

Residential Recycling Infrastructure Analysis

Purpose

This analysis evaluates Hamilton County's existing residential recycling infrastructure to determine how that infrastructure is performing in relation to the goals and needs of R3Source and residents of Hamilton County.

Definitions

Non-Subscription: Residents in these communities do not have to sign up and pay separately for curbside recycling service. They may pay a separate, combined fee for waste and curbside recycling, for example on their water bill, or the community's general fund may pay the expenses of the program. Non-subscription communities include those that contract with the private sector on behalf of residents and those that collect curbside recycling with community staff.

Subscription: Residents subscribe independently for waste and recycling services. Residents in these communities subscribe with the waste hauler of their choice and can also choose to subscribe for recycling services with the same hauler. Residents pay their waste and recycling haulers directly for the services.

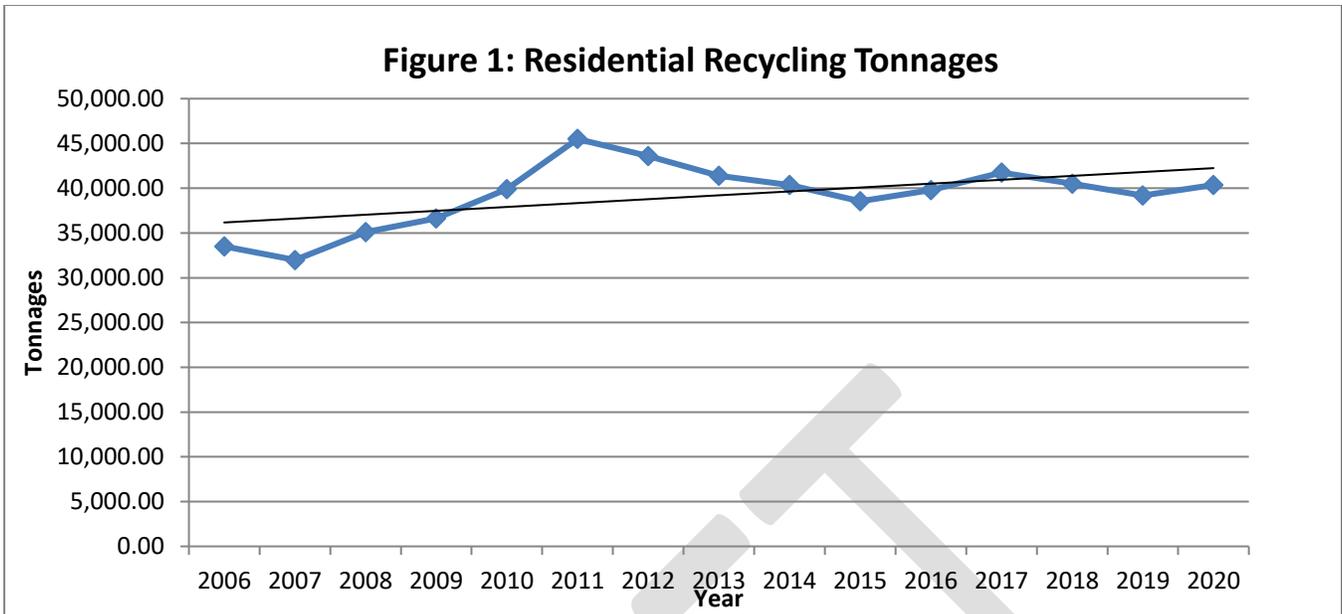
Drop-Off Recycling: A community places one or more drop-off containers in the community to which residents bring their recyclables (often contracted with private sector).

Pay-As-You-Throw: Pay-as-you-throw (PAYT) or volume-based waste programs have residents incur a cost for producing more trash. For example, residents would purchase a sticker per bag of waste or would be provided a small container and pay extra beyond the base service. These communities have high recycling participation (which is no additional cost) and have high recycling rates.

