

FOCUS ON DURABLES

The WCS provides information on the fraction of residential waste consisting of “durables,” including both finished products (toys, housewares) as well as certain materials in unfinished or semi-finished form (lumber, brick). Because they are not designed for one-time, immediate consumption, but can be used and reused, durables are distinct from other fractions of waste, including paper, putrescible organics, and packaging (metal, plastic, and glass).

The criteria used to assess durables in the WCS were derived from, but more detailed than, the methodology that the EPA uses in its annual characterization of MSW in the United States. The EPA uses the following categories to characterize durables in the waste stream: Major Appliances, Small Appliances, Furniture and Furnishings, Carpets and Rugs, Rubber Tires, Lead Acid Batteries, Clothing and Footwear, Non-Clothing Textiles, and Miscellaneous Durables. Because the WCS sorted each refuse and recycling sample into ninety-one different **material categories**, it was possible to collapse them into groupings corresponding to EPA categories.

In addition, in the WCS there were some materials – primarily Construction and Demolition Debris (C&D) and **Household Hazardous Wastes (HHW)** – which fall into a “grey area” between durable and non-durable in that it is possible to reuse certain C&D items, for example, but generally not as finished products. Conversely, HHW items are finished products, but many cannot be reused (although some unused items, such as latex paint, can be). In addition, in the WCS two “miscellaneous” categories cover durable and nondurable wastes. For completeness, we report on these categories as well as the more traditional categories the EPA uses.

The table on the next page shows how the 91 WCS sort categories have been re-grouped for the analysis of durables.

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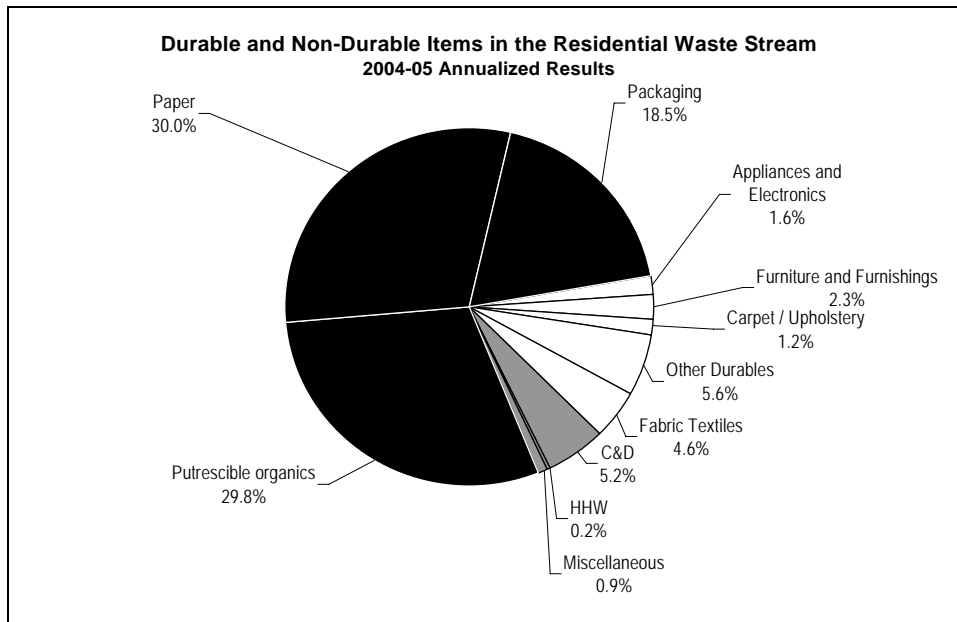
DURABLES	IN-BETWEEN	NONDURABLES	
Appliances and Electronics¹ Appliances: Ferrous Appliances: Non-Ferrous Appliances: Plastic Audio/Visual Equipment: Cell Phones Audio/Visual Equipment: Other Computer Monitors Televisions Other Computer Equipment Furniture and Furnishings² Wood Furniture/Furniture Pieces Non-C&D Untreated Wood Upholstered Furniture Carpets and Rugs Carpet/Upholstery ³ Other Plastic, Metal, Ceramics⁴ Other PVC Other Plastics Materials Other Glass Other Aluminum Other Non-Ferrous Other Ferrous Mixed Metals Rubber Products ⁸ Ceramics Fabric Textiles Clothing Textiles ⁵ Non-Clothing Textiles ⁶ Shoes ⁵ Other Leather Products 25 categories	Construction and Demolition Debris Untreated Dimension Lumber, Pallets, Crates Treated/Contaminated Wood Gypsum Scrap Rock/Concrete/Bricks Other Construction Debris Household Hazardous Wastes Oil Filters Antifreeze Gasoline/Kerosene/Motor Oil/Diesel Fuel Latex Paints/Water-Based Adhesives/Glues Oil-Based Paints/Solvent-Based Adhesives/Glues Pesticides/Herbicides/Rodenticides Dry-Cell Batteries Fluorescent Tubes Mercury-Laden Wastes Compressed Gas Cylinders, Fire Extinguishers Home Medical Products Other Potentially Harmful Wastes Wet-Cell Batteries ⁷ Miscellaneous Categories Miscellaneous Inorganics ⁴ Miscellaneous Organics 20 categories	Putrescible Organics Leaves and Grass Prunings Stumps/Limbs Food Diapers/Sanitary Animal By-Products Fines Paper Newspaper Plain OCC/Kraft Paper High Grade Paper Mixed Low Grade Paper Phone Books/Paperbacks Paper Bags Polycoated Paper Containers Compostable/Soiled/Waxed Other Nonrecyclable Paper Single Use Paper Plates, Cups 46 categories	Metal, Glass and Plastic Packaging PET Bottles HDPE Bottles: Natural HDPE Bottles: Colored #1 PET Tubs/Trays #2 HDPE Tubs/Trays #3 PVC bottles #4 LDPE bottles #5 PP bottles #7 Other bottles #3 PVC tubs #4 LDPE tubs #5 PP tubs #7 Other tubs Soda Crates and Bottle Carriers Rigid PS Containers/Pkging Expanded PS Containers/ Pkging Other Rigid Containers/Pkging Plastic Bags Other Film Clear Container Glass Green Container Glass Brown Container Glass Mixed Cullet Other Container Glass Aluminum Cans Aluminum Foil/Containers Tin Food Cans Empty Aerosol Cans Single Use Plastic Plates, Cups, Cutlery
Notes: 1 This grouping corresponds to the EPA major and small appliance categories. For the purposes of comparison, we disaggregated bulk from non-bulk appliances and electronics, respectively. 2 This grouping corresponds to the EPA furniture and furnishing category. 3 This corresponds to the EPA carpets and rugs category. 4 This grouping, along with some of the miscellaneous inorganics, corresponds to the EPA's Miscellaneous Durables Categories. 5 These two categories correspond to the EPA's clothing and footwear category. 6 This corresponds to the EPA's non-clothing textiles category. 7 This corresponds to the EPA's lead acid batteries category. 8 Disposal of rubber tires with refuse is prohibited in New York City and no rubber tires were found in samples.			

