Tiered Sanitation Rates: Inspiring Waste Reduction and Equitable Funding for Shared Systems



FERNDALE







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Contacts & Acknowledgements

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Special thanks to all those who provided data, insights, expertise, and feedback over the course of this 10 week project. A full list of project contributors can be found in Appendix D.



Table of Contents

Project Overview & Background	4
Ferndale, Michigan's Shared Compactor System	6
Outlining Methods and Scope of Work	7
Data Analysis	8
Key Takeaways from Stakeholder Groups	10
Recommendations	11
Business Outreach & Communication	
Improving Diversion & Reducing Waste	
Focus on Food Waste	
Tiered Rate Structure	
Program Evaluation & Data Tracking	
Conclusion	13
Appendices	14
Appendix A: Considering Benefits & Challenges of Shared Areas for Materia	Is Collection
Appendix B: Summary of Programs Researched	
Appendix C: Initial Outreach Survey & Descriptions of Added Services	
Appendix D: Acknowledgement of Contributors	



Project Overview

The purpose of this project was to provide support to the City of Ferndale in fulfilling the recommendation of their 2020 Downtown Waste Reduction and Recycling Plan to implement tiered sanitation rates for their central business district (CBD). This involved three primary work flows: 1) data collection and analysis of current system funding, 2) outreach to communities already using various tiered rate structures, and 3) communication with Ferndale city officials and business stakeholders. The methods used here will be broadly applicable to the kinds of data gathering and outreach necessary for any community looking to implement a similar funding structure and will also inform those assessing whether shared material collection areas could positively impact their community.

As a result of this project, Ferndale has also been provided with the following resources in addition to this document:

- A functional spreadsheet tracking monthly costs associated with providing services in the downtown area from mid-2020 through June 2023 for continued use.
- A tracking and monitoring spreadsheet of key fob entry data from mid-2021 through May 2023 for continued use.
- Specific survey feedback from in person interviews conducted with employees in Ferndale's downtown.
- Summaries of all other interviews conducted.



Background

As of 2018 the Environmental Protection Agency (EPA) reported that in the United States 146.2 million tons of municipal solid waste (MSW) were sent to landfill. It is important to note that MSW calculations do not include all types of waste and that materials from the construction and demolition industry accounted for an additional 600 million tons sent to landfill nationally in 2018.¹ Michigan's ecosystem for materials recovery is growing, and communities are increasingly becoming aware of the importance of waste reduction.

Landfills charge based on the weight of materials disposed. This per ton cost is referred to as the landfill's tipping fee. The more material you send to landfill, the higher the cost of service and tipping fees.

Informally, consumer sanitation rates are already designed to cover services whether you are working with a private hauler or if municipalities are managing their own hauling. As costs of disposal and service increase however, more communities across the U.S. are implementing formal Pay-As-You-Throw (PAYT)² or tiered rate funding structures with the dual purpose of incentivizing landfill waste reduction and equitably distributing operational costs. A large restaurant's



Photo 1: in 2022 Ferndale's Dot Compactor (seen above) sent 276 tons (over 550,000 pounds) of material to landfill.

waste streams look very different than those of a tax preparation business.

The bulk of this report will discuss how to assess an existing shared collection system's funding structure and determine its highest generators of waste to implement a tiered rate structure. A summary of other funding structures and programs that informed this report are also included in Appendix B.

If your community is considering implementing a centralized material collection area, these resources may help you identify relevant stakeholders and think through what funding structure fits best for your community. Appendix A further discusses the potential benefits and challenges of centralizing your downtown material collection for communities considering this avenue.

materials#:~:text=The%20total%20generation%20of%20municipal,25%20million%20tons%20were%20composted.

² PAYT Programs charge customers (by volume, frequency or a combination of both) each time trash is disposed to landfill. This can be implemented in shared commercial compactor systems (Roanoke, Virginia), throughout entire cities (Grand Rapids, Michigan), or even at the county level (Emmet County, Michigan). This requires a level of technology not currently present in Ferndale and therefore tiered rates are being considered as a preliminary step.