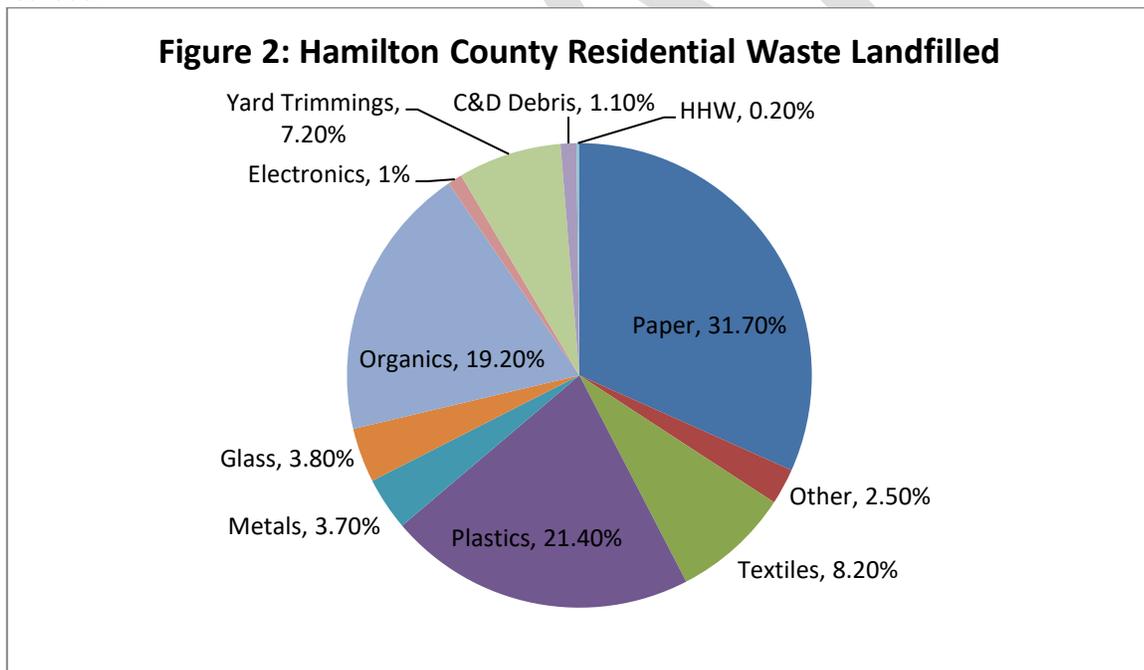
Residential Waste and Recycling Overview

Hamilton County has a strong overall residential recycling infrastructure. Over 98 percent of residents have access to curbside recycling collection, roughly half of the communities offer non-subscription recycling, and there are 57 recycling drop-offs located throughout Hamilton County.

In 2020, Hamilton County residents landfilled 275,585 tons, recycled 41,363 tons, and composted 17,238 tons for a county-wide diversion rate of 17.54 percent. Figure 1 depicts the historical tons recycled by residents of Hamilton County from 2006 to 2020.



In 2018, R3Source conducted a characterization study of residential waste entering Rumpke Sanitary Landfill. Figure 2 shows the breakdown of material entering the landfill from residents. Of this material, 29.2 percent is easily recyclable given the existing recycling infrastructure in Hamilton County and 31.7 percent could be composted by residents using backyard composting methods.¹



¹ See *Hamilton County Waste Composition Study, 2018*. Hamilton County Recycling and Solid Waste District, presented by SCS Engineers (2018).

Residential Recycling in Hamilton County

Forty-eight political subdivisions fall within the Hamilton County R3Source's District and each city, township, or village chooses their community's waste and recycling programs. Since inception, R3Source has not mandated types of waste and recycling programs.

