place them, untied, inside their trash containers. Trash, or "non-processable," as the city refers to it, is placed inside the trash container as well, in tied clear bags.[8]

The county uses a pay-as-you-throw model for garbage, with a monthly charge ranging from $14 to $24. As per the Swift County Solid Waste Ordinance: "All garbage must be separated into three categories - Recyclable, Compostable, and Non-Processible," making participation in the organics program mandatory. The new carts were provided to residential customers at no cost.[9]

The city of Benson contracts directly with a private hauler to perform curbside collection of both trash and organics. Compostable material is hauled to the Swift County Environmental Services-run compost and recycling facility, located in Benson. This co-collection method of trash and organics reduces the capital expenses and the environmental footprint of operating separate vehicle fleets for each waste type, as bags that contain compostables and non-processable material are collected at the same time (by the same truck and the same crew), and are sorted following collection.

TABLE 8: CITY OF BENSON GARBAGE CART PROGRAM CHARGE

Cart Sizes Available	35 Gallons	64 Gallons	96 Gallons
Monthly Service Charge	$14.00	$18.00	$24.00
Number of Bags	Holds about 2-3 kitchen bags	Holds about 4-5 kitchen bags	Holds about 6-7 kitchen bags

Community Characteristics

Community Type	Town
Population	3,480
Population Density (Person/Square Mile)	1,123

Program Structure

Service Model

Contracted

Participation Model

Mandatory

Food Waste Only or Combined Food and Yard Waste

Combined food and yard waste

Collection Frequency

- Trash and organics: Weekly (in the same load)
- Recycling: Weekly

Program Start Year

Current program: 2000

Scale

Single-Family Solid Waste Customer Count

2,800

Organics Collection Program Customer Count

All solid waste customers

Tons of Organic Material Collected Annually

700[j]

j Swift County, MN reported 2,000 tons of combined food and yard waste collected. Benson accounts for 35% of the County population, therefore this percent was applied to the total county-reported tonnage to arrive at the 700 ton figure for Benson alone. This methodology is for illustrative purposes only, and does not represent the precise tonnage for Benson.

Financials

Funding Model
General fund
Customer Charge (monthly)
$14-$24 (pay-as-you-throw), charged on utility bill

Key Insights

Benson and Swift County's curbside organics collection system is a prime example of a long-running rural program with built-in efficiencies such as the co-collection of food waste and garbage by the same vehicle fleet, incentives such as the discounted volumetric fee for food waste, and relatively low barriers for participation by residents. Approximately 85 percent of the compost created from the residential food waste collection program is used as soil amendment on county-owned grounds, and the remaining compost is distributed to residents and agricultural operators free of charge, making the benefits of composting visible to the community.

11.3. PILOT PROGRAMS

Piloting a curbside food scrap collection program before committing to full-scale implementation is a well-established strategy for managing operational, financial, and political risk. A well-designed pilot allows a municipality to test collection logistics, evaluate hauler and processor relationships, establish baseline performance metrics (such as set-out rates, pounds per household, and contamination), and build public familiarity with the program before expanding access. Pilots also generate the kind of locally grounded cost and participation data that general fund staff, elected officials, and ratepayers find more persuasive than national benchmarks alone. When paired with structured participant feedback, as Nashville demonstrated through quarterly surveys and focus groups, a pilot can surface behavioral insights that materially shape program design at scale.

That said, a pilot phase is not a universal prerequisite. Several communities profiled in this report launched full-scale curbside organics programs without a formal pilot period, moving directly from feasibility planning to citywide or districtwide rollout. Boise, Idaho is one such example. The experiences of both pilot and non-pilot programs are instructive: together, they illustrate the range of implementation pathways available to municipalities depending on their existing infrastructure, political appetite, budget flexibility, and service delivery model.

There are two city residential food waste collection pilot programs profiled below: Nashville, Tennessee and Durham, North Carolina.