¹ United States Environmental Protection Agency. National Overview: Facts and Figures on Materials, Wastes and Recycling. Retrieved July 12, 2023, from <u>https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-</u>

Ferndale's current shared compactor system

Ferndale, MI has a population of around 20,000 within its four square mile city limit. Like many communities, Ferndale has centralized waste and recycling collection sites in its central business district. There are four sites strategically located around the area most densely populated by commercial establishments.



Ferndale DDA Parcel Map (2022)

Source: Ferndale Finance Department & Oakland County

This system in Ferndale is currently funded through property taxes and Special Assessment Rates which are both paid per tax parcel. A portion of these taxes flows into the Department of Public Works' (DPW) Sanitation Fund. Ferndale is a part of the Southeastern Oakland County Resource Recovery Authority (SOCRRA), a municipal corporation comprised of 12 different Oakland County communities. SOCRRA manages Ferndale's contract with their hauler, Car Trucking, though there are direct and open lines of communication between Ferndale DPW and Car Trucking's staff.



Methods and Scope of Work

A variety of data could be used to inform the tier making process. In Ferndale, one of the compactors has a key fob installed. This means that we had a record of each time a business entered the room to dispose of waste. For our analysis we used this as a proxy for volume generated. Key fob systems, cart tippers (which can also measure the weight of material disposed), or waste audits could all be used to assess use of the system (by frequency or volume). Lawrence, Kansas also factored in square footage and occupancy rates of businesses into their tier formation.

Understanding operational costs and funding sources are also key, as well as gathering current feedback from the active participants in your CBD. Listed below is the basic assessment process with Ferndale specific data sources in parentheses.





Data Analysis

Major Questions

- What business types are generating the most waste?
- Where are tiered rate systems already working well? •
- What is the current experience of the recycling/compactor areas for employees and • businesses?
- Is the current funding structure providing adequate resources to maintain necessary services?

Key Fob Data

Key fob data has been tracked since 2021 when the system was installed. 2022 data was examined as the only full calendar year of data. All businesses that used the system for more than six months of the year were included in the analysis. In Ferndale's case frequency of system use serves as a proxy for volume of waste generated. This could change with added technology or tracking strategies.

Existing Programs

For an overview of the programs studied, see Appendix B.

Commonly private haulers charge a monthly rate based on the size of container a business needs and the frequency of pickup. This is, in Figure 1: Results of analyzing 2022 key fob data shown by business type. essence, a tiered rate. Larger companies like

Opens by Business Type (6 months or more of use) Source: DOT Compactor Key Fob Data Rar/Café (5) 22% Restaurant (6) 59% Grocery (1) 10% Salon/Personal Care (6) 5% Retail (4) 3% Office (1) 0% Other (1) 1%

WM, Ann Arbor's waste hauler, will "right size" services after an initial period, meaning that if you need more or less service after three months they will suggest an adjustment.

Cities that serve as their own hauler have PAYT programs or hybrid programs with a base rate, plus a per tip rate. Grand Rapids' award winning program uses radio frequency identified (RFID) carts for their PAYT system for both residential and commercial customers.³

In Ferndale's current structure, rates for businesses who use the compactors are no longer tied in any way to the amount of waste they generate. The yearly Special Assessment Rate for Ferndale is based on the cost of servicing one two yard dumpster once per week. Outside of the

³ Harger, Jim. "Grand Rapids' 'Pay-As-You-Throw' trash and recycling program wins 'Green Award'". https://www.mlive.com/business/west-michigan/2013/05/grand_rapids_pay-as-you-throw.html. May 24, 2013.



compactor areas, businesses who need extra volume or frequency of pickup contract with Car Trucking or an outside hauler to provide those added services. If a business is using the shared compactor area, the amount of waste they generate is not currently tracked.

Both Ypsilanti, Michigan and Lawrence, Kansas, which were the two cities whose tiered rates most closely resembled what could be implemented in Ferndale with current technology, have restaurants in the top tiers of their systems. This aligned with what we found in the key fob data.

