



From 1872 to 1932, trash removal in Worcester was the responsibility of over 8,000 pigs eating 10 tons of trash per day at the nation's largest municipal piggery. Smell complaints ultimately forced the city to shut down the piggery and build an incinerator. Since then, population increases and changing consumption habits have led to more garbage and different disposal challenges, but the citizenry is still complaining about rubbish. This brief will examine Worcester's current trash and recycling programs and analyze the alternatives to a pigsty.

Trash

Prior to 1993, municipal trash collection in the City of Worcester was funded entirely through property tax levy. But that year, Worcester adopted the Pay As You Throw (PAYT) model that partially funded trash collection through a fee residents pay for City-distributed yellow trash bags. The fee was designed to cover 50 percent of program expenses. During weekly trash pick-ups, the City only collects garbage placed in the yellow bags. Large 30-gallon bags cost \$1.50 each, while small 15-gallon bags cost \$0.75 each. For bulk items, such as couches, tables, and appliances, residents make an appointment at the Residential Drop-Off Center, or pay an additional fee to have bulk items picked up curbside by Casella Waste Systems. Commercial businesses and residential complexes over six units are not eligible for curbside pickup and must secure private trash disposal.

While the PAYT model offers a fair-minded user-fee based approach, it has its critics. Some argue that trash pickup is a core function of municipal government and therefore should be covered by local taxes. The high cost and low count of a sleeve of City trash bags relative to standard trash bags necessitates more frequent restocking in most households. Others see the PAYT model as an incentive for illegal dumping as scofflaws seek to avoid the bag fee. Statistics from the Keep Worcester Clean (KWC) program, an effort coordinated by the City to address litter and related problems like abandoned vehicles, show significant violations of Worcester's trash regulations (see Table 2). Canal District and Chandler Street business groups have even paid for public trash barrels to avoid street litter, although this is expensive for private interests and can cause problems as nearby residents inappropriately use the bins to dispose of household waste for free.

Worcester spent 0.74 percent of its total budget on sanitation in 2017, a low proportion compared to other large New England cities. Boston, the largest non-

Table 1: Selected Municipal Waste Disposal Figures in Worcester, 2017

Trash Collected	21,770 tons
Recycling Collected	10,218.66 tons
Scrap Metal (Includes curbside pick-up and drop-off)	129.15 tons
E-Waste (Majority of e-waste is television and computer monitors)	77.57 tons
Number of Garbage Bags Sold	
<i>Large</i>	1.4 million
<i>Small</i>	1.65 million

Source: Worcester DPW

Table 2: Keep Worcester Clean Figures, 2017

Bags of Litter and Debris Picked Up	2,200
Tons of Trash Removed	235
Non-Conforming (non-yellow) Garbage Bags	3,486
Citations for Dumping, Overflowing Containers and Failure to Maintain Property / Total Fines Assessed	218 / \$41,525

Source: Worcester DPW

PAYT program in the state, spent around 1.31 percent of its budget on waste reduction in 2017, while Fall River, the second-largest PAYT program after Worcester, spent 2.26 percent in 2017, with other comparable cities often spending between 1 and 2 percent of their budget on trash and recycling. Worcester also produces less trash, per capita, than many cities in Massachusetts. While cities report these rates differently, the average Worcester household generated around .42 tons of solid waste in 2017, about the same as the .41 tons the City reported in 2009.

In 2017, yellow bag sales provided 45 percent of the sanitation and recycling budget, according to a DPW report to City Council. The fee per bag has been raised twice since 1993, most recently in 2007, and the DPW estimates that a 25 cent increase per bag would allow the program to cover 52 percent of budget costs, in line with the original goal of 50 percent self-funding. Worcester’s yellow bags have a lower price per gallon than more than 70 percent of other PAYT bag communities.

