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DOBBS FERRY WASTE SUSTAINABILITY
SUMMARY OF RESEARCH

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The Village of Dobbs Ferry collaborates with multiple stakeholders at different levels in order to properly manage its municipal waste stream. One of the main points of inquiry I was tasked with was to help the Zero Waste Committee get a better sense of the steps of the waste and recycling value chain. That is, once the materials leave our curbs, what happens next, and where do they end up? A big motivation for this inquiry was to find out the lifecycle of items we put in our recycling bins.

Stephen Abenavoli of the Westchester County Department of Environmental Facilities (WCDEF) provided an overview of what happens to recycled materials after they are sorted at the MRF (Material Recovery Facility):

- Paper and cardboard are sold to paper mills to be used for production of recycled paper pulp.**
- Plastic, metal and glass are bid out to their respective recyclers and recyclables brokers.**
 - Plastics are broken up into tiny pellets that are made into things like outdoor furniture, like park benches, playground equipment, and decking.**
 - Metals are made into things like new cans, rain gutters, and window frames.**
 - Glass is either used in manufacturing concrete mixture or new glass products.**
- Waxed cartons are separated from the recycling stream and marketed separately. Waxed cartons are made of layers of plastic, paper, and sometimes also a thin layer of aluminum. Buyers of recycled cartons are able to break down the cartons and isolate each raw material with a machine called a hydropulper, which can then be sold off to other recyclables brokers.**

Abenavoli also reported that the county has always been able to find a buyer for recyclable materials and, to this date, has not had to resort to disposing of any processed recyclables. He did acknowledge the very real effect of contamination, stating that about 6% of mass brought to the MRF is contaminated material and therefore must be removed from the recycling stream. All in all, 94% of what ends up at the MRF is diverted from landfills or incineration. This is significantly better than the national average in which roughly 25% of recycled materials are thrown out as

waste due to contamination. This attests to a long-standing reputation among recyclables brokers for Westchester having reliably clean and well-sorted materials.

This reputation is most likely a major contributing factor to why Westchester is able to find interested buyers for all of its uncontaminated recycled materials. With a dependable flow of both supply and demand of recycled materials, Westchester is able to make substantial revenue from selling recyclables. In 2021, the county made \$3.5 million from recyclables sales. These earnings are then, themselves, recycled back into the county's waste management and recycling programs for program enhancements.

One of the primary uncertainties we wanted to clarify this summer was a discrepancy in reported organic waste disposed of between 2009 and 2018. In 2009, Dobbs Ferry was reported to have recycled 2,500 tons of organic waste. Numbers rose from there, peaking in 2012 at 3,850. In 2013, we see a drastic decline of reported organic waste recycling to 1,020 tons. This trend continues to 2018 when there was a mere 270 tons of recycled organic waste (See Figure 1 for recycling rates breakdown). It is of note that there is no increase in recycling stream for any other categories listed that could compensate for the drop in tonnage in organic waste.

Figure 1: Dobbs Ferry Municipal Report Card 2009-2021

Municipality (In tons unless otherwise stated)	Municipal Recycling Rates							Totals			
	Curbside Commingled Containers and Mixed Paper	Organic Waste	Bulk Metal	E-Waste	Deposit Containers	C&D & Sludge	MISC.	Recycled Waste	Disposed Waste	Total Solid Waste Generated (Recycled + Disposed)	Percent Recycled (Total)
Dobbs Ferry 2009	1,447	2,500	170	25	110	235	10	4,497	5,075	9,572	47%
Dobbs Ferry 2010	1,430	3,450	61	102	110	500	10	5,663	5,241	10,904	52%
Dobbs Ferry 2011	1,376	3,750	50	37	110	3,200	10	8,533	5,313	13,846	62%
Dobbs Ferry 2012	1,268	3,850	55	51	110	299	5	5,638	5,273	10,911	52%
Dobbs Ferry 2013	1,270	1,020	50	52	110	1,520	7	4,029	5,274	9,303	43%
Dobbs Ferry 2014	1,336	312	51	59	110	60	5	1,933	5,030	6,963	28%
Dobbs Ferry 2015	1,338	650	50	41	146	50	5	2,289	5,060	7,349	31%
Dobbs Ferry 2016	1,281	312	50	50	146	120	7	1,966	4,881	6,847	29%
Dobbs Ferry 2017	1,306	311	50	39	146	60	6	1,918	5,001	6,919	28%
Dobbs Ferry 2018	1,241	270	50	34	146	50	4	1,795	5,000	6,795	26%
Dobbs Ferry 2019	1,292	120	50	31	146	120	5	1,764	4,930	6,694	26%
Dobbs Ferry 2020	1,335	408	45	27	146	140		2,101	5,042	7,143	29%
Dobbs Ferry 2021	1,324	484	48	27	143			2,026	4,991	7,017	29%

Note: cells left blank are data that was not available as of the date of this report

This question was brought to the attention of Jennifer Dorman at the Dobbs Ferry Department of Public Works. While she couldn't say for certain what was responsible for this discrepancy, she did point out that prior to 2014 all organic waste recycling numbers were

estimates. She guessed that that could account for some of the change. The Yonkers Organic Waste Yard reports organic waste numbers for each municipality directly to the county. However, pre-2014 the Organic Waste Yard did not have a weigh scale, so all reporting was a rough approximation (the means of calculation for these approximations are unknown). Now that the Organic Waste Yard does have a weigh scale, reported numbers should be relatively accurate, according to Jennifer Dorman. Therefore, with regards to organic waste numbers for years prior to 2014, I recommend that they be replaced with an average of post-2014 numbers for any current accounting purposes for a more accurate representation of Dobbs Ferry’s pre-2014 recycling program.