TABLE 9: PILOT YEAR COMPARISON, 2023–2024

Metric	Nashville, TN	Durham, NC[k]
City population	705,000	302,000
Number of households	750	500
Total annual tons food waste collected	112	34
Pounds per set-out per week	6.75	3.5
Average set-out rate	85%	85%

The two pilots differ in meaningful ways across many structural dimensions, and those differences are worth holding in view when interpreting the table above. Nashville's pilot program is opt-in, contractor-operated, and funded at a per-household rate of $6.75 per week, yielding an annual cost of approximately $275,000. Durham's program is opt-in within defined geographies, operated in-house using city vehicles and a single driver, and costs roughly $2.05 per collection stop, though that figure covers only labor and vehicle operation, not processing fees or program overhead. The result is that Nashville's cost data is more complete and directly comparable to a contracted service model, while Durham's cost, though lower on its face, requires additional accounting.

k Figures are estimates based on reporting for the entire duration of the pilot. Using total enrolled households, weekly collection (52 weeks), the city-reported average of approximately 3.5 lbs per curbside stop, and the observed Phase Two set-out rate midpoint of 85%.

On performance, both programs achieved similar set-out rates of approximately 85 percent in their mature collection weeks. Nashville averaged 6.75 pounds versus Durham's approximately 3.5 pounds, a gap that may reflect differences in household size, bin size (four-gallon versus 35-gallon cart), collection culture, or some combination of all three. Neither program has published a formal cost-per-ton figure, which limits direct comparison of processing efficiency. Taken together, the two pilots represent distinct but complementary data points: Nashville offers the cleaner cost model and the higher diversion rate per household, while Durham offers a more operationally conservative baseline design that may better predict general-population participation at scale.

11.3.1. NASHVILLE, TENNESSEE

Nashville is a large city with a population of 705,000 and a density of approximately 1,449 residents per square mile. Solid waste collection in Nashville operates across two distinct service districts with meaningfully different funding structures. Residents in the Urban Services District (represents 75 percent of the waste generation in Nashville) receive weekly curbside trash collection and every-other-week recycling as part of their property taxes, with no separate monthly fee. Residents in the General Services District (represents 25 percent of the waste generation in Nashville) who want curbside trash pickup are required to contract with private haulers independently, at an estimated cost of $60 to $90 per quarter (roughly $20 to $30 per month). There is currently no standalone fee for solid waste management services applicable to the food scraps pilot; pilot participants do not receive a bill as program costs flow through the city's general fund.

Nashville has approximately 146,000 total current trash customers. The food scraps pilot enrolled 750 opt-in households selected through an application process, representing a small share of the broader service base.

Program Design and Operations

The Nashville Food Scraps Pickup Pilot is a standalone curbside organics collection program managed through Nashville Waste Services and executed by a private contracted hauler specializing in food scrap collection. Collection is curbside only; no additional drop-off component is part of the pilot itself, though Nashville's existing drop-off composting program saw increased usage following the pilot's public launch, which may have been a result of increased city-led communication about the pilot.

Materials are collected weekly and transported to a composting facility approximately 40 minutes outside the city, which uses an aerated static windrow method. The hauler provides each participant with a fresh, washed four-gallon bin with a liner, replaced weekly, as part of the service. The program is standalone: it does not combine food scraps with yard waste collection.

Participant selection was deliberate and methodologically notable. Households applied to participate, and Nashville Waste Services used census data to select 750 participants who together formed demographically representative, geographically contiguous pickup routes. Rather than relying only on routing logic, Nashville incorporated demographic data to create concentrated pickup routes. This approach was designed to demonstrate that high engagement is achievable across different community profiles, not just in areas with pre-existing environmental awareness.

Funding and Cost Structure

The pilot launched in October 2023 with funding from a private donation covering the first year. Year two was funded through a combination of a state grant, NRDC funds, and city operational savings redirected from other programs. Ongoing operational costs are drawn from Nashville's general fund. No dedicated fee has been established for the organics program, and Nashville maintains no standalone solid waste fee.

The contracted cost that the city pays to the hauler is $6.75 per household per week, yielding an estimated total annual program cost of approximately $275,000 for the 750 households. This rate includes the bin and liner service provided by the hauler. For context on potential scale: the hauler has indicated that a subscriber base exceeding 1,000 households would bring the per-household rate down to approximately $6.00 per week. If expanded citywide and passed through to residents as a standalone fee, the current per-household rate would translate to roughly $27 per month, which Nashville staff have flagged as a threshold that would need to come down substantially before it could be presented as an acceptable resident-facing charge.