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Composition of Durables in NYC Residential Waste

Looking at the chart below, the majority of NYC's waste stream is either putrescible, made of paper, or is packaging. Approximately 15% of the waste stream consists of durable items. Over 2% of this 15% is furniture and furnishings, another 1.2% is carpets and upholstery, nearly 5% is clothing and non-clothing (fabric) textiles, with other disparate items making up the balance in the "Other Durables" slice. The grey slices of the pie show an additional 5.4%, consisting of C&D and HHW materials, some of which can be considered durable, others of which are not (as explained above).



The table to the right shows the actual weekly tonnage that would be classified as durables in the waste stream from these percentages.

Bulk and Non-bulk Durables

In the WCS, bulk items were defined as those too large to fit wholly or partially into a 96-gallon container. Because 100- to 200- pound samples were "grabbed" using front-end loaders with very large buckets averaging 6 cubic yards, bulk items had as much probability of being included in the sample as non-bulk items. With the exception of being weighed and

Durables in the Waste Stream		
	percentage of waste stream	weekly tons generated
Appliances and Electronics	1.65%	1,066
Furniture and Furnishings	2.3%	1,464
Carpet / Upholstery	1.2%	792
Other Durables	5.6%	3,598
Textiles*	4.6%	2,945
subtotal	15.3%	9,865
C&D	5.2%	3,357
HHW	0.2%	159
Miscellaneous	0.9%	604
subtotal	5.4%	3,516
Putrescible organics	29.8%	19,274.1
Paper	30.0%	19,402.4
Packaging	18.5%	11,934.2
subtotal	78.3%	50,611

*clothing, nonclothing textiles, shoes, and leather goods. Does not include carpet, upholstery or upholstered furniture.

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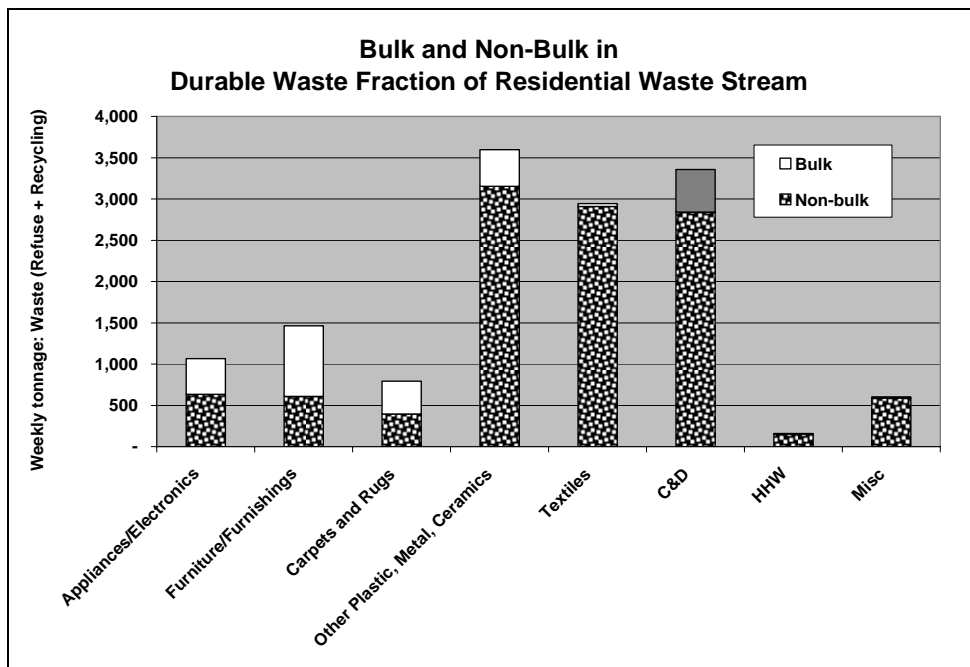
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characterized into the applicable material category at the sampling site rather than being transported to the sort site, bulk items were treated identically to non-bulk items and are part of the overall data calculations of the WCS.

