

NYC'S RESIDENTIAL WASTE COMPARED TO SEATTLE'S RESIDENTIAL WASTE

Clean, green Seattle has always been a leader in recycling and is the city most often looked to as an example for municipal waste prevention, reuse, recycling, and composting policy. Seattle is also the only city, aside from NYC, to have characterized not only its refuse stream, but also its recyclables stream. Because waste characterization data on recycling, in addition to refuse, are needed to calculate capture rates, and because Seattle is the only city aside from New York to have gathered such data, we are limited to the case of Seattle in our comparison of NYC's recycling performance to that of other cities.

It should be noted that the WCS Final Report compares results for refuse to additional US cities that have undertaken refuse characterization studies. Here, however, we focus on Seattle because it is the most complete municipal benchmark against which we can compare ourselves.

There are some important differences between the Seattle and NYC studies. Seattle used around 50 sort categories, as opposed to 91 in the NYC WCS, and characterized two housing density strata (houses vs. multifamily), as opposed to the eight housing density/income strata in the NYC WCS. In addition, most of Seattle's yard trimmings, and some of its food waste, is diverted before reaching the refuse stream through extensive, year-round collection and drop-off programs; while NYC's leaf and Christmas tree collection programs run four weeks in the Fall only, and divert proportionally less of NYC's much smaller baseline fraction of yard waste. For this reason, it makes sense to compare NYC's and Seattle's waste composition in terms of designated paper, metal, glass, and plastic recyclables, and not its organic waste fractions.

In order to accomplish this, the eight Density/Income strata used in the WCS were aggregated into two groups: Low Density/High Income and Low Density/Medium Income were collapsed into one group corresponding to "single family" homes. The other six strata, covering Medium and High Density groups of all incomes, were collapsed into another called "multi-family." This configuration best mirrors Seattle's single family homes/multifamily format for comparison purposes.

In the WCS Final Report, Volume 1, Section 9, R.W. Beck compares the basic results and methodologies of the NYC and Seattle studies. The analysis below, conducted by DSNY's BWPRR, takes the comparison a step further to understand how Seattle's capture and diversion rates compare to ours, factoring in their different systems of collection and data tracking.

COMPARING COMPOSITION

In order to compare waste composition, BWPRR designed a set of 16 common categories and collapsed both Seattle's 50 categories and our 91 categories into them. We also used data provided by Seattle Public Utilities¹ on the size of Seattle's residential waste stream, including refuse, paper/MGP recycling, as well as the yard trimmings and other organic wastes which are either collected for composting or retained by residents for backyard composting – and are counted by Seattle as part of

¹ We are grateful to Jenny Bagby, Principal Economist at Seattle Public Utilities, for this information.

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2004-05 NYC Residential and Street Basket Waste Characterization Study

overall generation and diversion. With these data sources, we were able to calculate comparisons as shown in the table below.

