PERFORMANCE ANALYSIS OF THE QUEENS RESIDENTIAL CURBSIDE ORGANICS PROGRAM CALENDAR YEAR 2023

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Executive Summary

This report presents a Performance Analysis of the current Curbside Organics ("Composting") Program serving the entire Borough of Queens, New York since Fall 2022. It assesses monthly capture rates and per household generation rates of compostable discards such as food scraps, yard trimmings, and compostable paper in residential curbside collection. It finds that the Queenswide capture rate averaged 4.3% per month for Calendar Year 2023.[1]

Monthly performance is shown below.

Borough of Queens: Capture Rate CY 2023	
MONTH	capture rate = tons collected organics/ (tons collected organics + tons organics in refuse) x 100%
2023 / 03	0.7%
2023 / 04	4.5%
2023 / 05	4.6%
2023 / 06	4.4%
2023 / 07	4.2%
2023 / 08	4.2%
2023 / 09	3.9%
2023 / 10	4.5%
2023 / 11	6.7%
2023 / 12	5.1%
Annual	**4.3%**
* organics = food scraps, yard trimmings, and compostable/soiled paper	

Table 1. Borough of Queens Capture Rate CY 2023[2]

Looking only at the ten (10) months in 2023 in which residential Curbside Organics collection took place, calculations show that 4**.3% of everything that could be set out for Curbside Organics collection, was in fact set out. The remaining 95.7% of food scraps, yard trimmings, and compostable/soiled paper went to disposal as refuse.**

Some Queens Districts performed better than average. Queens District 11 averaged an 8.1% capture and led other Districts. It was closely followed by Queens Districts 12 and 9. Queens Districts 2, 3, and 4 struggled the most. Shown below in Table 2 is summary data for each District and Total Borough Performance in 2023.

Calendar Year 2023 Performance Indicators:Queens Districts and Borough

Queens District	Average Monthly Residential Curbside Organics Capture Rate	Average Monthly Lbs Organics/all Households	Annual Tons Residential Curbside Organics	Annual School Truck (SmartBin) Organics	Annual Leaves and Xmas Trees	Annual Tons of Curbside Refuse	Average Monthly Lbs Refuse/all Households	Number of Households (ACS 2021)
QE07	3.6%	2.37	1,158	-	41	76,929	131.3	92,784
QE08	3.9%	2.37	698	-	11	43,382	122.5	58,775
QE10	3.3%	2.71	596	-	18	43,960	166.8	60,324
QE11	8.1%	5.12	1,229	732	45	34,484	119.8	56,128
QE12	7.2%	6.15	2,501	-	14	79,986	163.9	70,412
QE13	5.1%	4.08	1,370	-	25	62,830	155.8	56,772
QE14	4.1%	2.54	622	-	14	36,778	125.4	97,643
QW01	4.2%	1.80	835	-	35	48,141	86.5	59,000
QW02	2.3%	1.16	340	1,978	23	36,279	102.9	48,593
QW03	1.4%	1.09	328	-	22	56,398	155.8	43,935
QW04	1.2%	0.84	236	-	7	47,761	141.8	47,960
QW05	4.0%	2.62	921	1,260	30	55,110	130.4	81,327
QW06	4.7%	2.18	618	-	10	31,833	93.5	67,205
QW09	6.5%	5.17	1,257	1,164	14	45,492	156.0	48,878
Queens Total	**4.3%**	**2.87**	**12,709**	**5,134**	**306**	**699,360**	**132.3**	**889,736**

Table 2. Calendar Year 2023 Performance Indicators: Queens Districts and Borough [3]

Please note that capture rates and lbs/household/month are calculated for each month in which there was collection, then averaged for an annual figure. Thus, simply dividing total tons by households will yield a slightly different result.

The current Queens Curbside Organics Program covers all fourteen (14) Districts in Queens. A previous Curbside Organics Program ran in Queens between 2015[4] and 2020. Under the previous Program, Districts were added to collection routes in stages, first by District Section, and then by entire District. By 2018, nine (9) of the fourteen (14) Districts of Queens were included in the Program, and they continued until the Program was cut in June 2020.

Shown below in Figure 1 are the total tons of residential Curbside Organics collected, by year, 2018 to present. The first important thing to note is this: **more residential Curbside Organics tons were collected from eight (8) districts in 2018 than from fourteen (14) districts in 2023**. **More residential Curbside Organics were collected from a population of 540K households[5] in 2018 than from over 890K households in 2023.**.

This fact, which is the starting point for demonstration that performance in the Program is in decline, is confirmed and emphasized looking at capture rates across the years. Figure 1 also shows an average monthly capture rate for all Queens Districts for the years 2018 to 2023, only counting months in a year in which collection took place. It shows that Performance in Queens

in 2022 and 2023 is lower than in 2018 and 2019 (2020 saw collections halted due to COVID). Overall, the single digit capture rates are low – reflecting low participation.