There are three basic recycling programs for traditional commingled recyclables (see Figure 3):

1. Non-Subscription:

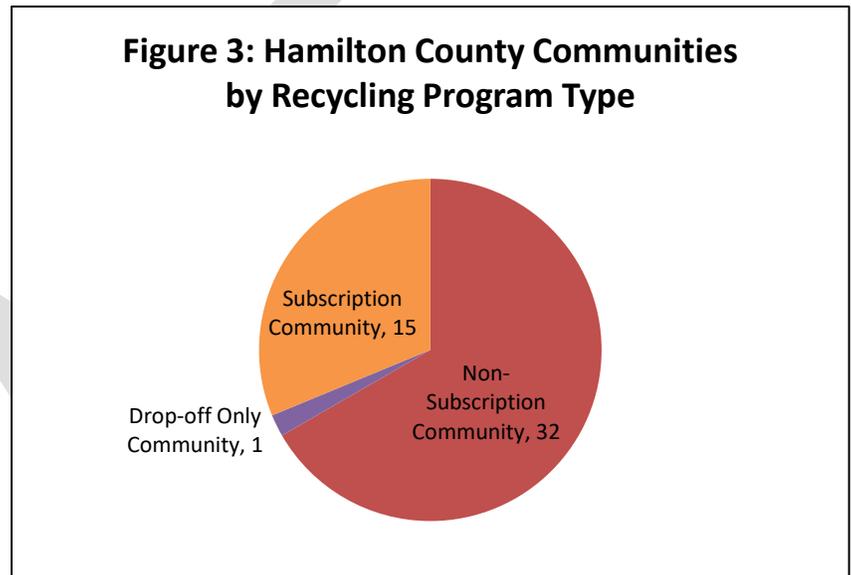
- 32 communities have non-subscription based recycling.
 - 2 self-haul recyclables with community staff.
 - 30 contract with a private hauler.

2. Subscription:

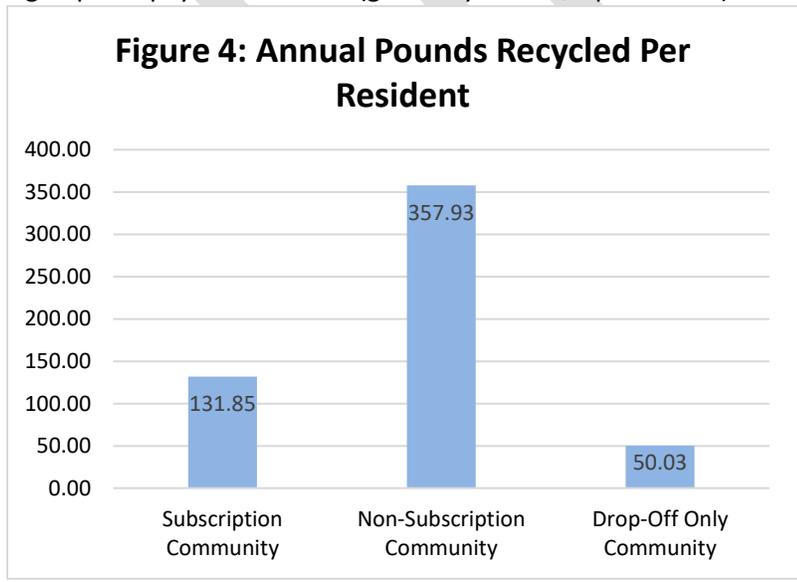
- 15 communities have subscription-based recycling.

3. Drop-Off:

- 1 community offers drop-off recycling with no curbside option.
- 28 communities offer drop-off recycling.
- 57 drop-offs total.



Communities with non-subscription based recycling tend to have higher participation than the communities with subscription-based recycling. The primary barrier in subscription-based recycling programs is that residents must sign up and pay an extra cost (generally about \$4 per month) for recycling collection. Many residents do not



wish to pay the extra cost and choose not to recycle. We have learned through focus groups and conversations with residents that they feel they are doing something good by recycling and do not understand why recycling should cost more. All residents pay for recycling, either in their taxes or by a fee assessed separately, but charging a voluntary, separate fee drastically reduces participation in recycling.

Figure 4 compares the average pounds recycled per resident for subscription, non-subscription, and drop-off only communities in Hamilton County in 2020.

Non-subscription based communities achieve the highest pounds per household, followed by subscription communities, and then communities with drop-off recycling only.