In total, bulk items accounted for less than 5% of the overall waste stream, but proportionally more of the durables sub-fraction of waste. In other words, out of all materials, durable or not, only 4.5% qualify as bulk; but out of C&D, 13% are bulk, and out of durables, almost 22% are bulk.

Durables: Bulk and Non-bulk		
Stream	Non-bulk	Bulk
Durables	78.1%	21.9%
C&D, HHW and Misc.	87.0%	13.0%
Total Waste Stream	95.5%	4.5%

The chart below shows that, within the durables fraction of the waste stream, furniture, electronics, and carpets/rugs are the categories most apt to have a significant percentage that qualifies as bulk. While there is a significant amount of bulk items in C & D debris, bulk is still less than 25% of that category.



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The list below gives itemized percentages from the WCS categories organized into the EPA groupings.

DURABLE, C&D, HHW and MISCELLANEOUS FRACTIONS OF WASTE (Refuse + Recycling), 2004-5 ANNUALIZED RESULTS									
BULK vs. NON-BULK ITEMS									
Material Category	% of Waste Stream		Weekly Tons		Material Category	% of Waste Stream		Weekly Tons	
	Bulk	Non-Bulk	Bulk	Non-Bulk		Bulk	Non-Bulk	Bulk	Bulk
Appliance/Electronic					C & D Debris				
Appliances: Ferrous	0.47%	0.24%	304.4	155.9	Untreated Dimension Lumber, Pallets, Crates	0.31%	0.31%	200.2	200.5
Appliances: Non-Ferrous	0.00%	0.03%	-	22.6	Treated/Contaminated Wood	0.37%	1.25%	239.0	805.7
Appliances: Plastic	0.03%	0.23%	21.5	148.8	Gypsum Scrap	0.01%	0.89%	6.0	574.5
Audio/Visual Equipment: Cell Phones	0.00%	0.00%	-	3.0	Rock/Concrete/Bricks	0.00%	0.66%	-	426.7
Audio/Visual Equipment: Other	0.03%	0.21%	20.7	138.5	Other Construction Debris	0.11%	1.29%	70.9	833.6
Computer Monitors	0.02%	0.05%	12.8	31.0		0.80%	4.40%	516.0	2,840.9
Televisions	0.07%	0.05%	45.0	30.3	Household Hazardous Waste				
Other Computer Equipment	0.04%	0.16%	27.7	103.4	Oil Filters	0.00%	0.00%	-	2.8
	0.67%	0.98%	432.11	633.62	Antifreeze	0.00%	0.00%	-	0.6
Furniture and Furnishings					Wet-Cell Batteries	0.00%	0.00%	-	0.0
Wood Furniture/Furniture Pieces	0.49%	0.69%	313.9	447.5	Gasoline/Kerosene/Motor Oil/Diesel Fuel	0.00%	0.00%	-	1.1
Non-C&D Untreated Wood	0.06%	0.12%	41.1	78.6	Latex Paints/Water-Based Adhesives/Glues	0.00%	0.05%	-	32.8
Upholstered or Other Organic-Type Furniture	0.77%	0.13%	499.2	84.2	Oil-Based Paints/Solvent-Based Adhesives/Glues	0.00%	0.02%	-	15.3
	1.32%	0.94%	854.19	610.31	Pesticides/Herbicides/Rodenticides	0.00%	0.01%	-	3.6
Carpet/Upholstery					Dry-Cell Batteries	0.00%	0.07%	-	44.5
	0.61%	0.61%	396.6	395.4	Fluorescent Tubes	0.00%	0.00%	3.2	0.4
Other Durables					Mercury-Laden Wastes	0.00%	0.00%	-	0.0
Other PVC	0.00%	0.01%	2.0	8.9	Compressed Gas Cylinders, Fire Extinguishers	0.00%	0.01%	-	4.3
Other Plastics Materials	0.14%	1.71%	87.6	1,105.5	Home Medical Products	0.00%	0.05%	-	31.5
Non-Container Glass	0.00%	0.19%	-	124.6	Other Potentially Harmful Wastes	0.00%	0.03%	-	19.3
Other Aluminum	0.01%	0.05%	4.3	33.2		0.00%	0.24%	3.2	156.2
Other Non-Ferrous	0.04%	0.12%	27.5	79.2	Miscellaneous				
Other Ferrous	0.46%	1.48%	299.7	955.0	Misc. Organic	0.00%	0.73%	-	472.2
Mixed Metals	0.01%	0.65%	3.5	418.0	Misc. Inorganic	0.00%	0.31%	-	201.9
Rubber Products	0.03%	0.25%	18.8	162.1		0.00%	1.04%	-	674.08
Ceramics	0.00%	0.42%	-	268.2					
	0.69%	4.88%	443.4	3,154.8					
Textiles									
Clothing Textiles	0.00%	2.50%	1.6	1,614.5					
Non-Clothing Textiles	0.04%	1.32%	26.8	851.0					
Shoes	0.00%	0.60%	-	387.2					
Other Leather Products	0.01%	0.09%	8.2	55.2					
	0.06%	4.50%	36.66	2,907.94					
TOTAL DURABLES	3.35%	11.92%	2,163	7,702.0	TOTAL C&D, HHW and MISC	0.8%	5.7%	519.2	3,671.2