SOCRRA & Car Trucking Data

Invoice data from Car Trucking, SOCRRA, and DPW from mid-2020 through June 2023 was input to a spreadsheet. This allowed for the costs of different services (cardboard, individual compactor pickups, special cleanups, etc.) to be examined.

One key takeaway from this analysis was that services from 2020-2022 saw almost zero (0.1%) cost increases, while the cost of services from 2022-2023 increased an average of 7.6%.

This spreadsheet will continue to be used by Ferndale's staff to monitor changes in costs and services being provided.

SOCRRA also provided data on how much material (reported in pounds) was sent to landfill per compactor from 2020 through May 2023.

Percent Change ($\% \Delta$) in price per Service		
	%Δ	%Δ
Line Item	20-22	22-23
West Troy Compactor	0.1%	4.3%
Withington Compactor	0.1%	4.3%
East Troy Compactor	0.1%	4.3%
Vester Compactor	0.1%	4.3%
Cardboard Cleanup	0.0%	10.0%
Cardboard Route	0.0%	10.0%
2 yd 3 x week	0.0%	4.3%
2 yd 1 x week	0.1%	4.3%
Special Cleanup	0.0%	22.2%
Average % Δ	0.1%	7.6%

Table 2: Rates for individual services significantly increased from 2022-2023.

This data will be helpful to track as Ferndale makes goals around waste reduction and diversion.

Funding Data

The shared compactor areas in Ferndale's downtown are funded through the DPW Sanitation Fund. As stated above, the properties in the DDA are paying into the Sanitation Fund through Special Assessment Rates and property taxes. In 2022, there was a \$7,000 funding gap between the funding provided to the Sanitation Fund by DDA parcels and the costs of operating the shared systems. As service costs continue to increase, Ferndale will be making decisions on how to close the funding gap. A tiered system is one clear way to distribute costs proportionally to waste generation.



Business & Employee Survey

Thirteen individual workers were informally surveyed at businesses in the area served by the two highest volume compactors in Ferndale. The full survey text can be found in Appendix C. When asked to rate the compactor areas on a scale of 1-5, five being "no changes needed to the system," only one person responded that no changes were needed (they also stated that they did not use the compactor system). Most cited opportunities for improvement were cleanliness and improved recycling solutions. Another resource included in this survey is a list of potential added services.

This was only a start to the large amount of continued outreach and relationship building needed before any tiered rates go into effect. The DDA has strong leadership at this time, despite being in a period of transition, and Ferndale's Zero Waste Coordinator plans to work closely with the DDA in further outreach efforts.

Key Takeaways from Stakeholder Groups

Planning for material recovery & disposal

One theme that continued to come up in conversation during interviews was the necessity of effective planning for waste management and reduction, especially for multi-family or large-scale developments. Communities looking to increase housing density or implement shared systems should work with their local planning and building departments, architects/developers, fire departments, and haulers to ensure that the volume of materials needing to be recycled or landfilled generated by development can be safely and adequately serviced.

Cautionary tale shared during a stakeholder interview: a multi-family townhouse style development was planned with parking and a disposal room for trash and recycling below ground. After the buildings were built, the fire department came to inspect the properties and they found that the enclosed spaces for trash and recycling were not sufficiently safe. There was no accessible space for the hauler to place or pick up dumpsters in the surrounding alleys or anywhere outside the structures. To this stakeholder's knowledge this issue has yet to be resolved. This was not the only specific instance of a similar issue being mentioned.

City Structures

Downtown Development Authority (DDA) or other similar organization

Ferndale and many communities have an active DDA, or some form of Main Street, downtown or economic development organization. While the roles that these organizations play can vary, at a minimum all will be connected to local business leaders and organizations. In Roanoke, Virginia and Ypsilanti, Michigan, the DDAs directly manage shared refuse and/or recycling areas. In any



scenario DDAs and similar organizations are important partners for business outreach, communication, feedback, and education.