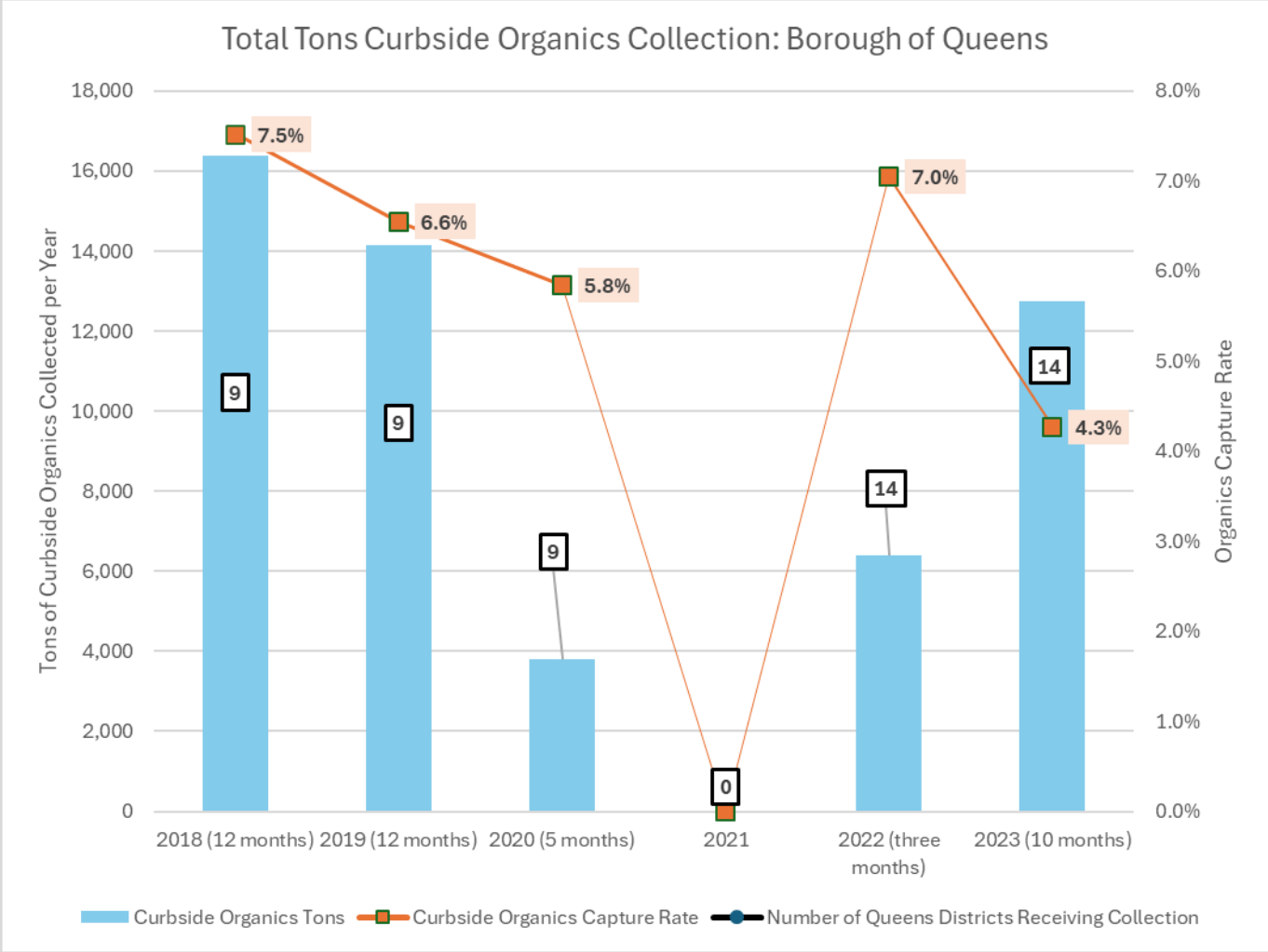

Figure 1. Total tons Curbside Organics Collection: Borough of Queens [6]

Figure 2 below shows that monthly performance in 2023 was slightly higher among Districts that were in the prior Curbside Organics Program (average of Districts 2, 5, 7, 8, 9, 10, 11, 13 and 14 – dark orange) than in Districts that began only in Fall 2022 (average of Districts 1, 3, 4, 6, and 12 – lighter orange).

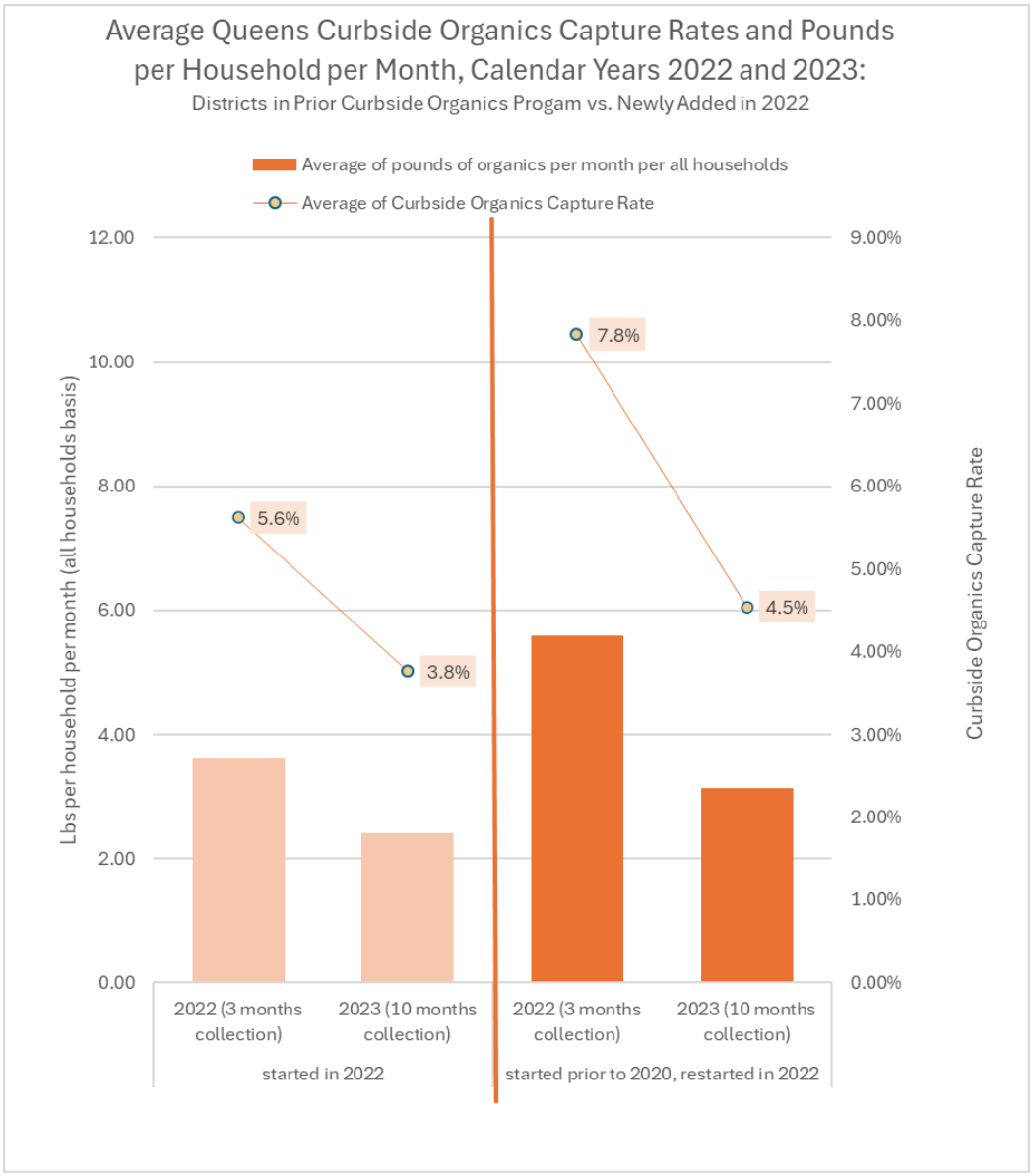

Figure 2. Average Curbside Organics Capture Rates and Pounds per Household per Month, October 2022 through December 2023: Queens Districts that Started in 2022 vs those that were in the Prior Curbside Organics Program [7]

Expansion of the previous residential Curbside Organics Program was paused in 2018, and then the Program was cancelled due in part to cost inefficiencies in 2020. Cost inefficiencies in collection were experienced as high per-ton costs to fuel, maintain, and staff collection trucks. Cost inefficiencies directly relate to low tonnage, which in turn reflects low participation. Given the current trajectory of the present Curbside Organics Program, there is a risk of future Program failure due to costs. The move to Mandatory status of the Program, with enforcement and ticketing, may or may not boost capture rates.