Bulk items are defined as items too large to fit wholly or partially into a 96 gallon container. All others are considered Non-Bulk

Further Assessment of Durables During the Summer 2005 Sort

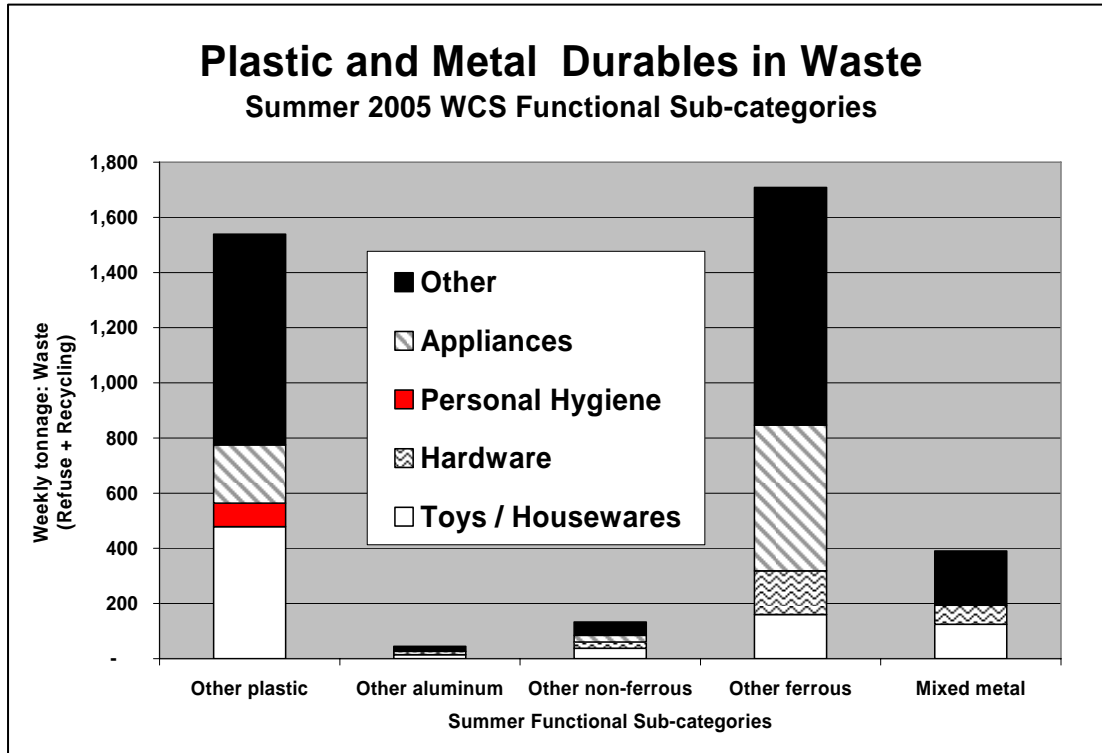
During the first three seasons of the WCS, plastic and metal durables that were not appliances or electronics were classified as "Other Plastics" and "Other Metals" (ferrous, aluminum, other non-ferrous, and mixed metals). During the final sort in the Summer of 2005, we sub-sorted "Other Plastics" and "Other Metals" into additional functional sub-categories in order to learn more about the products or materials comprising these "Other" categories. These sub-categories were recommended by the **Reuse Alliance**,¹ a nonprofit organization representing reuse enterprises in New York City, as reflective of the major types of durable plastic and metal products that are found in the waste stream.

The results of these sub-sorts tell us even more about the nature of plastic and metal durables in the residential waste stream. Approximately one third of the "Other" plastic was able to be identified as coming from Toys/Housewares, and a third of the "Other" ferrous metal came from appliances.

¹ www.Reusealliance.net

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However, as the chart below shows, metal and plastic durables are still quite heterogeneous in terms of product content, with ample representation among all functional subcategories. Even after sorting miscellaneous plastic and metal durables into functional sub-categories, the largest category of plastic and metal durables was still a mix of “Other” items that fit none of these descriptions.



Recycling Metal Non-durables

Among all the durable items discussed above, only metal appliances and other bulk and non-bulk metal durable items are designated for recycling under the current curbside program. Residents are instructed to set out any household item that is mostly metal for recycling along with commingled metal, glass, and plastic recyclables (MGP).¹ Because the WCS used the same sort methodologies for studying the MGP and Paper streams as it did for the Refuse stream, we were able to calculate the capture rate for metal durables in the MGP recycling stream. About half of bulk metal durables, and around 40% of non-bulk metal durables, are being recycled with MGP. The rest are being disposed of in refuse. Stated another way, out of the total 15% of durables in the combined waste stream, around 4% are metal and could be recycled; but only around 1.6% of them actually recycled.

¹ The Department does sponsor periodic collection events for textiles and electronics, and provides drop-off locations for certain “special waste” categories of HHW, such as batteries, motor oil, oil filters, fluorescent tubes & bulbs, latex paint, and mercury-laden wastes. In addition, a wide array of nonprofit and for-profit organizations collect textiles, building materials, and other durables for resale. However, none of these additional activities involve DSNY curbside collections; and the materials that come into them were not studied as part of the WCS.