Resident willingness-to-pay data from the pilot surveys is instructive on this point. Participant survey responses, collected in early 2024, show that a meaningful share of respondents indicated a willingness to pay a maximum range of $5 to $20 per month, with $10 as a common midpoint. Only a small number were willing to pay at or above the $27 per month that a direct cost pass-through would require. An additional survey, administered in spring 2025 and structured as a program-end evaluation, asked participants directly what they would do if the program expanded to all households at a fee of approximately $15 or less per month: the large majority indicated they would pay the monthly fee and continue service. This suggests that a fee in the range of $10 to $15 per month may be near the upper boundary of broad voluntary uptake, and that closing the gap between the current $27 per-household cost and that threshold is the central financial challenge for expansion.

Key Insights

Since its launch in October of 2023, the food waste pilot has collected approximately 270 tons of food waste, with 112 tons collected during the first year. The current $6.75 per household per week cost, while all-inclusive, would likely generate political resistance if passed directly to residents at the current pilot scale. Volume-based rate reduction (below $6.00 per household per week at 1,000-plus participants) and the development of a dedicated standalone organics collection fee are both under active consideration. Nashville staff have noted interest in modeling the program as a subscription service, which could allow for voluntary opt-in at a defined fee without requiring a universal mandate. A feasibility study is currently underway. However, as Nashville currently has no solid waste management fee separate from property taxes, any shift toward a fee-for-service model, even limited to organics, would represent a structural change in how solid waste services are funded and communicated to residents.

Additional insights are drawn from four surveys that were administered throughout the pilot period:

- A substantial share of Survey 1 respondents reported that their trash cart was noticeably less full since joining the pilot. Multiple respondents reported going from a full cart weekly to one-third or one-quarter full, which is consistent with the diversion rate implied by the tonnage data.
- Across all four surveys, participants consistently reported increased food-waste awareness, reduced over-purchasing, and a reluctance to return to throwing food scraps in the trash. Qualitative responses in Survey 4 include comments such as "Putting food waste in compost bins has definitely become a habit" and "I find it really difficult to throw out food waste into the normal garbage now."
- Survey 1 responses indicate that many participants had some prior exposure to composting (backyard, drop-off, or at work), but the pilot represented their first access to a convenient curbside option. Several respondents explicitly noted that the curbside service replaced drop-off trips they had been making to convenience centers.
- Survey 4 asked what participants would do if the pilot ended. The most common responses were returning to drop-off composting or to putting food scraps in the trash, with only a small number indicating they would pay the private subscription rate of approximately $40 per month for a private food waste hauler to collect the material. When asked about a city-operated fee program at approximately $15 or less per month, the large majority indicated they would continue. The gap between $40 (private market rate) and $15 (stated willingness threshold) frames the subsidy or cost-reduction challenge for a scaled fee-based model.

These survey results corroborate the claim that providing curbside food waste collection can result in meaningful garbage volume reduction. If a meaningful share of expanded program participants reduce their trash set-out rate or cart fill level, there may be a downstream case for adjusting trash collection frequency or cart size at scale, which could partially offset organics program costs. Nashville has not yet quantified this, but the survey data from the pilot suggests the effect is real and consistent.

11.3.2. DURHAM, NORTH CAROLINA

Durham is a mid-sized city in North Carolina with a population of approximately 300,000 and a density of roughly 2,500 residents per square mile. Curbside solid waste collection in Durham is administered entirely by the city of Durham's Solid Waste Management department for four or fewer contiguous units and is funded through the general fund. Residents pay no separate monthly fee for trash and recycling collection, with funding flowing through general operating appropriations. Every-other-week curbside yard waste collection is subscription-based for $90 per year. Durham currently provides weekly curbside trash collection and every-other-week recycling to approximately 84,000 residential units. The food scraps pilot serves 500 of those households on a voluntary enrollment basis within defined pilot geographies. This means that households participating in the pilot were enrolled through an opt-in process. The practical consequence of this approach is that the set-out and participation data reflects a group of self-selected enthusiasts within a diverse neighborhood, which may help provide a more accurate baseline for estimating a citywide participation rate across the general population.