Table 1 compares the 2020 reference year infrastructure with the infrastructure listed in our current approved plan (2014) and the previous plan (2009). The non-subscription based recycling programs have increased with six communities contracting for curbside recycling since 2014. The number of communities hosting recycling drop-off locations has decreased by 4 while the total number of drop-offs in the county has decreased by 7 locations.

Table 1: Residential Recycling Infrastructure 2009 vs. 2014			
	2009	2014	2020
Non-Subscription Curbside Recycling Communities	26	26	32
Subscription Curbside Recycling Communities	16	20	15
Communities with Drop-Off Recycling	22	28	24
Commingled Recycling Drop-Offs	46	64	57

Communities with the following attributes and programs tend to achieve the highest recycling rates:

- Contracting for curbside recycling services or self-hauling recyclables.
- Maintaining PAYT waste programs or some limitation on waste set out.
- Collecting residential yard trimmings for composting instead of landfilling.

One community, the City of Madeira, in Hamilton County has a pay-as-you-throw (PAYT) or volume-based waste program, where residents either purchase a sticker per bag of waste or are provided a small container and pay extra beyond the base service. Madeira has high recycling participation (which is no additional cost) and a high diversion rate. Currently, all residents in communities with curbside recycling have access to carts for recycling.

Figure 5 shows the hierarchy of residential waste and recycling programs based on the programs that result in the highest diversion rates.

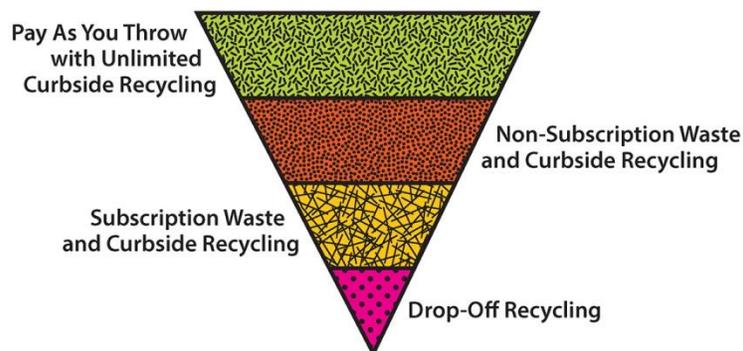


Figure 5: Hierarchy of Residential Recycling Programs

Drop-Off Recycling

Twenty-four of the communities in Hamilton County offer commingled recycling drop-off sites. These drop-offs generally consist of one or more 6-yard recycling containers, clearly labeled for recycling, in a central location such as a community park or government building. These drop-offs accept all of the same materials residents can recycle curbside with the same capacity to commingle materials (no need to separate).

Recycling drop-offs provide an important free recycling option for residents in subscription areas who choose not to pay extra for curbside recycling or who live in multi-family dwellings without access to curbside recycling. They are especially popular in subscription recycling areas. Seven of the fifteen communities with subscription-based recycling have a free recycling drop-off option.

Multi-Family Housing

Most communities offer curbside recycling service to residents living in buildings with four units or fewer. Some communities, such as the City of Cincinnati, work with larger buildings to provide access to recycling; however, the larger buildings are considered commercial properties and thus do not qualify for residential service. A separate analysis will be conducted on multi-family recycling.

Residential Recycling Incentive (RRI)

R3Source’s primary program to improve and maintain residential recycling infrastructure is the Residential Recycling Incentive (RRI) program. R3Source budgets \$700,000 to \$900,000 annually depending on the projected revenue to divide among participating communities. As a community increases its recycling rate, it receives more dollars per ton recycled. Forty-seven of the 48 communities participate regularly.

Table 2: RRI Tier Levels	
Recycling Rate	Approx. RRI Dollars per Ton
Greater than 30%	\$33
25% - 29.99%	\$29
20% - 24.99%	\$25
15% - 19.99%	\$21
10% - 14.99%	\$17
5% - 9.99%	\$13
0% - 4.99%	\$9

Table 2 outlines the tier levels of RRI funds available.