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Comparison: US Data on Durables and NYC WCS

How does NYC's durable waste compare to the durable waste of the nation as a whole? We can assess this by comparing the annual NYC WCS results to those that the EPA publishes for the United States. Readers should be aware that the EPA's data in most cases characterizes residential and commercial wastes together. Only in one year, 1998, did the EPA present separate statistics on residential waste. If we want to make an accurate comparison to the WCS results, we have to use the data from the EPA's 1998 update, rather than more recent statistics.

The table below compares NYC's durable fractions to those of the country as whole, following the durables categories that the EPA uses.¹ Compared to the U.S., on average, a smaller fraction of New Yorkers' waste is comprised of furniture and furnishings; carpets and rugs, and miscellaneous items, while a larger fraction of NYC's waste is clothing and non-clothing textiles and major appliances. Because of laws against disposing of lead acid batteries or rubber tires in residential waste, it is not surprising that the WCS did not find any of these items in its extensive sampling.

Durable Categories	EPA on USA	WCS on NYC
Major Appliances	0.3%	0.7%
Small Appliances	0.6%	1.0%
Furniture and Furnishings	4.8%	2.3%
Carpets and Rugs	1.5%	1.2%
Rubber Tires	0.2%	0.0%
Batteries, Lead Acid	0.1%	0.0%
Misc. Durables	8.3%	5.6%
Clothing and Footwear	2.8%	3.2%
Non-Clothing Textiles	0.5%	1.4%
Total Durables in the Waste Stream	19.1%	15.3%

We can also calculate an estimated generation rate based on the WCS data. New Yorkers generate less in the way of durables waste than do residents of the U.S. as a whole. On an annual basis, the typical American household discards nearly 450 pounds of durables, while the average New York household sets out around 320 pounds.

¹ in Table D-1, pp. 158 to 159 of the EPA's "Characterization Of Municipal Solid Waste In The United States: 1998 Update." www.epa.gov/msw/msw99.htm

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	EPA on USA 1998	WCS on NYC 2004-05
Total Tons Residential Waste	120,202,500	3,358,997
Total Number of Households	102,528,000	3,200,912
Fraction of Waste that is Durables	19%	15%
Pounds of Durables per Household per Year	449	321

Durables Are Not Necessarily Reusable

Under certain circumstances,¹ durable waste items can be utilized anew without the reprocessing that recycling and composting entail. "Reuse" covers a waste management strategy that includes (1) collecting unwanted durables, (2) assessing them for the potential to be reused as is, repaired for reuse, or disassembled for spare parts, (3) processing them for such ends and finally (4) marketing them to consumers.

The WCS provides information as to what fraction of residential waste consists of various types of durables. It also describes the product categories and material characteristics of durable items in refuse and recycling. It does not, however, provide data on the potential reusability of such items, as such a question is not within the proper scope of the WCS.

Instead, we consider the potential reusability of discarded durables as part of a larger policy question: to what extent are the durables in NYC residential waste "treasures from the trash" that can be recovered for reuse, repair, or spare parts as opposed to "junk" that no one wants nor needs? And if DSNY were to support reuse over and above the level it does currently, how would such activities fit into the City's overall residential waste management strategy?

Identifying and describing the fraction of residential waste consisting of "durable" items, as well as carefully examining the parameters of reuse/repair enterprises here and in other jurisdictions, is only a first step in addressing these questions.

History of Debate over the Study of Reuse in the WCS

In early May of 2004, shortly before the first sampling and sorting season of the Preliminary Waste Characterization Study (PWCS), DSNY met with representatives the **Citywide Recycling Advisory Board (CRAB)** to present a preliminary list of material sort categories for their review. CRAB members submitted comments that informed the finalization of the list of material sort categories that were used throughout the WCS.

DSNY integrated most of the CRAB comments into the final sort category definitions, but in two areas the Department did not follow CRAB input. After consideration, DSNY did not follow the CRAB's recommendation that all WCS samples be collected in special non-compacting trucks; nor did it adopt

¹ These circumstances occur when they are intact, repairable, or suitable for use as spare parts; and, more important, when they have a market of end users interested in purchasing them for a price that will at least partially cover the costs of their processing.

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the CRAB's proposals that materials be classified according to their ability to be reused, repaired, or disassembled for spare parts.

CRAB Proposal

CRAB members believed that the WCS should include a detailed analysis of all durable products' potential for reusability. Consequently, they were concerned that compaction, which routinely takes place in the rear-loading packer trucks used for DSNY collection, would obscure the material and/or product qualities of waste contents. As stated in their correspondence on the subject:

...in order to make useful recommendations for waste prevention and reuse, the sampling must preserve the size, identity, and utility of the products and packaging in the waste stream.¹

To appropriately characterize durable and non-durable contents in the waste stream, the CRAB proposed that:

...it is necessary to know a) the major category of durable, non-durable, or container/packaging (e.g. furniture); b) the subcategory (e.g. wooden desk); and c) its condition (e.g. is it usable as is, does it require a small repair, does it require spare parts, can it be used for spare parts, or can it be recycled).²

The CRAB advocated a scenario of non-compacting sample collection, followed by two rounds of sorting in which collected waste would be sorted according to product/package category/package subcategory, evaluated as to its condition (as defined above), and its weight recorded. The waste would then be re-aggregated and resorted by material category as part of the sample.