COMPARISON OF WASTE COMPOSITION, SEATTLE TO NYC, 2004-05												
Seattle to NYC Comparison Category	SEATTLE						NEW YORK CITY					
	2002 Waste (refuse) composition			2005 Recycling Composition			2004/05 Refuse Composition			2004/05 Recycling Composition		
	total	single	multi-family	total	single	multi-family	citywide	low density	high-medium density	citywide	low density	high-medium density
newspaper	2.9%	2.2%	4.2%	33.0%	34.0%	29.4%	3.7%	2.5%	4.1%	25.3%	27.3%	24.5%
OCC	3.1%	2.5%	4.1%	15.8%	14.0%	19.7%	1.2%	1.0%	1.2%	8.3%	6.9%	9.0%
mixed paper	7.8%	7.0%	9.5%	26.9%	27.4%	25.6%	10.6%	8.9%	11.3%	25.5%	24.1%	26.0%
nonrecyclable/compostable paper	8.8%	9.5%	7.2%	0.6%	0.5%	0.7%	7.9%	8.3%	7.8%	1.6%	1.8%	1.5%
PET	0.6%	0.4%	0.7%	0.9%	0.9%	0.8%	0.9%	0.6%	1.0%	2.6%	3.2%	2.4%
HDPE	0.5%	0.4%	0.5%	0.7%	0.7%	0.6%	0.6%	0.4%	0.6%	2.6%	2.7%	2.5%
other 1 - 7 bottles tubs	0.4%	0.5%	0.4%	0.3%	0.3%	0.4%	0.4%	0.3%	0.4%	0.4%	0.5%	0.4%
other rigid containers	1.7%	1.9%	1.4%	0.0%	0.0%	0.0%	1.7%	1.5%	1.8%	0.8%	0.8%	0.8%
plastic bags and wraps	4.7%	5.0%	4.0%	0.4%	0.4%	0.3%	8.7%	6.7%	9.4%	2.2%	1.8%	2.3%
other plastic	1.7%	1.9%	1.5%	0.7%	0.7%	0.6%	2.5%	3.0%	2.4%	1.6%	1.6%	1.7%
aluminum cans foil other nonferrous	0.8%	0.7%	0.8%	0.5%	0.5%	0.4%	1.0%	0.9%	1.0%	1.2%	1.6%	1.0%
tin/aerosol cans	1.2%	1.2%	1.1%	0.8%	0.8%	0.7%	1.0%	0.6%	1.1%	3.2%	3.5%	3.1%
other ferrous	0.8%	0.7%	1.1%	0.3%	0.2%	0.5%	1.6%	2.1%	1.5%	7.3%	7.4%	7.3%
other nonferrous	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%						
mixed metals	1.1%	1.0%	1.3%	0.0%	0.0%	0.0%	0.5%	0.5%	0.5%	1.3%	1.3%	1.3%
glass	3.9%	3.4%	4.6%	18.3%	18.0%	18.9%	2.4%	1.6%	3.0%	13.1%	12.6%	13.4%
other	60.2%	61.9%	57.6%	0.9%	0.8%	1.3%	55.3%	61.2%	53.1%	3.0%	3.0%	3.0%
percentage of stream that is designated for paper or metal/glass/plastic (mgp) recycling												
recyclable paper	13.8%	11.7%	17.8%	75.7%	75.4%	74.7%	15.4%	12.4%	16.5%	59.1%	58.3%	59.5%
metal	4.0%	3.7%	4.4%	1.8%	1.7%	1.8%	4.1%	4.0%	4.1%	13.0%	13.8%	12.7%
container glass	3.9%	3.4%	4.6%	18.3%	18.0%	18.9%	2.4%	2.8%	1.4%	13.1%	12.6%	13.4%
recyclable plastic (definition differs between Seattle and NYC)	7.9%	10.1%	8.5%	3.0%	3.0%	2.7%	1.5%	1.0%	1.6%	5.2%	5.9%	4.9%
total recyclables in stream	29.6%	28.9%	35.3%	98.8%	98.1%	98.1%	23.4%	20.2%	23.7%	90.4%	90.6%	90.4%

We see from the figures above that the designated recyclable materials found in Seattle's refuse and recycling streams have a different composition from those in NYC's refuse and recycling. Seattle's study did not aggregate results to come up with a total waste (refuse + recycling) composition. However, from looking at the percentages, we can see that their waste stream is far richer in paper than ours. Around 75% of their recycling stream is paper, as opposed to 59% of our combined paper/MGP stream, while similar fractions are left in their and our refuse. This tells us that Seattle both generates and recycles more paper than we do.

The reverse **observation** applies to metal and plastic. NYC has far more of these materials in its recycling stream, and less in its refuse stream, than Seattle. The reasons for this are not clear. Washington is not a Bottle Bill state, which may explain why a greater proportion of recyclable plastic and aluminum containers are in refuse there than here. But this doesn't tell the whole story. In contrast, glass fractions are similar between cities, although it would seem that Seattle generates and recycles slightly more glass than NYC.