Best practice: Tina Workman, the President of Downtown Roanoke Inc., began implementing shared compactor areas for MSW and recycling in Roanoke, Virginia's downtown nearly 10 years ago. Recycling was free to businesses, while landfill waste used a PAYT model. One key element of implementation in her community was staffing each compactor area (through a combination of DPW, DDA and other City employees) nearly round the clock during the initial week of implementation to ensure real time feedback and assistance. **A pre and post assessment of Roanoke's program saw increases of over 565% in recycling and a reduction of landfill waste volume by 55.5%.**

Financial Structures

For tiered rate systems in commercial districts, utility style rates charged monthly or quarterly are more commonly used than biannual or annual taxes. This more closely mirrors the structure of how individual businesses pay for refuse and recycling services independently, but maintains lower costs. Ferndale's Finance Department reinforced this practice, pointing out that payments made via tax parcel are not flexible enough to accommodate the turnover commonly seen in commercial spaces. With tax funding, there is also a series of potential disconnects between property owners and businesses leasing space and then further between business owners and their employees who are primarily dealing with businesses' waste.

This is not to say that property taxes and Special Assessment Rates should be eliminated from shared area funding. Every taxpayer, resident, landowner, and visitor to the community experiences the benefits of a shared compactor system.

Recommendations

Business Outreach & Communication

More communication is needed to the business community in order to successfully implement tiered rates based on waste generation. Ferndale's DDA has two current board members who supported this project, in addition to the interim Executive Director, Sommer Realy, who plans to work closely with the Zero Waste Program Coordinator to provide relationship building support.

Support and education should be provided to businesses who want to divert more waste through recycling. As referenced in the survey results, many employees would like to see recycling services increased and all areas better cared for by everyone using the system.



Improving Diversion & Reducing Waste

Support for businesses could come from Ferndale staff, but another option is entering into a contract with <u>Green Living Science</u> (GLS). GLS is a local recycling and waste reduction education non-profit with a proven track record of working with businesses of all types and sizes to evaluate their waste streams and train employees to reduce waste.

Focus on Food Waste

Ferndale is lucky to have excellent support for sustainability initiatives across stakeholder groups. Three of their formalized planning documents contain recommendations for waste reduction and specifically cite food waste as an area of opportunity.⁴

In a pre-pandemic analysis of Ferndale's downtown waste streams, Resource Recycling Systems (RRS) found that around 40% of material sent to landfill from the downtown was food waste.⁵ This is not only relevant because of the potential for diversion, but also because food waste and organic materials are typically far heavier (due mostly to their high water content) than other common materials heading for landfill from the CBD. This means that not only are restaurants and food establishments producing the highest volume of waste, their waste also weighs proportionally more for the same volume disposed. Diverting these valuable materials from landfill has myriad benefits and EGLE's website has a large section of resources devoted to managing organic waste streams which you can find <u>here</u>.

There is currently momentum in Ferndale on the subject of composting because of a pilot program spearheaded by Claire Dion, Ferndale's Zero Waste Program Coordinator. Four downtown businesses participated in this program (along with 400+ residential participants), and evaluation is ongoing. Business feedback from the pilot can be used to inform wider efforts in the future.

Tiered Rate Structure

Ferndale is in a unique situation because of its size, private hauler, and its membership in SOCRRA. Ferndale has no intention of leaving SOCRRA or changing to a different hauler, and it is therefore unlikely that Ferndale could implement a PAYT program without buy in from those entities. Tiered rates are therefore the best choice at this time. With current technology and data, one or two tiers for food services businesses could be introduced. Restaurants and grocery stores could form the highest generator tier, while bars and cafes could form the second highest.

In order to collect as much data as possible to inform any future system, key fob access should be a low barrier to entry for all business types. Foregrounding education on waste reduction in this process is important because it gives businesses the opportunity to understand how to reduce waste.