In addition, BWPRR was copied on a letter dated May 26, 2004 from the **NYC Waste Prevention Coalition (WPC)** to Mayor Michael Bloomberg with similar recommendations as those submitted by the CRAB, as well as expressing concern over the "waste sorting parameters" citing a "misconfiguration of a number of elements of the study."³

Both the CRAB and the WPC were advocating an approach to the WCS that they believed would answer the following question: how much of residential discards could be recovered for reuse – either "as is", or after being repaired and sent back in working order, or, as a last resort, being disassembled for spare parts. The CRAB and WPC advocated using the opportunity of a waste characterization study to include procedures that could calculate or estimate this figure.

¹ May, 20, 2004 email communication from CRAB member M. Vaccaro to Director R. Lange

² May, 20, 2004 email communication from CRAB member M. Vaccaro to Director R. Lange

³ May 26, 2004 letter from WPC Chair T. Logan to Mayor M. Bloomberg

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Why DSNY Rejected this Proposal

DSNY decided against including the reuse evaluation protocols in the project design of the Waste Characterization Study for several reasons. First, to collect over 3,400 samples in non-compacting trucks would have entailed deploying specially designed and supervised refuse and recycling collection routes, which would have to be run in addition to the thousands of normal routes that service neighborhoods every week in NYC. This would have entailed significant additional labor and vehicle costs (in the order of millions of dollars), and disruption of regular collections and traffic across the entire city. Ultimately, careful planning by the Department's Bureau of Cleaning and Collections and the Bureau of Waste Prevention, Reuse and Recycling resulted in a route sampling methodology that guaranteed income and density-specific samples without any alteration of normal collection operations. The fact that all samples in the WCS were taken from real collection routes meant that compaction could not be avoided.

The second reason for rejecting such an approach was that further examination of the suggested protocols showed a weakness in their assumptions and practicality. Neither the CRAB nor the WPC specified any particular testing methodology beyond calling for each bulk item to be evaluated in terms of "condition" (e.g. is it usable as is; does it require a small repair; does it require spare parts; or can it be used for spare parts).¹ In practice, such an assessment would have required extensive handling and testing of each durable in the 3,000+ refuse samples taken, to assess its manual, electrical, mechanical, and in some cases electronic functionality. Such an effort would have required a team of trained workers and experts in every possible area of reuse materials on hand to test bulk and durable items for functionality for the entire duration of the sampling periods. Such a detailed assessment would have been extremely expensive in time and labor.

More importantly, it would have yielded non-useful results because such assessments of reparability or suitability for spare parts (as opposed to reusability on an "as is" basis) would be moot: the vast majority of contemporary products, especially those not made of metal moving parts, are not designed for repair or parts substitution, and no significant retail infrastructure exists that would have a need for these materials.

In addition, even if successful, this elaborate effort would not have been able to answer several fundamental questions:

- Would the durable item, if functioning, be something that a consumer would want? For instance, would a rescued plastic salad bowl, a repaired circa 1980 radio, or a rubber gasket from a broken faucet, be something that could be sold or even given away?
- How much would it cost to process and market these materials?
- Would the benefits justify the expense?

The WCS was neither appropriate nor applicable as a method to answer such inquiries. For all of the reasons listed above, the assessment and testing of durables for reusability, reparability, or suitability

¹ May, 20, 2004 email communication from CRAB member M. Vaccaro to Director R. Lange

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as spare parts under the WCS was considered unrealistic on programmatic, economic, and methodological grounds.

How DSNY took the CRAB/WPC Proposals into Account

While DSNY did not incorporate the CRAB's and WPC's entire protocol, the WCS was designed to, and does, reveal new insights into the bulk and durables components of the waste stream, and, as has been detailed earlier in this report, was expanded when possible (Summer 2005) to focus more comprehensively on bulk and durables in the waste stream.

For example, the WCS results suggest that the CRAB's concern that collection of compacted truck samples would inhibit accurate classification of a material as "bulk" or "durables" was unfounded. The extensive list of bulk items provided in the WCS report, and the ability for all personnel, including the temporary sort workers to identify materials coming out of a regular sanitation truck by their composition and often by function suggests that compaction does not result in the destruction of durables beyond recognition for waste analysis purposes.

In the back of a refuse truck, contents are only mildly compacted, not pulverized. A full 75% of glass containers in refuse samples were found to be intact; broken glass, or **mixed cullet**, comprised only 25% of glass in refuse samples. Contents of MGP recyclables trucks are subject to more breakage. The contents of MGP collections provide less cushioning during compaction. In MGP loads, only 44% of glass containers were found to be intact; 54% of the container glass sampled was mixed cullet. However, in no cases did such compaction of refuse or MGP result in the consultants' and sorters' inability to properly classify the sorted material into its proper durable category.

This observation is supported further by the Multi-Unit Study (MUS) sub-portion of the WCS, where we noted the same levels of breakage among samples taken from individual buildings which were not compacted. Whether such breakage occurred before items were discarded or at some point during the discard process could not, of course, be determined. But this observation, coupled with the observation detailed above refuting the claim of compaction's obliteration of product characteristics, validated the Department's decision not to design thousands of special, non-compacting collection routes in order to comply with the CRAB and WPC's proposals to preserve the size, identity, and utility of the products and packaging in the waste stream.

The Role of DSNY in Promoting Reuse as a Waste Reduction Policy Alternative

If the WCS was not the proper analytical venue to evaluate the potential for reuse to increase the curbside residential diversion rate, then how should we consider this question? In the section that follows, we respond to the major policy proposal that was behind the CRAB's interest in modifying the WCS methodology: a DSNY-funded system of curbside collection, assessment, repair, and marketing of used durables through a system of "Reuse MRF"s.