Another question related to organic waste the team had was *what are the requirements for curbside yard waste to be properly composted?* Stephen Abenavoli at the Westchester County Department of Environmental Facilities helped answer this question by clarifying that yard waste left in plastic bags are considered “contaminated” and are not allowed to be collected as organic waste. Rather, they are taken with traditional garbage. Knowing this, it would be very beneficial for the municipality to take efforts to inform residents of this protocol. For most people, it is the case that they want to recycle properly and reduce their landfill waste, but they just don’t know the rules.

Stephen Abenavoli also provided explicit definitions for each waste stream category listed in the Westchester County Municipal Report Card (See Figure 2).

Figure 2: Waste Stream Categories for Westchester County

Category	Definition
Curbside Comingled Containers and Mixed Paper	Typical mixed-stream recyclables that are collected curbside and processed at the MRF
Bulk Metal	e.g., gutter pieces, grill racks, HVAC ducts, metal vent grates, metal pipes, tile edging, etc.

E-Waste	e.g., computer/computer peripherals, TVs, scientific equipment, gaming devices, printers, etc.
Deposit Containers	Bottles and cans collected from recyclable exchange machines at food stores
C&D Sludge	Materials accumulated from construction work, mostly road and sidewalk repairs, as well as dewatered beneficially reused sewage sludge.
Organic Waste	Recycled food scraps, mixed yard waste, and other organic debris destined for a composting site
Mics.	e.g., antifreeze, motor oil, tires, junk automobiles, vehicle batteries, household batteries, cell phones, textiles, etc.

One thing to note is that while Westchester County defines organic waste to include both food scraps and yard waste, Dobbs Ferry has not in the past had a way to accurately measure recycled food scraps collected, and it is most likely that its organic waste numbers are comprised of primarily yard waste. However, Abenavoli found records from the Municipal Annual Reports that the Village filed with the County where, in 2019, 2020, and 2021, food scrap waste was reported as 20 tons, 49.7 tons, and 96 tons respectively, all under 20% of the total organic waste figures for that year.

The Village signed up for the County food scrap collection program, RFSTAD, in April 2022. With this program, the County will now be able to track accurate data on the Village's food scrap collection, and the Village will be able to access quarterly updates from the County.

One important category of recycling we wanted to investigate is that of soft-plastics (plastic shopping bags, bread bags, plastic films, etc.). While soft-plastic recycling is not a service provided by the municipality, “the New York State DEC [Department of Environmental Conservation] requires large retail stores, including most grocery stores, to make plastic bag recycling collection bins available in visible, easily accessible locations.” I tried to do some digging to see whether soft-plastics are, in fact, recyclable, what happens to the soft-plastics that are disposed of in collection bins, and how much of soft-plastic recycling programs are really just a form of “wish-cycling.” Interestingly, I had great trouble finding reliable sources that have published on this topic. I decided to call some local grocery stores (Stop and Shop, DeCicco & Sons Ardsley, and Foodtown of Hastings) to ask about their soft-plastic collection bins and whether they were part of a larger program. I spoke with one associate at each store. All three associates that I spoke with said that their stores did not have such a collection bin, which raises an interesting point, that even if stores do have plastic bag recycling collection bins, they may not be sufficiently communicated about or promoted.*

It is clear that there is much haze surrounding the state of soft-plastic recycling. Knowing the lengthy half-life of plastic decomposition, it would be beneficial for the Zero-Waste Committee to gain some clarity on this point in planning a waste reduction strategy for the future. That is, are soft-plastics truly recyclable? In any case, the best strategy might be a campaign urging people to bring their soft-plastics to a proper collection bin rather than throwing them out with their garbage. If it becomes clear that soft-plastic recycling is less environmentally sustainable than perceived, the most appropriate approach would be to urge people to reuse plastic bags whenever possible and to minimize their use of soft plastic all together.

This last point reflects a larger philosophy around recycling and waste management sustainability. That is *to reduce, reuse, recycle*, as the saying goes. The turn of phrase communicates a hierarchy of strategies to minimizing our waste. The best thing we can do is to limit our overall consumption of disposal goods. As much as we can, we should try to opt for things that don’t come in layers of extra packaging, avoid single-use goods, etc. This step has also been referred to as refuse—to refuse excessive stuff like double-bagged plastic or extra take-out utensils. When *reducing* isn’t a realistic option, then the next best thing is to *reuse*, and repurpose,

the things that we do have—for example, using old ripped-up t-shirts as dish rags or keeping glass jars and bottles as drinking glasses. The point here is to find new ways to use the things that we already have, which, by turn, contributes to the primary goal of *reducing* our consumption of new goods. Lastly, when *reusing* is no longer possible, we can *recycle* materials using the proper cleaning and sorting procedures. Recycling is a great way to lessen the need for virgin materials. But, because the recycling process requires its own inputs of energy and materials, it is recommended as an option only when the first two are not practical.

The end goal of waste management sustainability is to minimize the volume of trash we create. Since trash decomposes over such a long time scale—up to thousands of years for certain materials—from the perspective of any individual lifetime, we can think about the waste we produce as never going away. Dealing with the volume of waste generated by the world is a major challenge. What to do with it, where to store it, and how to store it safely; none of these questions have an easy answer. Ultimately, our waste takes up a lot of space, which is fundamentally the most finite of all resources we have on this planet. It is therefore in the best interest of each of us to minimize the waste we generate and contribute to circular economic processes, like recycling, as much as we can.

* The Zero Waste Committee has new information obtained after this report from our local Stop & Shop and DeCicco's supermarket managers indicating that the plastic bags in the collection bins are picked up, along with the vending machine bottles and cans, by a company called Tomra. While we have learned that Tomra does process the vending machine recyclables, we are still in the process of determining what happens to the plastic bags.