Worcester is one of 136 municipalities in the state that uses a PAYT model, according to a Massachusetts Department of Environmental Protection survey from 2017, but one of only three out of the top 15 trash and recycling programs in terms of households served,

along with Brockton and Fall River. PAYT (or Save Money and Reduce Trash—SMART) programs are used as at least one revenue stream in around 36 percent of Massachusetts communities. Around 75 percent, including Worcester, use property tax revenue as one of their funding sources, 28 percent levy an annual trash fee, and 11 percent use an access or per-visit fee. Worcester is also typical in using a bag model—only 38 percent of cities and towns in the state provide carts for trash disposal, with the remaining 62 percent providing bags, like Worcester, or some other method.

Map 1: Sanitation Collection Schedule

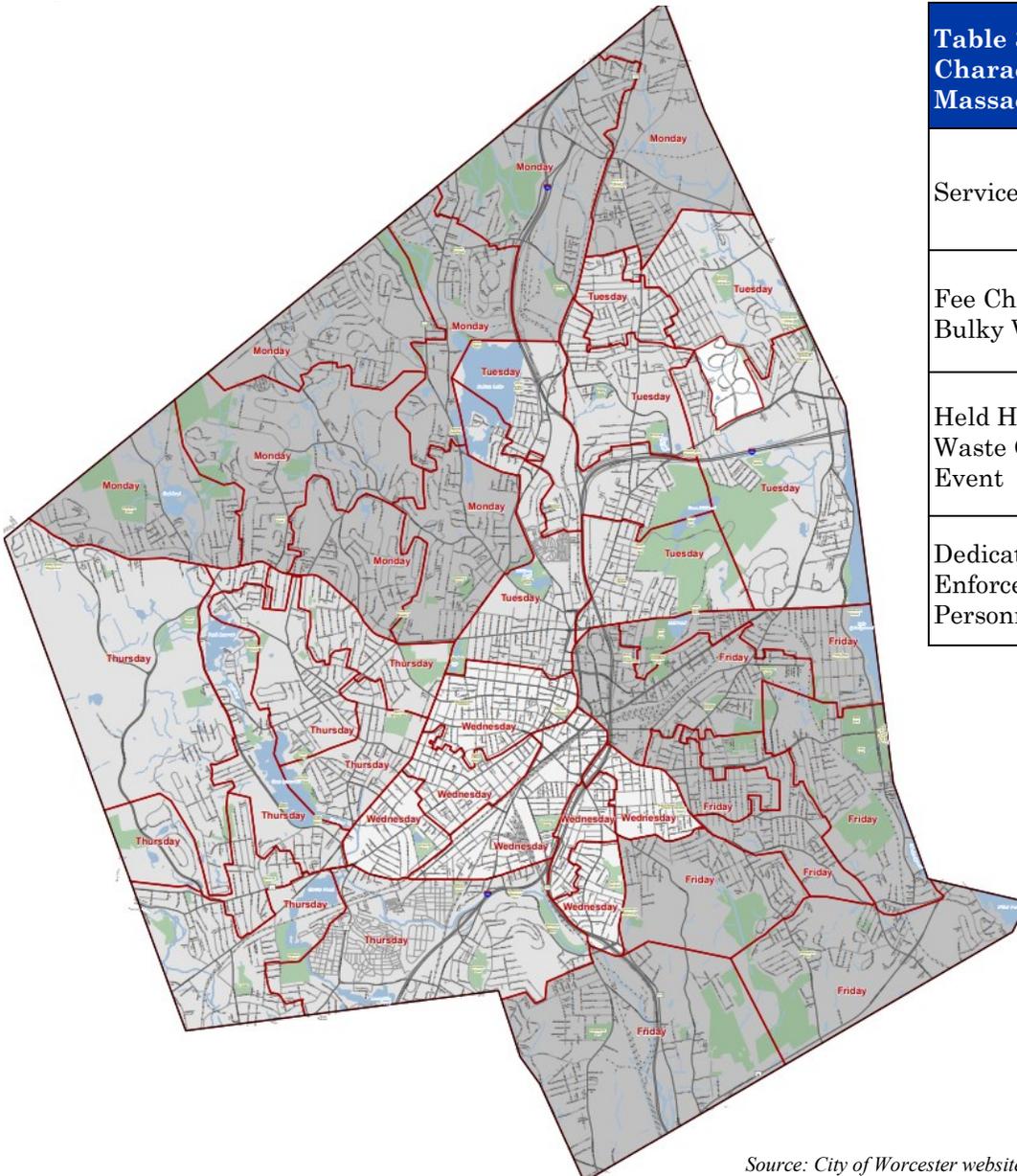


Table 3: Selected Trash Pickup Characteristics for Massachusetts Municipalities	
Service Type	31% Curbside 36% Drop-off 10% Both
Fee Charged for Bulky Waste	55% Yes 15% No 30% No Response
Held Hazardous Waste Collection Event	44% Yes 37% No 19% No Response
Dedicated Trash Enforcement Personnel	4% Yes 6% No 90% No Response

Source: Massachusetts Department of Environmental Protection

Source: City of Worcester website

Recycling

Worcester’s recycling rate, measuring the tonnage of weighed recycling against the tonnage of weighed trash, is around 32 percent, according to the DPW. While communities report recycling rates differently, this rate is high for an urban area, and is around the national average of 34 percent as reported by the U.S. Environmental Protection Agency in 2015.

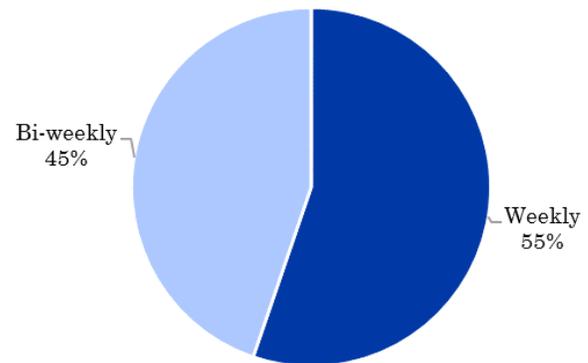
Providing recycling free of charge, combined with a PAYT system for trash, is designed to boost recycling by reducing the amount of waste residents have to pay to discard, creating a financial incentive for residents to recycle. The Massachusetts Department of Environmental Protection estimates that municipalities that have adopted this approach have reduced solid waste tonnage by 25 to 50 percent by diverting waste to recycling, compost, or other disposal methods.

