

PER CAPITA RESIDENTIAL TRASH IN SOUTHERN MAINE:

HEAD-TO-HEAD COMPARISON OF MUNICIPALITIES WITH PAY-AS-YOU-THROW (PAYT) AND THOSE WITH NO PAYT

ANALYSIS OVERVIEW

Using data provided by ecomaine, a leading non-profit organization providing a range of waste disposal, recycling and waste-to-energy solutions for communities in southern Maine, WasteZero analyzed the residential trash tonnages and recycling rates for 20 municipalities. The data can be accessed at <http://www.ecomaine.org/recyclingcomparisons/>. The objective was to measure the differences, if any, between communities that use pay-as-you-throw (PAYT) trash systems and those who do not.

PAYT trash systems, also referred to as unit-based pricing or SMART (Save Money and Reduce Trash) systems, charge households for trash service based on the amount of waste they individually generate. This is different from the traditional flat fee approach. PAYT systems are designed to provide an economic incentive for residents to reduce trash and increase recycling.

DATA COLLECTION

AND ANALYSIS

1 WasteZero collected and included data from all cities and towns that met the following criteria:

1. Are ecomaine customers
2. Provide curbside trash collection service to residents
3. Provide curbside recycling collection service to residents
4. Have clean data on file with ecomaine

2 This resulted in a list of 20 municipalities. Eleven use bag-based PAYT systems, in which residents must use pre-paid official municipal trash bags to dispose of waste. Nine of the municipalities have no form of PAYT. WasteZero collected the following data for each:

- Population
- Fiscal Year (FY) 2017 Residential Trash Tonnage
- FY 2017 Residential Recycling Tonnage
- FY 2017 Recycling Rate

3 WasteZero then calculated the average pounds of trash per person generated in each municipality during FY 2017. This “pounds per capita” (PPC) measurement is regarded as the most accurate method for measuring waste generation, as it avoids the use of per household measurements, which obscure the fact that different communities have different average household sizes. All 20 municipalities were then ranked from the lowest (best) 2017 PPC to the highest 2017 PPC.

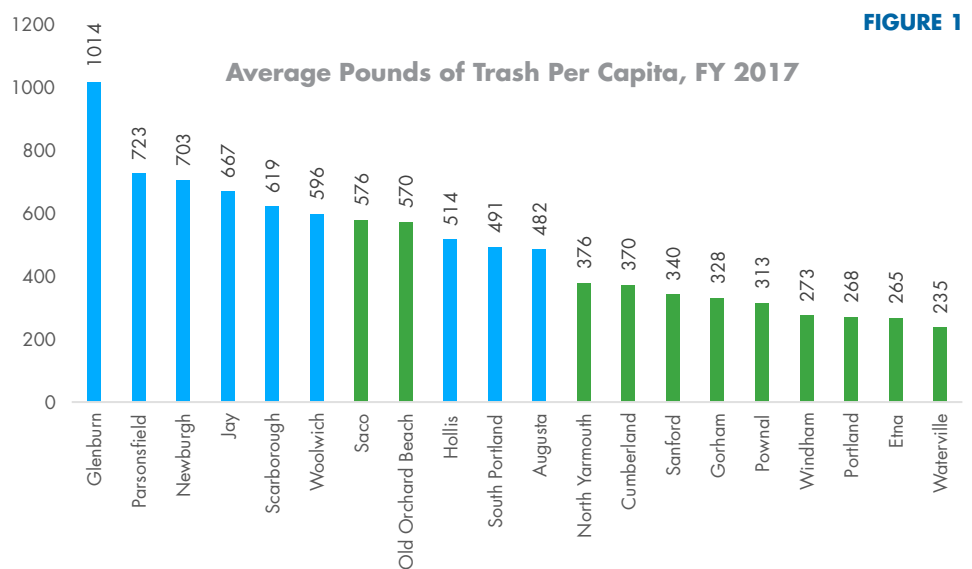
To complete the analysis, WasteZero then calculated the average PPC for municipalities with PAYT and the average for those without. The differences were then noted.

OVERALL RESULTS

Table 1 provides a summary of the overall results. **Communities with PAYT generated, on a per capita basis, 44.8% less trash than those without PAYT.** Nine of the 10 municipalities with the lowest PPC scores use PAYT.

	Communities with PAYT	Communities with No PAYT
Avg. Pounds Per Capita (PPC), Residential Trash, FY 2017	356	645
PPC Range	235 - 576	482 - 1,014
Avg. Recycling Rate	33.1%	20.4%

The data show a very clear difference between communities with PAYT and those without PAYT. When the cities and towns are plotted on a bar chart, the differences become even more stark. In Figure 1, the PAYT communities are indicated with green bars, whereas the non-PAYT communities use blue bars.



PAYT communities (green bars) produce 48.4% less trash on average than non-PAYT communities (blue bars), as measured by average pounds of trash per capita.

Table 2 ranks the 20 communities and provides more detailed information regarding population and recycling rate.