The strategic impetus for the program is traced to a 2016 waste composition study commissioned by the Solid Waste Management department. After sorting waste into categories, the city found that food scraps made up 18 percent of the waste stream, the largest single component, prompting the city to prioritize getting food waste out of its waste stream. Keeping food scraps out of the landfill is seen as both a sustainability and an environmental justice imperative for Durham. Durham's waste is hauled to a landfill that is sited in a historically Black community; neighborhoods northeast of the landfill are 55 percent non-white and 74 percent low-income, and immediately south of the landfill, 75 percent of residents are low-income and 43 percent are non-white.

Program Design and Operations

Durham's food scraps program is a standalone, food-only curbside collection program operated directly by the city using city vehicles, with composting handled by a private company under a contracted processing arrangement at the city's Waste Disposal & Recycling Center. The program does not co-collect yard waste with food scraps. The program has evolved in two distinct curbside phases: Phase One launched in January 2022 with 80 households enrolled in a single neighborhood. Each household received a 35-gallon rollout cart, a stainless-steel countertop container with a lid and filter, and educational materials including a custom decal showing acceptable and unacceptable items. Food scraps were picked up once a week. Phase Two expanded enrollment to 500 total households beginning in August 2023, adding a second nearby but separate neighborhood. (A drop-off component was added to the food scraps program in July 2024.)

Participation in the curbside pilot is provided for voluntarily enrolled households within the defined pilot geography and is provided at no additional cost to customers. Of the 500 enrolled households, the only departures from the pilot have been due to individuals moving out of the service area.

Food scraps collected from curbside households are transported to composting pads located on the grounds of the North Durham Water Reclamation Facility, where a private compost processor blends them with ground yard waste and biosolids from the adjacent treatment plant. The private processor operates two composting facilities in Durham under an 11-year contract with the city dating to May 2018, with a combined permitted capacity of 65,000 tons per year. The finished product is a Class-A, STA-certified compost wholesaled to retailers, landscapers, and farms.

Funding and Cost Structure

Durham has secured multiple competitive state grants to support startup costs associated with the pilot. Solid Waste Management received funding from the North Carolina Department of Environmental Quality (NCDEQ) Division of Environmental Assistance and Customer Service through its 2022 Community Waste Reduction and Recycling Grant to purchase countertop compost bins, outdoor carts, and some on-vehicle equipment for the pilot. The Phase One research partnership with Duke University Center for Advanced Hindsight also contributed staff time for planning, outreach, surveys, and data analysis at no direct cost to the city. NCDEQ awarded Durham $20,000 to pilot the drop-off units, and the Solid Waste Management department matched 20 percent of that grant from its operating budget. Separately, the city of Durham received $20,000 from NCDEQ's Food Waste Reduction Grant program to purchase and install a small vertical compactor to expand food scrap collection.

One small and economical collection vehicle takes six hours each Friday to collect from the 500 pilot households and food scrap drop-off locations, at a cost of around $2.05 per stop counting current driver salary and vehicle operation. This figure covers collection only; it does not include the tipping fee, program administration, capital amortization, or grant match contributions. The city has also published a projection for citywide scale: serving all 84,120 homes currently receiving solid waste services would cost approximately $173,000 per month for curbside collection of food waste alone. For comparison, the drop-off model is substantially more cost efficient on a per-pound basis, although the material capture rate is significantly lower.[1] The city has been transparent about this trade-off in its public communications about the collection program, framing it as a question of service equity and convenience rather than pure cost optimization.

Key Insights

Since the program's launch in 2023, approximately 200 tons of food waste have been collected. No loads have been rejected by the composting contractor, indicating that contamination rates are low. Set-out rates ranged from roughly 20 percent to 70 percent during Phase One, then increased and stabilized in a range of roughly 50 percent to 90 percent as the program matured into Phase Two. Pounds per set-out per week from participating households fluctuated between approximately two and eight, with a general trending average near three to four pounds per household per week.

The city's own assessment is that making food scrap collection convenient, providing clear instructions with rigid contamination controls, and keeping the service free to customers allows the processing contractor to produce high-quality compost it can sell, which in turn keeps contractual costs down. This feedback loop between contamination management, compost quality, and contractor economics is a structurally important feature of Durham's model.

1 Drop-off locations yield approximately 320 pounds of food scraps per collection stop versus roughly 3.5 pounds per curbside stop, making the per-pound collection cost of curbside service substantially higher.