In 2008, the City switched to single-stream recycling, which encourages recycling by allowing residents to dispose of all recyclable material into one bin rather than separating into categories (e.g., paper, plastic, glass). Nearly 80 percent of Massachusetts curbside recycling programs also use the single-stream method. While this makes household recycling simpler, according to the DPW, it has led to an increase in litter, especially on windy days when the contents of recycling bins blow into the streets. This is exacerbated by an open-top bin that does not prevent the escape of waste from the container, and by changes in the composition of recycled matter—fewer heavier items

and more lightweight plastics compared to previous years. The first recycling bin is free to residents, while additional ones cost \$5 each.

There are behind-the-scenes challenges for recycling programs in Worcester and across the country. The market price of recyclables has dropped, and China, one of the largest markets, has become more selective about the cleanliness of the recyclables it will purchase, targeting a 0.5 percent contamination rate, far below the average American contamination rate of 25 percent. Municipalities across the country increasingly weigh the environmental benefits of recycling against the rising cost and difficulty of disposal.

Chart 1: Frequency of Massachusetts Curbside Recycling Programs



Source: Massachusetts Department of Environmental Protection

Table 4: DPW Assessment of Recycling Program Options for the City of Worcester

	18 Gallon Containers (current system)	18 Gallon Containers with Lid	64 Gallon Carts on Wheels with Lid	Clear Bags Provided by City	Clear Bags Sold by City	Clear Bags Sold by Retail Stores
Cost to City	Minimal	\$500,000 start-up	\$2.3 million start-up	\$600,000 annually	Resident charge	Resident charge
Collection Speed	Quick	Quick	Slower	Quick	Quick	Quick
Enforcement	Easy	Harder	Harder	Easy	Easy	Easy
Container Storage	Easy	Easy	Hard	None	None	None
Durability	High	High	High	High	High	Variable
Predicted Compliance	Current	Lower	Lower	High	Lower	Lower
Pilot Program	Current	None	Mixed Reviews (2010)	Positive Reviews (2015)	None	None