New York City's experience with Mandatory Curbside Recycling is instructive here. Mandatory Paper and Metal/Glass/Plastic (MGP) recycling was introduced in 1990, and was followed by a phase-in period, through 1994, during which time there was virtually no enforcement. Over those four years, diversion increased rapidly, reflecting the simple fact that recycling collection was being rolled out to more and more Districts. The Program served the entire city by 1995, and through 1997, there was little enforcement, but new materials were added to curbside collection (mixed paper, bulk metal). Diversion increased due to expanded tonnage.

In 1999, DSNY began issuing more tickets, and the diversion rate increased modestly, but these gains were lost with the cancellation of part of the Curbside Recycling Program (metal/glass/plastic or MGP) between 2002 and 2004. After reinstatement of MGP collection in 2004, diversion rates for recycling rebounded but not to levels seen in 2000. In 2007, there followed a period of increased enforcement, with ticketing levels far exceeding prior years. This heavy enforcement period peaked in 2009, but the diversion rate declined during that period, reaching a nadir in 2012. Enforcement continued at varying levels thereafter, and the diversion rate increased annually through 2020, but not in proportion to numbers of tickets issued or amounts fined. Figure 3 below shows this Program history.

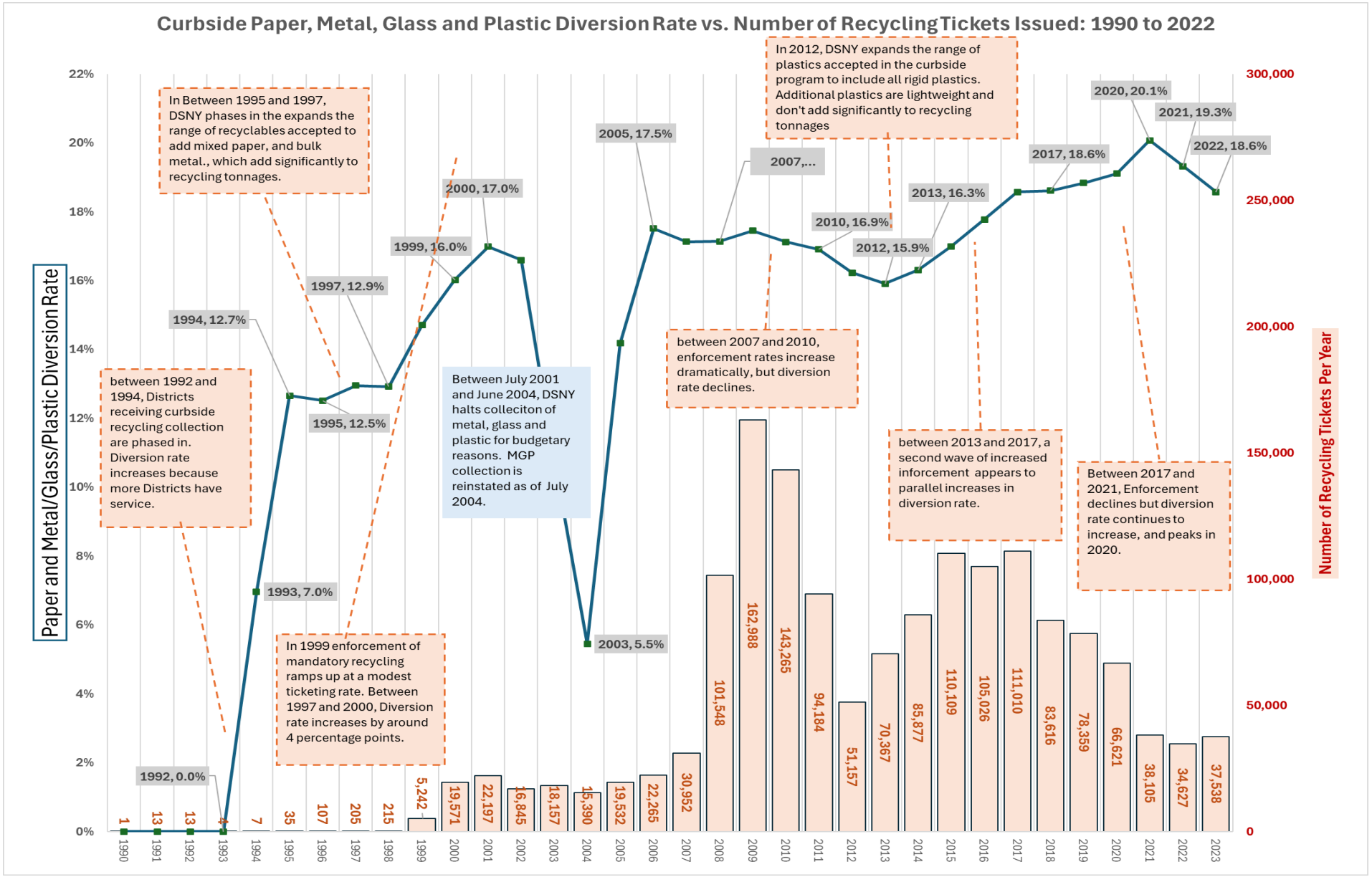

Figure 3. Curbside Paper, Metal, Glass and Plastic Diversion Rate vs. Number of Recycling Tickets Issued: 1990 to 2022[8]

Introduction

New York City's residential Curbside Organics ("Composting") Program has been back in full force in the Borough of Queens since late 2022. With one year of performance data available, now is an opportune time to analyze and assess how well this new version is doing to prevent food scraps, yard trimmings, and compostable/soiled paper from disposal. Using performance analytics that are standard throughout the waste management field, this report finds that the Queens residential Curbside Organics Program had a peak annual average monthly capture rate back in 2018 of 7.5%, when only nine (9) of fourteen (14) Districts were served by curbside collection. The average monthly capture rate has declined, rebounded, and declined again since then. [9]

As shown in Figures 1 above and 4 below, in 2023, DSNY collected over 12,700 tons of residential Curbside Organics in Queens; in 2018, that total was over 16,000 tons; and in 2019 it was over 14,000 tons – with five (5) fewer Districts and hundreds of thousands fewer household served. Most Queens Districts show lower performance today than they did in past years of the Program, when performance was already poor.