12. APPENDIX E: SAMPLE SCOPE OF WORK

The following sample Scope of Work for Curbside Organics Collection Planning and Implementation is intended to provide communities with a practical framework for planning, implementing, or expanding a residential curbside organics collection program. It may be adapted for use in a request for proposals (RFP) or other procurement process to obtain outside technical assistance or used internally by municipal staff as a planning framework for an in-house program.

The scope is intentionally flexible. Communities may undertake all the tasks described below or select only those that are appropriate to their program's stage of development, existing solid waste system, available staff capacity, and local conditions. A community developing a new program may use the full scope from baseline assessment through pilot design and implementation, while a community with an established pilot or existing organics service may begin with the tasks most relevant to expansion, optimization, or financial planning. Similarly, a pilot is not required in every community; where sufficient information and operational capacity already exist, the program design task may be adapted directly to phased or full-scale implementation.

The scope reflects a central finding of this report: curbside organics should be planned as part of the entire solid waste system, rather than as an isolated new service. Accordingly, the work should consider potential interactions among garbage, recycling, and organics collection; participation and economies of scale; existing contracts and infrastructure; processing access and market conditions; and funding and billing. The objective is not simply to determine how to add organics collection, but to identify how the overall solid waste system can be structured to provide the service efficiently and sustainably.

TASK 1: BASELINE SOLID WASTE SYSTEM ASSESSMENT

Goal: Establish a clear understanding of the community's existing solid waste operations, finances, infrastructure, contracts, and policy environment as the basis for organics program planning.

Methodology:

- Conduct a project kickoff and develop a data and information request.
- Document existing garbage, recycling, yard waste, organics, bulky waste, and other relevant services.
- Inventory customer accounts, collection frequencies, container types, routes, fleet, staffing, and other operational resources.

Review existing hauling, processing, disposal, and related service contracts, including renewal dates and opportunities for amendment or new service integration.

Assess current disposal and diversion tonnage and available waste characterization data.

Evaluate current solid waste program revenues, expenditures, funding sources, billing mechanisms, reserves, and capital needs.

Inventory existing public and private infrastructure that could support organics collection, including vehicles, transfer facilities, yard waste programs, composting facilities, and billing systems.

Review applicable state and local requirements, ordinances, solid waste plans, climate or sustainability plans, and permitting requirements.

- Identify preliminary opportunities to improve the existing system through changes in collection frequency, route design, service bundling, equipment use, contracts, or administration.

Deliverables:

- Existing conditions and baseline assessment memorandum
- Solid waste service and infrastructure inventory
- Contract review and policy summary
- Preliminary opportunities and constraints matrix

TASK 2: PEER PROGRAM AND MARKET ASSESSMENT

Goal: Use experience from comparable communities and local market conditions to inform program design.

Methodology:

- Identify a representative group of peer communities with established or pilot curbside organics programs.
- Compare participation models, service delivery approaches, collection frequencies, material types, customer counts, material capture, and program maturity.
- Evaluate strategies used by peer communities to integrate organics into existing garbage and recycling systems.
- Review approaches to contracts, public versus private service delivery, processing, funding, billing, education, and enforcement.
- Assess regional organics processing options, including facility location, accepted materials, available capacity, transportation requirements, contractual relationships, and market competition.
- Identify potential regional, intergovernmental, nonprofit, institutional, or private-sector partnerships.

Deliverables:

- Peer program comparison matrix
- Best-practices and lessons-learned memorandum
- Processing and market assessment
- Partnership opportunities summary

TASK 3: ORGANICS PROGRAM OR PILOT DESIGN AND COST MODELING

Goal: Develop an operationally feasible organics collection model and clarify its financial implications within the broader solid waste system.

Methodology:

- Define and evaluate potential program configurations, including:
  - food waste only versus combined food and yard waste;
  - public, contracted, franchise, or hybrid service delivery;
  - dedicated organics routes versus integration with existing collection;
  - collection frequency for garbage, recycling, and organics;
  - container sizes and distribution;
  - opt-in, standard, or mandatory participation;
  - processing destinations and acceptable feedstocks; and
  - education, contamination monitoring, and enforcement.
- Identify opportunities for whole-system integration, including changes to garbage or recycling frequency, route optimization, right-sizing of garbage service, use of existing vehicles and crews, or expansion of an existing yard waste program.
- Develop a bottom-up financial model that accounts for relevant collection, processing, container, staffing, administrative, outreach, enforcement, and capital requirements.
- Compare the cost of proposed three-stream service with the existing solid waste system rather than evaluating organics only as a standalone cost.
- Develop alternative implementation scenarios, such as a pilot, phased geographic expansion, or full-scale service.
- Evaluate the sensitivity of program costs to participation, material capture, processing fees, collection frequency, tipping fees, and other major variables.