Green is a perceived improvement & Red is a perceived decline in current operations. Source: Adapted from Worcester DPW memo to City Council, March 28, 2017

Fall Leaf Collection Program

Trash and recycling are not the only materials picked up by the City. Worcester's fall leaf collection program predates the PAYT trash program. In the fall, residents are allowed to rake leaves into the streets without bagging them and the City does a one-time pickup. The City started this program to keep leaves from blocking catch basins and organic matter out of the wastewater/sewer system. An online map shows residents when their neighborhood's leaves will be collected. The program lasts up to six weeks and costs the City over \$400,000, as DPW staff work additional hours to complete the collection and the City must hire additional equipment to assist with the pick-up. The fall leaf collection program is the only time the City collects yard waste curbside. During the rest of the year residents must bring yard waste to one of the three yard waste collection sites located on Millbury Street, Chandler Street, and Clark Street.

In the spring, DPW does a city-wide street sweeping program that takes up to 10 weeks to complete. Residents are asked to sweep their sidewalks and put the debris into the street the day or night before their

street is to be swept. This year DPW notified residents of the program through visible signs posted on the streets, a map with the schedule in the *Telegram and Gazette*, and updates on the DPW's Twitter and Facebook feeds. According to the DPW website, yard waste is not picked up during the Spring Street Sweeping program, although many residents still put yard waste out and it is picked up by the DPW crews.

The City began composting over 25 years ago when the state prohibited dumping leaves and yard waste into landfills and incinerators. According to the DPW, the City runs one of the largest municipal composting programs in Massachusetts. The compost made by the City from the leaves and yard waste collected from the Fall Leaf program and yard waste brought to collection sites is available to residents free of charge and can be collected at the Residential Drop-Off Center on Millbury Street. It is also used by the Parks Department and is sold in bulk to commercial businesses. The City encourages residents to compost at home and the DPW sells a compost bin for \$45. By composting at home, residents can reduce their food waste and the number of yellow trash bags they need to buy.

Recommendations

By many metrics, Worcester's waste collection systems are working well. The PAYT model provides an important revenue stream for trash pick-up, the city's recycling rate is high for an urban area, and the leaf collection program, according to one former DPW chief, is one of the most popular programs in the city. Still, as with any city, there is room for improvement. Residents do not like paying for specially-designated trash bags, they do not like struggling to fit all their recycling in the current bins, and they do not like litter in the streets, whether it is left there intentionally or blown there by errant winds. All of these issues are connected, and all have been the target of proposed solutions or mitigation techniques. The City should consider a few of these potential changes seriously.

Much of the blame for recycling blowing into the streets on windy days lies with the design of the current bins, which are open-topped, with nothing to prevent refuse from escaping, and small enough that residents often overload the bins. The DPW recognizes this problem and last year provided the City Council with a menu of options to alleviate the situation (see Table 4). Lids and wheeled carts with lids are used in other communities, but both have problems with enforcement and making sure there is no non-recyclable contamination (larger issues in a world with stricter standards), and the latter is difficult to use and

store in many Worcester neighborhoods, especially ones with three-deckers or smaller units. Furthermore, a pilot program in 2010 did not go well. On the other hand, a pilot program more recently with clear plastic bags was well-received by residents. Waste collectors can easily see inside the bags, collection is easier, and there is nothing to store in a home. Like the other solutions, it would come with a cost—either paid by the City or by residents—but it would solve the problem of loose recycling blowing around neighborhoods.

On the trash side, it would not be environmentally-friendly to abandon the PAYT model, as it is a driving force behind Worcester's high recycling rate. But critics are correct that some residents illegally dump their household garbage to avoid paying for yellow bags. Worcester's price per bag is already low compared to other PAYT communities in the state, so lowering the barrier to acquiring the bags does not seem like the best solution. Instead, the City should continue the positive impact of the Keep Worcester Clean initiative—possibly with more stringent penalties for those caught flouting the trash laws, as an additional deterrent and source of income. It should also explore whether there is demand for a free trash drop-off site—a potential equitable alternative to household trash storage issues, the cost of bags, and dumping.