A major finding is that less dense Districts in Queens perform better than more dense Districts. This is unsurprising. Low density Districts generate more leaf and yard waste. They have more to work with, and they set out more – especially during the Fall, with the highest achiever, Queens 11, attaining an annual capture rate for 2023 of around 8.1%. More dense Queens Districts have lower capture rates, with some attaining a little over 1% capture for 2023.

A document published by DSNY at the end of 2022 reported high levels of success in Queens under the new, simpler, more accessible Program.[10] That document did not assess capture rates, and looked only at a single, initial Fall season, during which performance is always highest due to leaves. DSNY'S document had other analytic flaws, most notably comparing Queens Districts to Legacy Opt-in Districts outside of Queens in straight, tonnage terms, when it is known that each District has a different population size (and number of households). As is obvious, Districts with larger populations will generate more total tonnage than lower population Districts. This is why total tonnage comparisons across Districts are not useful.

School Truck (Smart Bin) Collections

The return of the newly-structured Curbside Organics Program for residents has been paired with an innovation in organics drop off – the Smart Bin. As of January 2024, there are an estimated 44 such bins in Queens, with locations estimated to be in Districts 1, 2, and 4.[11] While tonnages from these bins have not been reported as such by DSNY on Open Data, they are said to be included with School Organics Collections posted on this site. It is not known what fraction of School Organics tonnages are from Smart Bins, vs. actual schools. It should be noted that the increase in School Organics tonnages in 2022 and 2023 as compared to past years is large. There are more schools served with Organics Collection today than there ever have been.

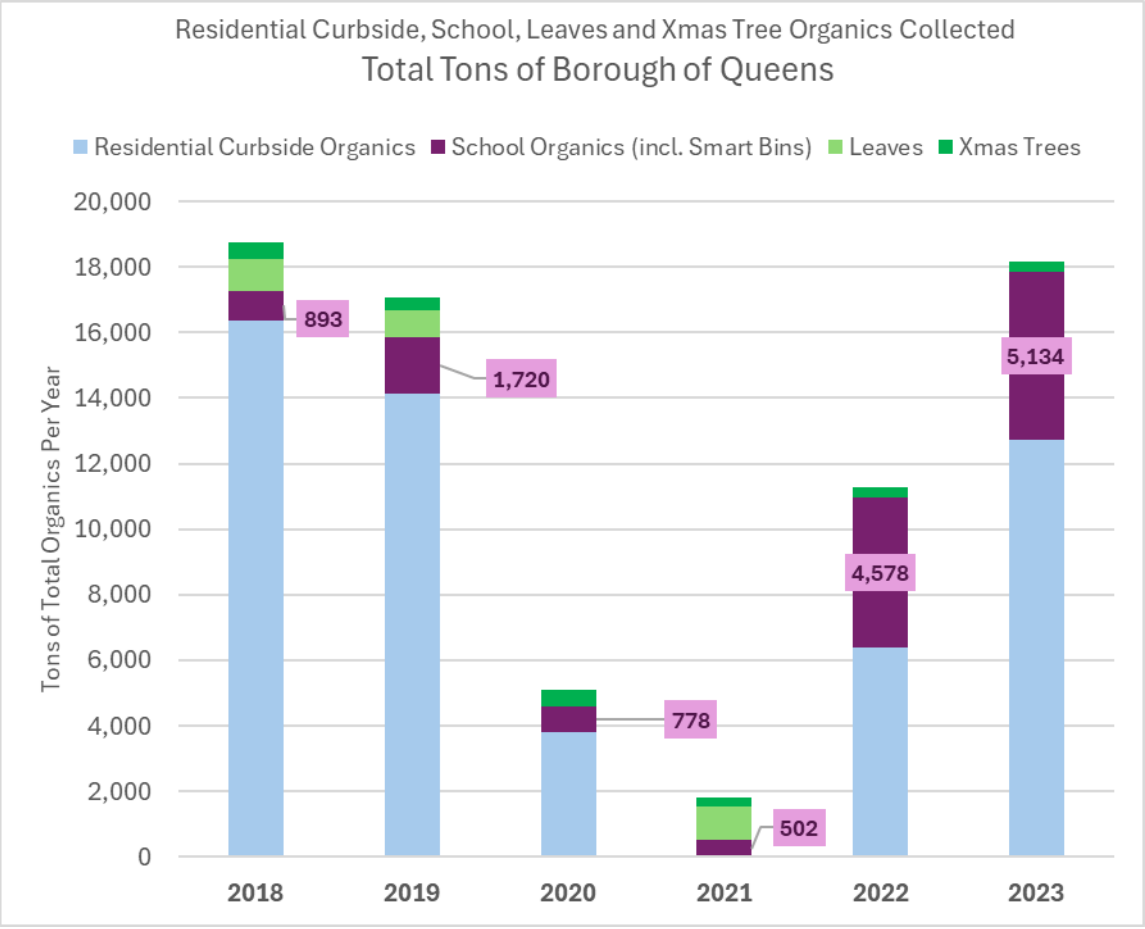

Figure 4. Residential Curbside, School, Leaves and Xmas Tree Organics Collected: Total Tons Borough of Queens[12]

Some, though not all, of the increased tonnage labelled "School Organics" by DSNY (purple bands in Figure 4 above) comes from Smart Bin participation. However, as measurable as these additional tonnages are, this achievement is independent of the performance of the residential Curbside Organics Program.

The residential Curbside Organics Program serves all residences with a one-time weekly collection in front of their door. It draws on a model of participation that ties buildings to setouts, which will be the basis for enforcement under the Mandatory scenario that will come with the passage of Local Law 85 of 2023. Residential Curbside tonnage can be tracked at the Community District level. School Organics (Smart Bin) tonnage cannot, as bins are located only in some Districts, and School Truck collections cross Districts. Finally, School Organics collections involve the participation of school custodians, students and teachers, instead of building owners/tenants. The latter represent most DSNY-managed organics generation. For these reasons, increased School Organics (Smart Bin) tonnage does not compensate for low tonnage or capture rates in the residential Curbside Organics Program.

Risk of Not Meeting Goals

Furthermore, neither the residential Curbside Organics Program, nor even the additional tonnages of School Organics (Smart Bin) collections to date, show performance at the levels needed to meet waste-related climate goals under the New York State Climate Leadership and Community Protection Act (CLCPA), or related local climate and zero waste goals. This fact becomes evident when comparing tonnages of potential, vs. actual, Curbside and School Organics under various capture rate scenarios.