Communities must spend RRI funds on recycling or waste reduction or litter clean up related expenses such as a curbside recycling contract, recycling drop-off costs, community leaf collection, or recycling promotion. This program is analyzed in more detail in the Economic Incentive Analysis.

Target Community Program

R3Source has historically worked with several communities each year to improve recycling infrastructure and participation. This process involves meeting with the community, developing a plan for outreach, and then implementing that plan. These efforts involve significant technical assistance helping to draft bid specifications to improve recycling access and marketing to improve participation in the curbside recycling program.

Materials Collected

The materials collected in curbside and drop-off recycling programs are almost completely dependent on what materials can be accepted at Rumpke’s Material Recovery Facility in St. Bernard. At present that list includes:

- Plastic bottles and jugs
- Plastic tubs and yogurt cups
- Glass bottles and jars
- Aluminum and steel cans
- Paperboard

- Office paper
- Newspapers and magazines
- Phone books
- Paper cartons

Contamination of recyclables is a significant issue and becomes problematic at the material recovery facility. In the second half of 2020, Rumpke Recycling (the dominant recycler of residential recyclables in Hamilton County) reported that 11.80% of the residential recycling stream was not recyclable. Contamination costs recycling processors time and money, can cause significant damage to recycling equipment, and may negatively impact the value of the recyclables.

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Gap Analysis and Solutions

A. Improving Drop-Off Recycling

1. **Add a Drop-Off Recycling Option:** The following communities have subscription-based recycling but no free drop-off recycling option within their community:

- Village of Addyston
- Village of Elmwood Place
- Harrison Township
- Miami Township
- Village of North Bend

Interestingly, all of these communities except Harrison Township also contract for waste collection but not recycling. Access to recycling options could be improved in these communities by placing a recycling drop-off.

- R3Source could work with these communities to make the case for siting a recycling drop-off (cost, RRI revenue, resident need), find a location for the recycling drop-off, and provide complementary signage and help with promotion. R3Source could fund the drop-off for one year.
2. **Improve Drop-Off Signage:** Many communities could benefit from better signage directing residents to the recycling drop-offs since they are not always visible from the road.
 - R3Source currently provides complementary drop-off signage to communities. Staff should continue to promote this service to communities.
 3. **Improve Drop-Off Placement:** Residents may be encouraged to use recycling drop-offs more if the sites were located at popularly visited destinations such as grocery stores and schools. Allowing schools to use the containers might make them amenable to providing the space for a drop off.
 - R3Source could encourage communities to work with schools or grocery stores to site new drop-offs.

B. Improving or Implementing Curbside Recycling

4. **Upgrade from Drop-Off to Curbside:** One community (City of Cheviot) has a community collected curbside trash program and offers recycling drop-offs for recyclables. This community has a densely populated neighborhood and could drastically increase recycling participation and tonnage collected by offering a curbside recycling program. Making recycling as easy as trash collection has proven effective at increasing participation. Cheviot could either contract out the recycling service or develop the infrastructure and staff needed to implement a curbside recycling program themselves.
 - R3Source could offer technical assistance and support through this process.
5. **Upgrade from Subscription to Contract:** Fifteen communities in Hamilton County offer subscription-based recycling, which has lower participation than community-collected or contracted recycling programs. Seven of the 15 communities with subscription-based recycling contract on behalf of their residents for curbside waste service. These communities could include curbside recycling in their next

bidding process and start offering this service to their residents the next time they go out to bid. The other 8 communities that only have subscription service available could improve recycling participation by contracting out both waste and recycling service for their residents.

Contracted Waste and Subscription Recycling

- Village of Addyston
- Village of Arlington Heights
- Village of Cleves
- Village of Elmwood Place
- Miami Township
- Village of North Bend
- City of Reading

Subscription Waste and Recycling

- Anderson Township
- Crosby Township
- Delhi Township
- Green Township
- Harrison Township
- Sycamore Township
- Symmes Township
- Whitewater Township

- R3Source could offer technical assistance and support through this process.