Deliverables:

- Recommended program or pilot design
- Program design alternatives matrix

- Financial and scenario model
- Whole-system cost and efficiency analysis
- Pilot or phased-expansion plan, as applicable

TASK 4: FUNDING, RATE, AND REVENUE ANALYSIS

Goal: Establish a sustainable mechanism for funding the program and determine how costs should be distributed and collected.

Methodology:

- Determine the full cost of providing proposed solid waste and organics services and identify the revenues currently available to support them.
- Evaluate funding alternatives, which may include a dedicated solid waste fee, enterprise or special-purpose fund, general fund support, franchise revenues, grants, loans, or a combination of sources.
- Evaluate billing mechanisms, including utility billing, property-tax billing, direct hauler billing, or other existing systems.
- Consider whether organics costs should be bundled into the overall solid waste rate or identified separately.
- Evaluate rate structures that may encourage diversion, such as pay-as-you-throw or variable garbage-cart pricing.
- Develop revenue projections under alternative participation and implementation scenarios.
- Assess customer affordability and potential equity implications of proposed funding and rate structures.
- Identify appropriate mechanisms for periodically reviewing rates, revenues, and the cost of service.

Deliverables:

- Funding and billing alternatives analysis
- Cost-of-service and revenue analysis
- Rate structure recommendations
- Customer impact and affordability analysis
- Financial sustainability framework

TASK 5: STAKEHOLDER ENGAGEMENT, EDUCATION, AND COMMUNICATIONS

Goal: Build community understanding and participation while establishing the education and feedback systems necessary for successful implementation.

Methodology:

- Identify key internal and external stakeholders, including residents, elected officials, municipal departments, haulers, processors, property owners, community organizations, and other affected groups.
- Develop an engagement strategy appropriate to the program's planning and implementation stage.
- Establish a process for gathering resident input on program design, participation, convenience, and affordability.
- Develop clear and accessible educational materials addressing acceptable materials, source separation, contamination, collection procedures, and program benefits.
- Provide multilingual and otherwise accessible communications appropriate to the community.
- Establish outreach approaches for pilot recruitment or phased rollout, where applicable.
- Develop customer communications regarding changes to collection schedules, containers, billing, rates, or enforcement.
- Establish ongoing communication and feedback mechanisms beyond the initial program launch.

Deliverables:

- Stakeholder engagement and communications plan
- Public education framework and sample materials
- Resident survey or feedback tools
- Customer communication materials
- Elected-official or governing-body briefing materials

TASK 6: IMPLEMENTATION ROADMAP AND PERFORMANCE MONITORING

Goal: Translate program recommendations into a clear sequence of actions for implementation, expansion, and ongoing improvement.

Methodology:

- Develop an implementation schedule identifying major decisions, dependencies, and milestones.
- Identify anticipated actions related to:
  - procurement or contract amendments;
  - processing agreements;
  - fleet and equipment;
  - container procurement and distribution;
  - route planning;
  - staffing and training;
  - billing-system modifications;
  - public education and outreach;
  - regulatory approvals; and
  - pilot or phased geographic rollout.
- Define roles and responsibilities among municipal departments, contractors, processors, and other partners.
- Establish performance measures for evaluating program effectiveness, including participation, set-out rate, material capture, contamination, tons diverted, cost per household, cost per ton, customer feedback, and other locally appropriate metrics.
- Establish a process and schedule for reviewing performance data and making operational or financial adjustments.
- Identify decision points and criteria for moving from pilot to expansion or from phased implementation to full-scale service.
- Develop recommendations for future program optimization, including opportunities to adjust collection frequency, routes, contracts, rates, processing relationships, education, or enforcement as conditions change.

Deliverables:

- Implementation roadmap and milestone schedule
- Roles and responsibilities matrix
- Performance measurement and monitoring framework
- Pilot evaluation or expansion criteria
- Final recommendations and next-steps memorandum

ENDNOTES

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