These capture rates are not unreasonable, given that the City of Seattle averages over 60% capture for organics for all of its residential collections, and over 80% among single family homes. It is common knowledge that a 30% capture rate is considered a target minimum for collection efficiencies to be seen in the system of residential/institutional collection we have in New York City. Attaining this rate means that sufficient tonnage has been transferred from refuse collections to organics collections to ensure that organics trucks fill up, and that refuse routes can be rebalanced to maximize tons per truckshift.[13]

Purpose of this Performance Analysis

The information presented in this Performance Analysis is meant to inform any party about measurable facts. It is meant first and foremost as a move towards data transparency and accountability. It is also an aid for planning future direction of this Program so that it does not fall victim to cuts or cancellation due to future costs and inefficiencies.

Among many stakeholders committed to the success of this Program, there is support for making Curbside Organics Mandatory -- which is understandable on grounds of equity. There is also a commonly held expectation that enforcement under a Mandatory law will turn the tide

on low performance that has been seen since the start of the prior, DeBlasio-era Curbside Organics Program. However, there is reason to be cautious about this assumption.

A visual examination of citywide Curbside Paper and Metal/Glass/Plastic (MGP) diversion rates[14], which have rarely exceeded 20% since 2004[15], makes this clear. Figure 3 above shows the diversion rate for Curbside Paper and MGP Recycling since 1990, as well as the number of recycling tickets (AR violations) issued each year. It notes important milestones in the expansion of Curbside Recycling over the years. Major increases in the diversion rate were seen as the Program was being rolled out to more and more Districts in the period 1992 through 1995, when the Program held Mandatory status but was not enforced. More improvements followed through 1997 followed, as heavy weight recyclables – bulk metal and mixed paper – were added to the list of recyclables residents were required to separate. But the onset of enforcement has a mixed record in terms of tracking increases in the diversion rate.

Curbside Organics Program History: DeBlasio and Adams Administrations

It has now been over a year that the Curbside Organics Collection Program has been back in New York City, after a hiatus of two years following the pandemic. In contrast to the DeBlasio-era effort that served only some of the City's 59 Community Districts, the new Adams-era Program is simpler and makes more geographic sense. The entire borough of Queens, including the five (5) out of fourteen (14) Districts that had not been included in the prior Program, began once weekly Curbside Organics Collection starting in October of 2022. By December, DSNY was reporting a total collection tonnage of over 2.7 million pounds, or around 6,400 tons.[16]

The mechanics of participation under the new Curbside Organics Program are more straightforward than the program in place between 2015 and 2020. At that time, residents had to use a DSNY-issued brown bins or paper leaf bags for their setouts. Now, they can use any type of labelled closing bin– which is consistent with setout requirements for Curbside Recycling that have been in place for decades. For extra yard waste, they can use clear plastic bags as well. In the same, simplified fashion, the entire Borough of Brooklyn was added in October 2023, with the remaining Boroughs set to come on board in late 2024.

Curbside Organics Tonnage

The best method to assess performance of the current Program in Queens is to compare it to the prior Queens Program, looking at District and Borough performance over time. Figure 1 in the Executive Summary presents annual tonnages of residential Curbside Organics collected under prior and current iterations of the Curbside Program. For Queens as a whole, we saw that the tonnage collected in 2023 was lower than it was 2018 and 2019, the last two full years of the prior Program. This is true even though only nine Districts were served with Curbside Organics Collection in 2018 through 2020, representing hundreds of thousands fewer households (see Table 3 below).

Program	District	# 1-9 unit HH-ACS 2021	# 10+unit HH-ACS2021	total HH-ACS2021
Districts Receiving Collection 2018-2020, resuming in 2022	Queens 02	20,857	37,872	58,775
	Queens 05	63,905	6,249	70,412
	Queens 07	55,631	41,842	97,643
	Queens 08	34,268	24,406	59,000
	Queens 09	35,255	13,287	48,593
	Queens 10	40,749	2,983	43,935
	Queens 11	40,608	7,060	47,960
	Queens 13	62,486	4,586	67,205
	Queens 14	27,651	21,012	48,878
	Subtotal	**381,410**	**159,297**	**542,401**
Districts Starting Collection in Fall 2022	Queens 01	49,133	43,568	92,784
	Queens 03	33,334	26,863	60,324
	Queens 04	29,752	26,257	56,128
	Queens 06	14,727	42,034	56,772
	Queens 12	60,119	21,118	81,327
	Subtotal	**187,065**	**159,840**	**347,335**
	Grand Total	**568,475**	**319,137**	**889,736**

Table 3. Number of Households in Queens Districts[17]

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Variation in Numbers of Districts and Months in which Curbside Organic Collection Took Place

The totals in Figure 1 appear to present a growing, then falling, then growing performance in the Program over time. This is accurate at a gross tonnage level but does not account for the fact that under the prior Program, there were varying numbers of Community Districts receiving Curbside Collection of organics to begin with.

This matters for data analysis, for a couple of reasons. First, the gradual, District-by-non-contiguous-District Queens rollout between 2015 and 2018 means that in different years, and even months, there were different numbers of Districts receiving Curbside Organics collection. What is more, many years included a different range of months of collection. In 2022, for example, collections started in October, and continued through November and December. In 2023, collections were stopped during the months of January and February, resuming in March[18]. For the calendar years 2018 and 2019, a full 12 months of collections from eight (8) Districts proceeded. Pre-2018, the monthly coverage gets more complicated due to staggered rollouts.

Queens Community District	Full District Start Month	Pandemic Pause in Collection	Full District Restart Month	Pause in Jan/Feb 2023	Full District Restart Month
District 01	October 2022			January 2023	March 2023
District 02	November 2017	June 2020	October 2022	January 2023	March 2023
District 03	October 2022			January 2023	March 2023
District 04	October 2022			January 2023	March 2023
District 05	November 2016	June 2020	October 2022	January 2023	March 2023
District 06	October 2022			January 2023	March 2023
District 07	October 2017	June 2020	October 2022	January 2023	March 2023
District 08	October 2017	June 2020	October 2022	January 2023	March 2023
District 09	November 2017	June 2020	October 2022	January 2023	March 2023
District 10	November 2015	June 2020	October 2022	January 2023	March 2023
District 11	December 2016	June 2020	October 2022	January 2023	March 2023
District 12	October 2022			January 2023	March 2023
District 13	May 2018	June 2020	October 2022	January 2023	March 2023
District 14	November 2017	June 2020	October 2022	January 2023	March 2023

Key
DeBlasio Administration Program Start
Adams Administration Program Start

Table 4. Start-Pause-Restart-Pause-Restart Schedule, Borough of Queens[19]

I have presented total tonnages in the figures above as a starting point for Performance Analysis. However, it is not accurate to compare the performance of a full year's collection to, for example, a year in which there was collection only 10 months out of the year. It is analytically incorrect to compare Borough performance in years where fourteen (14) Districts received service to years in which only nine (9) Districts did. Fortunately, there are ways to overcome the complexities of the start, pause, restart schedule so that an "apples to apples" comparison can, in fact, be made**.**

Pounds Per Household per Month

One option for a more comparable measure of performance translates monthly District tonnages into a household-level understanding, with a simple calculation:

$$\frac{\text{District monthly organics tons x 2000}[20]}{\text{\# of households receiving Curbside Organics Collection service}}$$

This formula normalizes tonnages to yield a pounds/household/month measure, sometimes referred to as "household organics generation". There is an additional caveat to this method, however. As noted above, the prior residential Curbside Organics Program did not treat all households equally. It made service to 1–9-unit buildings default, with 10+ unit buildings requiring an application process to be added to an existing collection route. Relatively few 10+ buildings in Queens enrolled, making the effect on tonnage of 10+ unit participation negligible. The current, simpler, Program offers collection to all buildings, regardless of size. So, there are two sets of "number of households served" in any Queens District; one that applies to 2019 and prior (i.e. 1–9-unit households), and a second that applies after that time (all households).