⁵ Ferndale Downtown Waste Reduction & Recycling Master Plan (2020)



⁴ These reports are the Downtown Waste Reduction and Recycling Master Plan (2020), Greenhouse Gas Emissions Inventory Report (2021), and Climate Action Plan (2022). All of these reports can be found on <u>Plan Ferndale's</u> <u>website</u>.

Continue to Consider Special Assessment Rate changes

In 2020, the Downtown Waste Reduction and Recycling Management Plan advocated for increasing special assessment rates to improve base funding for Ferndale's downtown sanitation system. This supports city goals at a larger scale and does reflect the fact that all Ferndale residents, landowners, and stakeholders benefit from these centralized waste collection systems.

Program Evaluation & Data Tracking

Communities need to consistently evaluate what they measure to ensure effective program evaluation. Over the course of this initial project, we took all the data we could get. However, Ferndale may decide in the future to measure different variables in different ways. Measuring weight disposed or moving toward a PAYT program may eventually make more sense for Ferndale if SOCRRA or Car Trucking moves toward that model. If Green Living Science is contracted and institutes a highly successful education program, waste reduction or diversion through recycling could significantly reduce system costs. If composting services become more readily available through SOCRRA communities' collective action, shifting focus to implementing that system would be critical.

As of now, Ferndale plans to track the following types of data:

- Key fob data
- SOCRRA & Car Trucking Invoices
- DPW maintenance investments

Conclusion

A successful shared material recovery area takes careful planning and continued evaluation. In order to fund these sites equitably, the cost to participate should be tied to waste generation in some way. Tiered rate structures in Ferndale's ecosystem will help set the stage for larger scale system improvements while continuing to improve services. Communities considering setting up shared recycling and waste collection services should take into account the wealth of resources and programs successfully running and learn from their expertise.



Appendix A: Potential Benefits & Challenges of Centralized Material Collection Areas

To ensure an equitably funded shared collection system, some part of funding for the system should be tied to waste generation. This can take many forms including PAYT, tiered rate systems or some combination of the two.

Planning for an effective system will include the stakeholders listed in this report and should be informed particularly by the prospective hauling and maintenance organization. Physical planning for these areas is critically important to effective operations.

Benefits of centralizing collection:

- Compactors reduce the overall number of dumpsters and carts needed in public areas and reduce pickup frequency
 - This is what helps reduce overall system costs
- Ability to reclaim alleyways or other areas for outdoor seating, gathering spaces, or other positive community resources
- Reduction of pest activity in spaces where refuse & recycling containers are removed
- Maintenance and communications efforts are also centralized

Challenges:

- Difficulty holding individual members of the system accountable when contamination or other issues arise
- Altered level of investment needed in education and management of the system
- Potential for inequity if rates are not tied to waste generation
- Illegal dumping and contamination if containers are not enclosed or locked



Appendix B: Summary of Programs Researched

This list of programs is non-exhaustive and pricing structures vary.

If you are looking to implement a PAYT or tiered rate structure, look for a location with similar size and program management structure to your community to begin your research.

Location	Current Population	Pricing structure	Program management	Website or resources
Ann Arbor, Michigan	122,904	Hybrid PAYT	Private hauler (WM)	Commercial Rates
Austin, Texas	966,292	Hybrid PAYT	Austin Resource Recovery	<u>City Service Rates</u> Private haulers also allowed
Detroit, Michigan	621,193	Hybrid PAYT	Detroit DPW	Information provided by Madison Kraus, Recycling Coordinator
Emmet County, Michigan	34,538	PAYT (per bag)	County & Haulers (3)	<u>Solid Waste Ordinance</u> <u>Overview</u> <u>Rate Information</u>
Grand Rapids, Michigan	195,911	Hybrid PAYT	City Public Works Dept.	Information provided through Bob Swain, DPW
Lawrence, Kansas	95,905	Tiered Rate	City of Lawrence	Shared Area Tiers
Roanoke, Virginia	99,261	ΡΑΥΤ	Downtown Roanoke	Overall System Information
Ypsilanti, Michigan	19,634	Tiered Rate	DDA	Information provided by Elize Jekabson, DDA