6. Implement Pay-As-You-Throw: Encouraging communities to adopt a volume-based system could increase their recycling rates. Even when the fee is low, residents are more aware of what they throw away and can see a financial gain by throwing away less. PAYT programs also benefit elderly residents and others who generate lower volumes of waste.

- R3Source could offer technical assistance and support through this process.

Other Programs for Improving Curbside Recycling: R3Source could implement a number of programs to encourage communities to improve or implement curbside recycling.

- R3Source could host workshops on contracting out, PAYT, etc.
- R3Source could create sample and easily customizable bid specifications.
- R3Source could encourage consortiums for efficient use of resources.

7. Target Lower Performing Communities. Communities with low recycling rates often lack the internal resources to improve recycling infrastructure in their community. R3Source could choose to work with select communities every year with low recycling rates to improve the available recycling infrastructure. This would align with R3Source's current target community approach.

- R3Source could work with the community to establish goals, assist creating bid specifications, help site a recycling drop-off, or offer other technical assistance as needed.

8. Implement Single Fee for Waste and Recycling. The primary barrier to recycling for residents in subscription areas is choosing to pay the extra cost of curbside recycling. If all haulers agreed to offer recycling at no additional charge (combining the cost of recycling and waste into one figure), then residents would have access to recycling at no apparent extra cost. This would maintain the subscription-based service but make recycling a standard service. Warren County implemented a similar program and communities with subscription-based recycling now achieve the same recycling rates as non-subscription communities.

- R3Source could work with subscription recycling communities and waste haulers to develop a county-wide policy.

C. Modifying the RRI Program to Encourage Program Improvement.

9. Since 2007, the RRI program has used a recycling rate tier system to award communities a dollar-per-ton incentive for recycling. The RRI program could be modified to encourage communities to adopt a program that would create more diversion. The RRI program could also be modified to create a minimum threshold tier that would allow the lowest performing communities to have enough funds to implement changes to their programs. R3Source is scheduling meetings with communities to discuss changes to the RRI program. A separate, detailed analysis on the RRI program will be available in Economic Incentive Analysis.

Conclusions

Although R3Source has a strong existing residential recycling infrastructure, Hamilton County has not realized the full potential waste diversion from the residential sector. Of the waste residents currently landfill, about 30% can still be diverted for recycling given the local outlets available. This analysis identified the areas of infrastructure improvement that could work to increase recycling participation and diversion.

The primary focus of the suggestions for infrastructure improvement involves making recycling more accessible and attractive to residents of Hamilton County. R3Source knows which types of residential programs yield the best results, so these suggestions work to upgrade communities into higher performing recycling programs. Some suggestions could easily be implemented immediately, whereas others would require more funding, staff resources, and policy changes.

Table 3 summarizes the narrative discussion presented in this appendix.

Table 3. Summary of Potential R3Source Actions to Address Identified Gaps			
	Infrastructure Improvement Suggestions	Gap Addressed	R3Source Program
1	Add recycling drop-off	No free recycling option in 15 communities	Technical assistance and funding
2	Improve drop-off signage	Residents unaware of drop-off location	Technical assistance and complimentary signage
3	Improve drop-off placement	Residents not using inconvenient drop-offs	Technical assistance
4	Upgrade from drop-off to curbside	Lower participation for drop-off only	Technical assistance
5	Upgrade from subscription to contract	Lower participation in subscription communities	Workshops
6	Implement PAYT	Potential for decreasing waste landfilled	Sample bid specs
7	Target communities	Communities often lack internal resources to improve infrastructure	Consortiums
8	Incorporate single fee for waste and recycling	Lower participation in subscription communities	RRI modifications
9	Modify RRI to upgrade community recycling program	Lack of incentive to change recycling program	Work with 2 target communities every year
			Work with subscription communities and haulers to develop policy.
			Change tiers to program type
			Change tiers to per capita
			Include organics
			Include reuse

Questions for Policy Committee

- Do you agree that Hamilton County has a strong residential recycling infrastructure?
- What are your priorities?
- Are there programs you would like staff to investigate further?
- Would the Policy Committee rather staff focus on infrastructure improvement or recycling promotion?

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