One way to address the change in Program coverage over time is to use the number of 1–9-unit households per District in the denominator for years 2018, 2019 and 2020, and all households per District for years 2022 to present. From U.S. Census American Community Survey, we know the number of households living in buildings of 1-9 units, vs. 10+ units, for each Community District. This allows the calculation of 2018-2020 performance on a per 1–9-unit household basis; and 2022 to 2023 performance on an all-households basis. As we will see, adjusting for variable Program coverage presents clearer data, but does not affect the conclusions of this analysis.[21]

In Figure 5 below, we see that in the year 2022, which included three months of collection, Queens households on average separated close to five (5) pounds per month of food scraps,

yard trimmings, and compostable paper, and set these out for collection. We also see that even with a conservative calculation that uses all households, rather than adjusting past results for covered households, the year 2018 surpasses all other years. In 2023, Queens residents set out an average of under 3 pounds of organics per household per month.

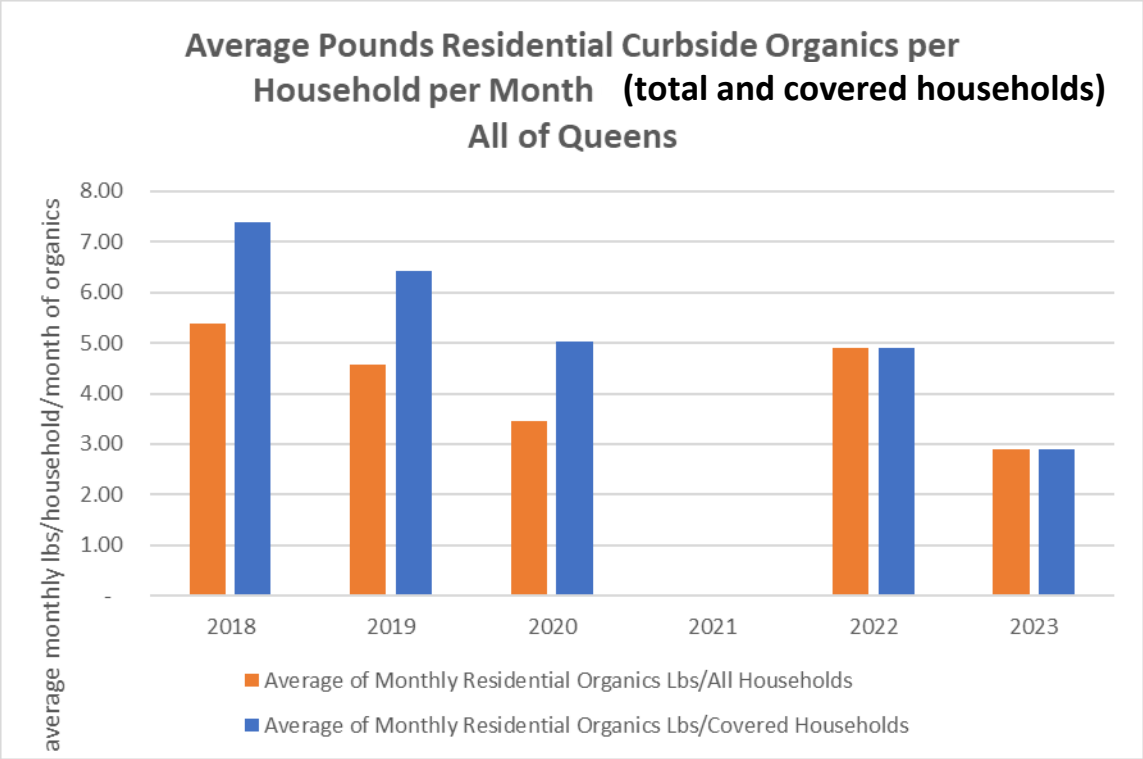


Figure 5.Average Pounds Residential Curbside Organics per Household per Month (total and covered households): All of Queens[22]

To recap: this method of assessing performance only counts participation for entire months in which Districts received curbside collection service. It accounts for the fact that Districts have different population sizes (numbers of households), and thus generate different total quantities of Curbside Organics. It presents two methods of assessing per household quantities – based on past and present Program coverage, and on an "all households" basis.

Variation Across Districts

If we break down the 2022 and 2023 household organics generation figures by District, there is substantial variation in performance (see Figures 6 and 7).