Rank	Municipality	Population	PAYT?	Avg. Pounds of Trash per Capita, 2017	Recycling Rate
1	Waterville	15,722	Yes - Bag-Based	235	20.5%
2	Etna	1,246	Yes - Bag-Based	265	23.8%
3	Portland	66,318	Yes - Bag-Based	268	38.9%
4	Windham	17,001	Yes - Bag-Based	273	39.3%
5	Pownal	1,474	Yes - Bag-Based	313	38.2%
6	Gorham	16,381	Yes - Bag-Based	328	29.9%
7	Sanford	20,798	Yes - Bag-Based	340	35.5%
8	Cumberland	7,211	Yes - Bag-Based	370	39.8%
9	North Yarmouth	3,565	Yes - Bag-Based	376	37.4%
10	Augusta	19,136	No	482	7.6%
11	South Portland	25,002	No	491	27.2%
12	Hollis	4,281	No	514	20.5%
13	Old Orchard Beach	8,624	Yes - Bag-Based	570	22.9%
14	Saco	18,482	Yes - Bag-Based	576	24.1%
15	Woolwich	3,072	No	596	21.5%
16	Scarborough	18,919	No	619	29.3%
17	Jay	4,851	No	667	14.3%
18	Newburgh	1,551	No	703	7.1%
19	Parsonsfield	1,898	No	723	9.8%
20	Glenburn	4,594	No	1014	4.2%

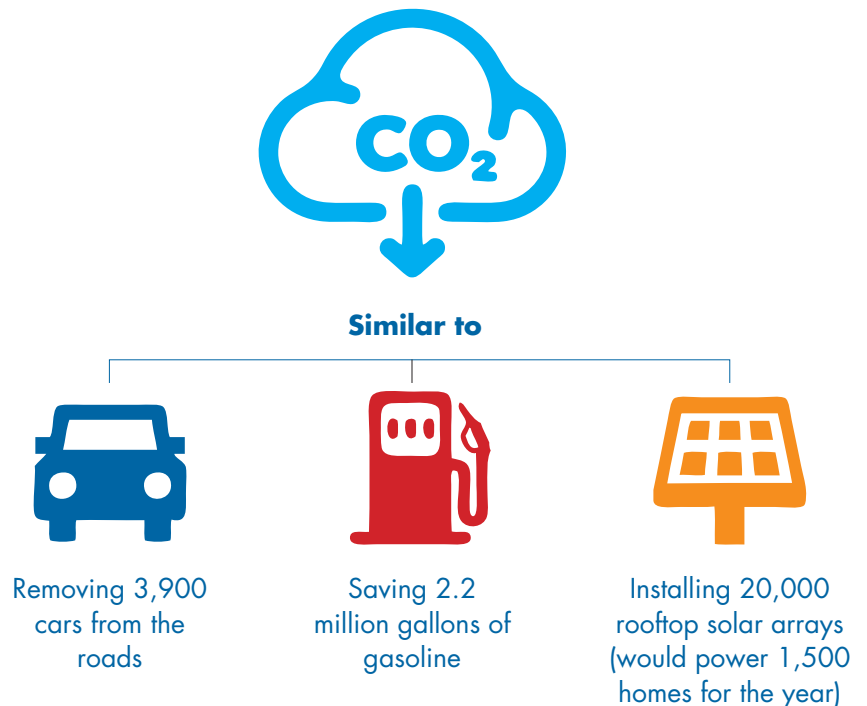
GREENHOUSE GAS (GHG) IMPACT

The US Environmental Protection Agency (EPA) has developed a Waste Reduction Model (WARM) to calculate the impact that waste reduction and recycling has on GHGs, as well as the related energy savings. Per the EPA, the WARM is designed “to help solid waste planners and organizations track and voluntarily report greenhouse gas (GHG) emissions reductions from several different waste management practices.”

Using the EPA WARM, it’s a relatively straightforward process to calculate the potential GHG impact and energy savings that would result if the non-PAYT towns in the list above were to switch to a bag-based PAYT system.

During FY 2017, the nine non-PAYT municipalities generated a total of 23,799 tons of residential municipal solid waste, as recorded by ecomaine. Assuming a bag-based PAYT system would reduce waste by 44% (10,472 tons), the resulting impact would be as follows for the first year:

GHG reduction of 20,000 metric tons of CO2 equivalent



CONCLUSION

These findings are consistent with WasteZero’s experience with bag-based PAYT systems throughout the United States. WasteZero’s historical data show that bag-based PAYT systems reduce waste by 44% on average. The fact that PAYT towns in this data set generate 44.8% less trash per capita than non-PAYT towns is directly in line with that expectation.

Old Orchard Beach and Saco are two interesting cases, in that they have higher PPC scores than would normally be expected of towns with PAYT. It may be the case that these towns have higher percentages of seasonal residents, who generate trash tonnage but are not counted as residents of the towns in Census data. Further analysis is needed to determine the root causes of their higher-than-expected PPC scores.