In June 2004, the Consumers Union, representing an array of waste policy advocacy groups working in New York City, released a plan entitled Reaching For Zero: A Citizen's Plan for Zero Waste in New York City. This document proposed a range of ideas for reducing, reusing, recycling, and composting

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fractions of the City's residential, institutional, and commercial waste streams.

One chapter devoted solely to the subject of "Reuse" proposed that DSNY implement and operate a program for the collection, assessment, repair, distribution, and marketing of reusable durables culled from the refuse and recyclables that New York City residents put out at the curb for collection. This system, which would entail the construction of five reuse materials recovery facilities and the establishment of a dedicated fleet of DSNY trucks to collect potential reusables, was justified based on certain assumptions made by the Report's authors:

The creation of approximately 9 jobs per undifferentiated ton of durables in the waste stream, using estimates from the Institute of Local Self Reliance (ILSR, 1997)

Predictions of high tonnages of municipally collected reusables (SAIC, 2000)

Other predictions of high revenue-to-tonnage ratios based on small industrial or commercial reuse operations not located in New York City (ILSR, 1997)

Follow-up research on the source data used for Reaching For Zero, which included a DSNY-funded 2000 Characterization of New York City's Solid Waste Stream by Science Applications International Corporation (SAIC) reveals that both sources (ILSR and SAIC) are out of date; the examples cited are not a valid comparison in terms of what Reaching For Zero is suggesting NYC do; and, in many cases, the source data have been misinterpreted by the authors of Reaching For Zero.

Quantifying Durables and Reusables in NYC's Waste Stream

Reaching For Zero incorrectly states that the 2000 SAIC report characterized only residential and institutional waste. In fact, the 2000 SAIC report characterized commercial as well as residential and institutional waste and gave a factor of between 55% and 65% as being residential (the SAIC report did not give a factor for institutional waste distinct from commercial waste). Therefore, all of the tonnage figures in Table 1 of Reaching For Zero should be reduced by 40% in order to focus on that portion of the waste stream for which DSNY is responsible for collecting. Doing so reduces the total annual tonnage per year for "Reusable Items" to 441,681.6 tons per year.

However, referring back to the table on page 66 of this report, based on the 2004/2005 WCS, the amount of durables (not necessarily reusables) in NYC's residential waste stream has been calculated as 9,865 tons per week, or 512,980 tons per year, which constitutes 15% of the total NYC residential waste stream.

Because of the extensive number of sort categories in the 2004 WCS, we can explore further and match WCS data to SAIC data by slightly reorganizing the data once more as per the table on the next page.

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WCS Annual Tons		SAIC Annual Tons	
Appliances/Electronics*	55,417.47	Major Appliances + Small Appliances	38,440.20
Carpets and Upholstery	41,179.47	Carpets and Rugs	40,206.60
Furniture**	76,153.87	Furniture and Furnishings	130,674.00
Textiles***	153,118.93	Clothing and Footwear + Towels, Sheets, Pillowcases	79,728.00
Untreated Dimension Lumber, Pallets, Crates	20,833.16	Pallets and Wood Containers	152,632.80
Total	346,702.91	Total	441,681.60
<p>* Appliances, Ferrous; Appliances, Non-ferrous; Appliances, Plastic; Audio/Visual Equipment-Cell Phones; Audio/Visual Equipment-Other; Computer Monitors; Televisions; Other Computer Equipment</p> <p>** Wood Furniture/Furniture Pieces; Non-C&D Untreated Wood; Upholstered or Other Organic-type Furniture</p> <p>*** Clothing Textiles; Non-Clothing Textiles; Shoes; Other Leather Products</p>			

This analysis reveals a substantial difference between the 2000 SAIC study upon which Reaching For Zero is based and the 2004-05 WCS, as well as noticeable differences in many of the individual categories, especially Textiles, Furniture, Untreated Dimension Lumber, Pallets, and Crates. Since the SAIC study was not nearly as complex and statistically sound a study, the WCS data should be considered more accurate in terms of an actual reflection of New York City's waste stream.

Using Urban Ore as a model for "Reaching For Zero"

In making claims about the job creation and diversion potential of reuse and repair as a waste reduction policy, Reaching For Zero relies heavily on ILSR's report, Creating Wealth From Everyday Items (Platt, B. 1997). ILSR's report provides an overview of "Reusables" and provides 13 case studies of successful reuse operations across the country. Reaching For Zero references one profile, that of Urban Ore, a well known California-based retail salvage operation, which was started in the 1980's with assistance from the City of Berkeley. Urban Ore is now an independent and profitable business, and the model to which all other salvage and reuse operations aspire.

Another reuse operation profiled in ILSR's report is Materials For the Arts, a reuse program jointly funded by DSNY, the New York Council for the Arts, and the NYC Education Department to capture valuable materials from commercial waste generators and give them away or sell them at reduced prices to NYC public schools and nonprofits. The ILSR report also features the DSNY publication "Reuse It, Repair It – But Don't throw It Away" as a creative method for empowering the millions of NYC residents to consider reuse and repair before disposing of reusable items. However, Reaching For Zero mentions neither of these profiles, focusing solely on Urban Ore.