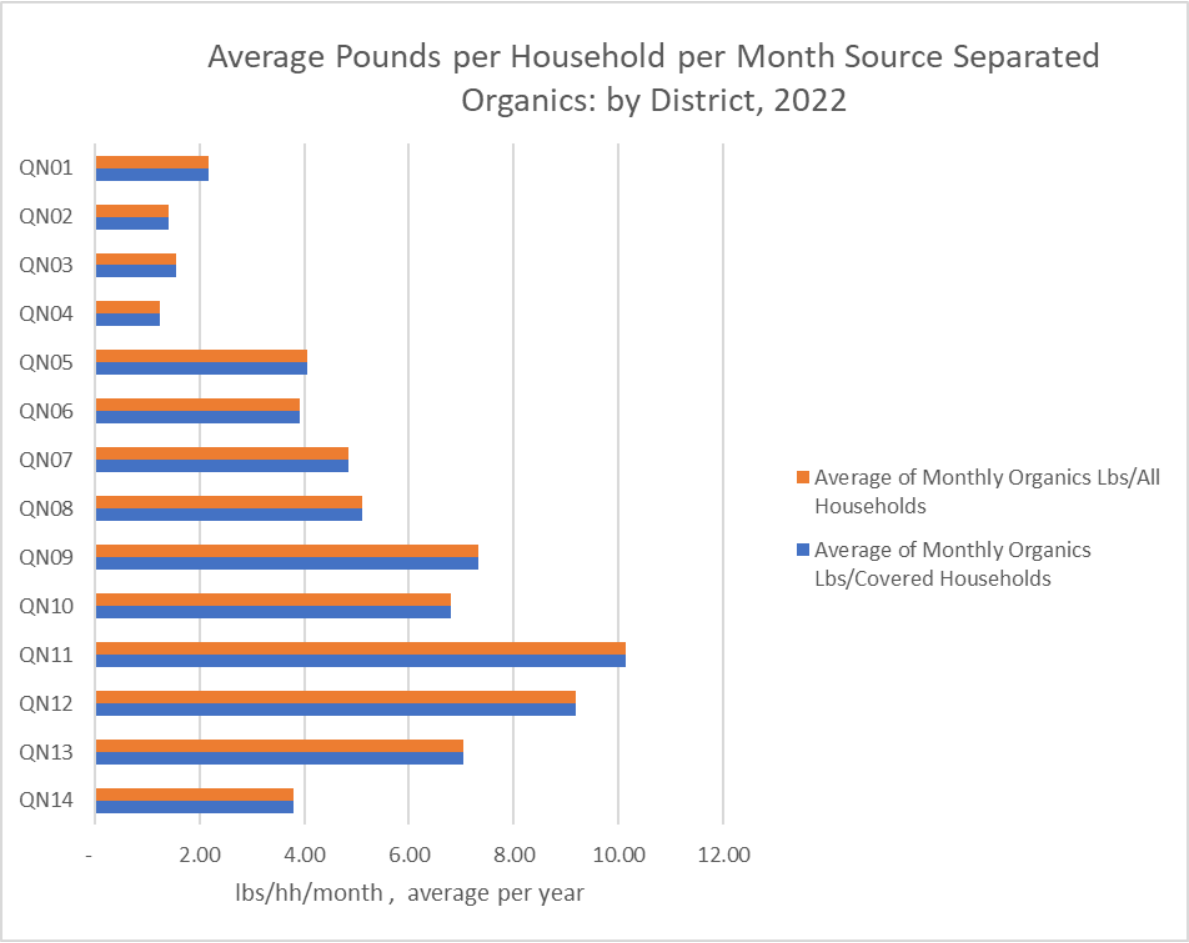


Figure 6. Average Pounds per Household per Month Source Separated Organics: by District, 2022 [23]

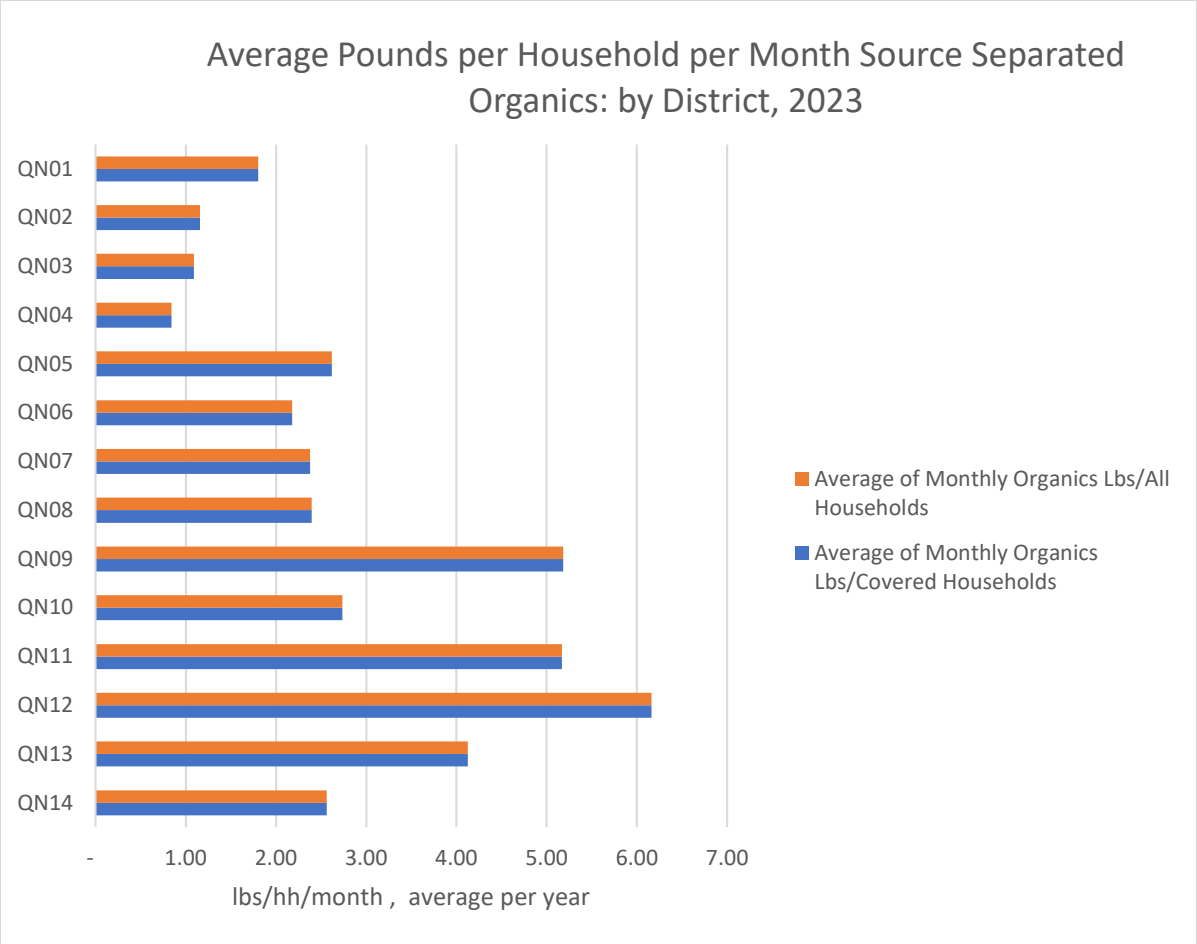


Figure 7. Average Pounds per Household per Month Source Separated Organics: by District, 2023. [24]Both per household measures are shown for continuity with prior graphs, even though they are the same under the new, post 2022 Program.

From these monthly averages, we see that households in some Queens Districts set out less than one (1) pound per month, while others reach levels of five (5), and even in the Fall (10) pounds per household per month, depending on the year analyzed.

Further comparisons to “Legacy Opt-in Districts”

The term “Legacy Opt-In Districts” refers to Districts that, sometime in 2020 or 2021, opted to resume residential Curbside Organics Collection, after a period of cessation that started in June 2020. No Queens Districts “Opted In”. Districts in the Bronx, Brooklyn and Manhattan, shown below in grey bars, did opt in.