Appendix C: Initial Outreach Survey & Descriptions of Added Services

City Of Ferndale

information@ferndalemi.gov 300 East Nine Mile Road, Ferndale, MI, 48220, US 248-546-2525







How w	rould you describe your business (please choose one of the options below)? igstarrow
O Ba	r/Cafe: somewhere people gather to drink or eat without a full kitchen or food eparation service
	estaurant: full kitchen, meals served and prepared in house
O ^{Gr}	ocery: store where customers purchase majority food items
O Re	tail: store where customers purchase majority non-food items
O ^{Sa}	lon/Barber: services are provided to customers
O Me	edical: services are provided to patients
	fice: place of work where most of the waste generated is paper-based
0	
lf othe	r, please explain the main role of your business below:
What a	are the top two types of waste your business generates? *
🔲 Re	ecyclable plastics
□ Fo	od scraps/post-consumer or "leftover" food waste



Aluminum cans	
Cardboard	
Office paper	
Landfill waste: non-food items	and anything not able to be recycled
What is your opinion of the curr of 1 to 5: 1= Needs serious imp	ent shared compactor/recycling areas in Ferndale? On a scale ovements 5= needs no improvements *
O 1	O ²
O ³	O ⁴
O ⁵	

Do you have any further comments about your experience of the system or something that would improve these areas from your perspective? *



Below you will find a list of potential added services for the compactor areas.

Added Services:

Additional Key Fob Systems: Currently only one of the compactor areas has a key fob system. Adding other key fob systems will allow for better data collection on how much the compactor sites are being used and by which businesses.

Cart Tipper: these are attached to dumpsters or compactors to perform the labor of lifting and tipping an entire trash cart. An added benefit of some cart tippers is that they can weigh the waste that is being disposed of which means more data. A compactor with attached cart tipper in action is shown below:



Employee Education: resources or in person training sessions to clear up recycling questions and best practices or address issues in the shared compactor areas.

Additional Recycling Solutions: alternative solutions for cardboard or recycling collection i.e. more or larger carts, increased pickups.

Adding to enclosure infrastructure: adding enclosures would increase safety, cleanliness, and control of the areas. Additional enclosures could also provide more spaces for our <u>Downtown</u> <u>Ferndale Mural Program</u>.



In your opinion, which one of these services would improve the shared experience of the compactor areas most?
O Additional Key Fob Systems
O Cart Tipper
C Employee Education
O Additional Recycling Solutions
O Adding to enclosure infrastructure
Please explain or expand on your choice:
Cubrait
Submit



Appendix D:

Many thanks to the following individuals and their organizations for contributing valuable information, insights, and expertise to this project:

Ferndale-specific Stakeholders

All employees in the CBD who took time out of their day to speak with me and share their experiences, or who later filled out the online survey.

Claire Dion, Zero Waste Program Coordinator Dan Antosik, DPW Director Jeff McKeen, SOCRRA Philip Whitfield, Michelle Townsend & Rich Tschirhart, Finance Department Sarah Brown & Omar George, Ferndale DDA Board Scott Worthington & Emily Loomis, Buildings Department Shanon Rupkus, Car Trucking Sommer Realy, DDA Interim Director

Outside Ferndale

Bob Swain, Public Works Manager, Grand Rapids Elize Jekabson, Ypsilanti DDA Logan Applebee, Green Living Science Madison Kraus, Recycling Coordinator, Detroit Sarah Mason, Resource Recovery Manager, Ann Arbor Timothy Colbeck, Main Street Oakland County Tina Workman, Downtown Roanoke Inc.

Graham Sustainability Institute

Sarah Lee, Fatimah Bolhassan, Alex Haddad, Sarah Mills, Jean Sadler, Upasana Roy & fellow Fellows.

This project would not exist without the recommendation to consider a tiered rate structure from Ferndale's 2020 Downtown Waste Reduction and Recycling Master Plan, prepared by Resource Recycling Systems (RRS).