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During BWPRR's investigation of the claims made in Reaching For Zero, additional inaccuracies, showing a lack of substantive research, were discovered, as shown in the table below.

Reaching For Zero claim	Fact
Urban Ore receives about 200 tpd <u>delivered to Urban Ore by the City of Berkeley</u>	<p>According to the Recycling Manager for Berkeley, Urban Ore is allowed to bring a truck and two employees to the transfer station and pull items, primarily from the "self haul" category (residents in cars bringing bulk items to the transfer station for a fee) before the car load is dumped.</p> <p>Urban Ore is not the only salvage operator allowed to do this.</p> <p>Urban Ore does not deal with the compacted refuse or recycling from the City of Berkeley's collection trucks.</p>
<u>Urban Ore receives about 200 tpd</u> delivered to Urban Ore by the City of Berkeley	According to a 2006 3rd Quarter "Report on Diversion and Disposal Tonnage" for the Berkeley transfer station (provided by the Recycling Manager), Urban Ore gets approximately <u>170 tons per quarter, or less than 800 tons per year</u> from the Berkeley transfer station.

Further analysis shows that Urban Ore is not a model that could translate easily into the type of program the authors of Reaching For Zero envision for NYC. The table below demonstrates the key differences between Urban Ore and Reaching For Zero.

Urban Ore	"Reaching For Zero"
Only accepts materials "As Is". They do not touch items that need to be repaired	Requires every piece of potentially reusable material to be "Triaged" - tested, evaluated, and sent to distribution centers for sale, repair, or deconstruction for spare parts
Most materials are brought by the homeowner to Urban Ore	Requires DSNY to allocate two more fleets of trucks to pick up potentially reusable items left at the curb as refuse or recycling and take all items to the triage depot, and then transfer items to their retail/swap shop/repair destinations
Highly trained and well compensated "Outside Traders" who decide what they will pay for, what they will take off the residents' hands (thus saving the resident a disposal fee at the transfer station), and most importantly, what they don't want	DSNY would be compelled to take every item that COULD be reused - even just for spare parts - and try to determine its best and highest use and forward it to that center/store/swap shop/etc.

Urban Ore maximizes its ability to rescue treasure from the trash. Reaching For Zero's recommendations do not duplicate the successful and sustainable facets of Urban Ore's operations. The Consumers Union's Reaching For Zero plan simply cannot serve as a realistic model for diversion through reuse in New York City. The fact that it requires separate DSNY collection for every potentially

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reusable item that has been placed out at the curb as trash, and then handling that material a minimum of three times to get it to its destination and for which there may or may not even be a market, disassociates it from the very model of "success" it claims to be based on.

Conclusion

The members of the Citywide Recycling Advisory Board, the Waste Prevention Coalition, and Consumers Union put a great deal of work into their report, Reaching For Zero: A Citizens Plan For Zero Waste in New York City. Their commitment to reuse as one method to reduce waste is well-founded. There is no question that promoting reuse of durables that would otherwise be discarded, including repair of certain items, is a worthy goal. Reuse enterprises, such as the network of thrift shops in New York City, and reuse and repair nonprofits provide social benefits in terms of job training and the provision of goods at lower than retail costs. Promoting reuse as a method of reducing waste also has important educational benefits. Reuse is higher in the solid waste management hierarchy than recycling or composting because it is less energy intensive and generates less waste. For this reason, DSNY targets the following reusables in its programming:

Textiles: DSNY sponsors twice yearly drop-off events with Goodwill and the Salvation Army, bringing in donations of over 130 tons in 2006, and promoting the continued use of these venues year round.

Electronics: DSNY sponsors twice yearly drop-off events for computers and televisions with various electronics manufacturers and retailers including Best Buy, collecting over 300 tons of obsolete and highly toxic computer and television monitors.

All goods: DSNY funds and administers a telephone and internet-based NYC Stuff Exchange (www.nyc.gov/stuffexchange), an interactive service that enables users to look up of locations by NYC neighborhood and throughout New York City where they can donate, buy, or sell different types of used goods.

All goods: DSNY promotes durables reuse through its "Waste Le\$\$!" media messages and on the NYC Wasteless website (www.nyc.gov/wasteless) under the heading, "New Homes for Old Stuff" (http://www.nyc.gov/html/nycwasteless/html/new_homes/new_homes.shtml).

Art supplies, electronics, fabric, furniture, musical instruments, industrial discards, paint, office equipment, and supplies: DSNY funds "Materials for the Arts" (www.mfta.org), a nonprofit organization that accepts donations of items for redistribution to NYC public schools and nonprofit arts and cultural organizations.

It is, however, important to distinguish the virtue of promoting reuse for environmental, social, and

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educational purposes from the goal of diverting substantial tonnages from the waste stream cost-effectively. The former goals can be pursued using the nonprofit infrastructure currently in place, which reflects a broad array of organizations specializing in the reuse and repair of certain fractions of the waste stream. Among them, the thrift shop economy is most poised to noticeably increase the tonnage of textiles diverted from the NYC residential waste stream, given the considerable size and homogeneity of this fraction. For this reason, DSNY is exploring further partnerships with major charity thrift shop operators to divert textile tonnages.

Overall, however, the fraction of wastes that the WCS characterizes as Durable, combined with the existing data on the cost-effectiveness and economic benefits of municipal-scale reuse collections and processing, simply do not warrant a system such as proposed in the Citizens Union's Reaching For Zero.

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