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COMPARING CAPTURE

Using data on Seattle's refuse and recycling tonnages, as well as the portion of their organic waste stream that is collected for composting or backyard composted at home, we can compare not only NYC's diversion rate, but also its capture rate, to Seattle's.

As the chart on the next page shows, Seattle's capture rates for single family homes are higher than NYC's, but for multi-unit housing NYC and Seattle are comparable, and, considering the difference in overall housing density between the two cities, NYC is not too far behind for single unit housing, either. Seattle has an overall capture rate for paper/MGP of 65%, and an overall paper/MGP diversion rate out of the total waste stream of 28%. NYC has an overall capture rate for paper/MGP of 51% and a corresponding 18% diversion rate.

Organics diversion/prevention is the major difference between NYC and Seattle, not paper and MGP diversion. The composting of organics increases Seattle's diversion rate from 27.5% to 49.4% in the chart below. In other words, although Seattle has a nearly 50% diversion rate, over 22% of this rate reflects composting. Seattle is able to achieve such a high composting rate because it includes estimated backyard composting, and also collects green-waste from single family homes citywide.

More importantly, Seattle generates far more yard waste to begin with than New York City. As the table on the following page shows, on average, Seattle's residential waste stream is close to 25% yard waste, as opposed to around 4% for NYC. This distinction will be very important to bear in mind in policy discussions as we continue to make comparisons between New York City and Seattle, or other cities, in terms of diversion and capture rates.

2004-05 NYC Residential and Street Basket Waste Characterization Study

RESIDENTIAL WASTE GENERATION, CAPTURE, AND DIVERSION RATES						
	Seattle 2004*			NYC 2004 - 2005		
wkly res waste stream in tons	total	single	multi-family	total	low density	medium high density
refuse	2,741	1,654	1,086	52,996	14,145	38,851
paper/mgp recycling	1,493	1,182	310	11,600	3,398	8,202
separately counted organics**	1,185	1,185	-	279	n/a	n/a
total generation	5,419	4,022	1,397	64,875	17,543	47,053
* for comparability with NYC, excludes self-haul						
** yard waste collection and food/yard waste backyard composting						
capture rate						
tons Paper/MGP in recycling	1,493	1,182	310	11,600	3,398	8,202
tons Paper/MGP in waste	2,304	1,660	694	22,855	5,734	17,121
capture rate	65%	71%	45%	51%	59%	48%
diversion rates						
diversion rate of paper/mgp recycling out of total residential waste	27.5%	29.4%	22.2%	17.9%	19.4%	17.4%
diversion rate of paper, mgp, and organics recycling out of total residential waste	49.4%	58.9%	22.2%	18.3%	n/a	n/a
NOTES ON CALCULATIONS:						
Seattle has a substantial residential yardwaste collection program, and also counts estimates of backyard composting diversion in its overall residential diversion calculations. For this reason, Seattle's "total residential waste" stream is the sum of its residential recycling, refuse, and yardwaste collections, plus its residential backyard composting estimates. NYC has a very small residential yard waste collection program, and does not count estimates of residential backyard composting in its overall diversion calculations. NYC's "total residential waste" stream is the sum of its residential recycling, refuse, and yardwaste collections.						
Seattle's residential refuse and recycling characterization studies therefore reflect the composition of its waste in the absence of much of the organic material, unlike NYC's waste characterization study. To make sure we were comparing "apples to apples" in the above analysis, we calculated the capture rate for paper and MGP recycling for both cities as:						
$\frac{\text{Paper and MGP recycling collections}}{\text{estimated fraction of Paper and MGP in Refuse and Recycling}}$						
We calculated the diversion rate for Paper and MGP for both cities as						
$\frac{\text{Paper and MGP recycling collections}}{\text{the sum of Paper, MGP, Refuse and yard waste collections}}$						
The diversion rates routinely reported by Seattle include a substantial portion of yard waste diversion. That rate is reported above in the second set of diversion rates as the "diversion rate of paper, mgp, and organics recycling out of total residential waste".						

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