Using the average pounds per household per month method, a similar comparison of current Queens Districts to Legacy Opt-in Districts for 2023 shows a mixed result, with Brooklyn Districts 6 and 7 outperforming all but three Queens Districts in average pounds of organics set out per week on an “all households” basis. This comparison is more accurate than a total tonnage per District comparison among Queens and Legacy Opt-in Districts, for the obvious reason that different Districts have different numbers of households.[25]

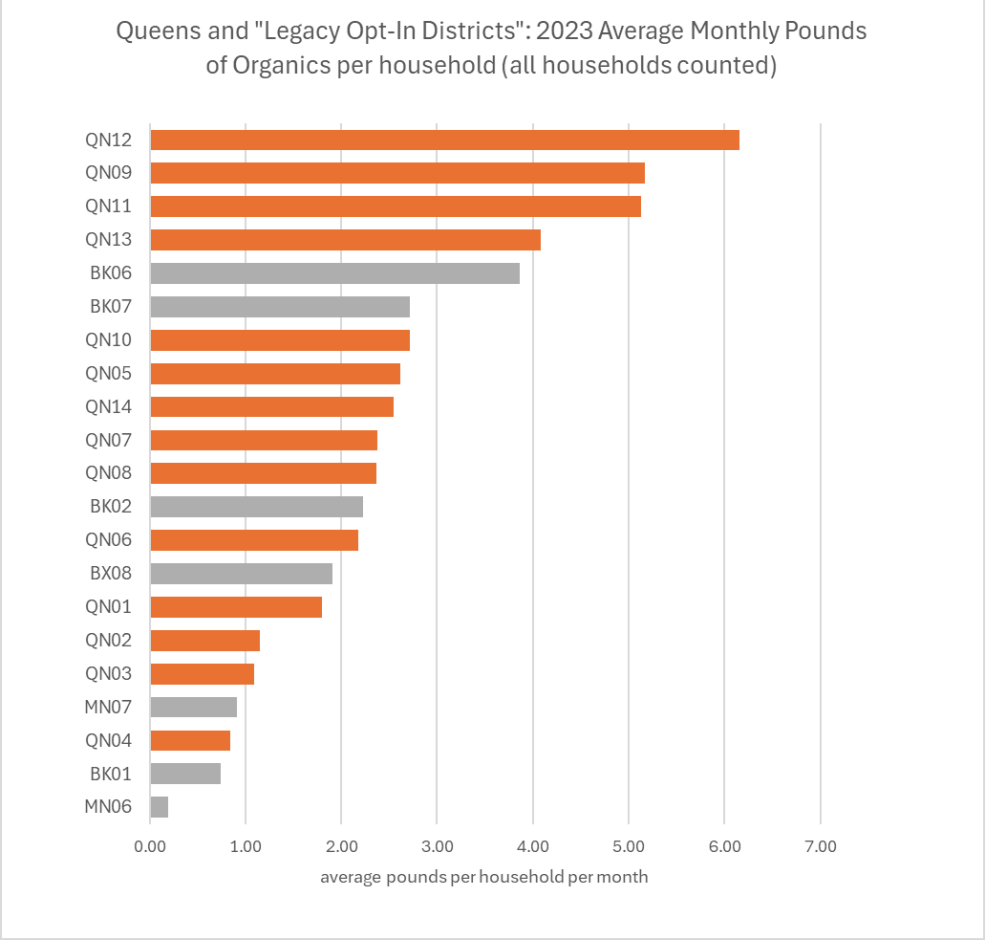


Figure 8. Queens and “Legacy Opt-in Districts”: 2023 Average Monthly Pounds of Organics per household (all households counted) [26]

Comparison to Refuse Generation

Is one (1), five (5), or ten (10) pounds per household per month of Curbside Organics a lot, a little, or something in between? Understanding this requires looking at curbside **refuse** generation as well. Shown below are monthly average pounds of refuse per household per month for Queens Districts. All households are counted, because all receive curbside refuse collection.[27]

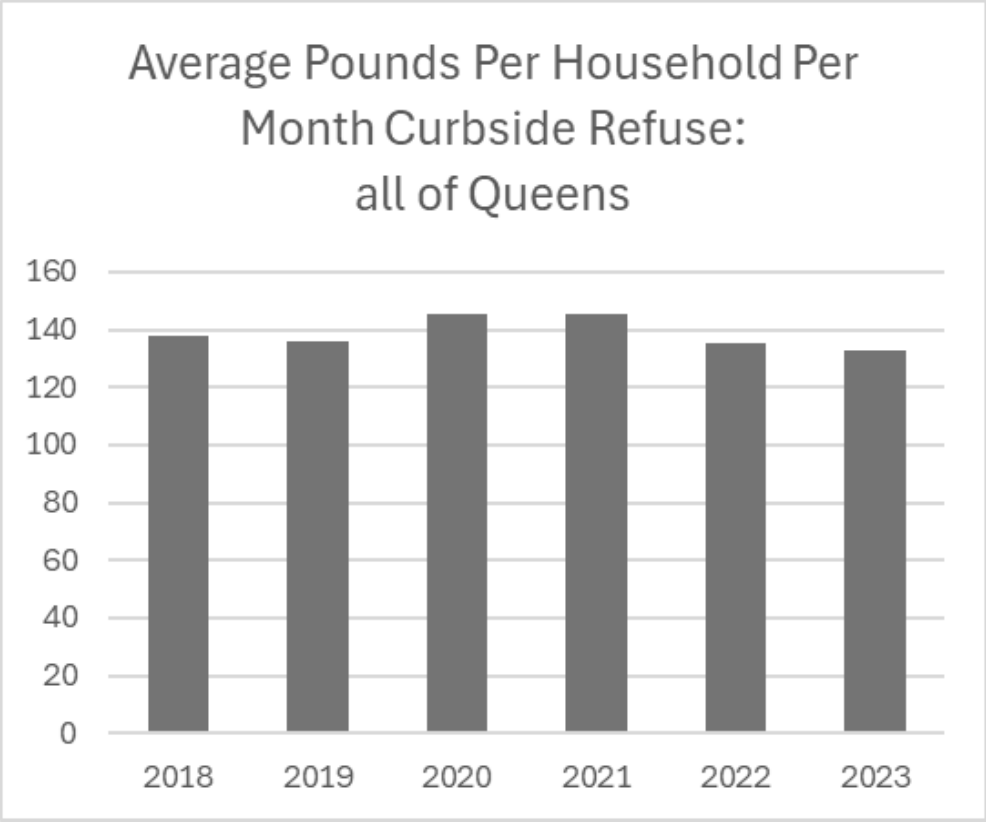


Figure 9. Average Pounds per Household Per Month Curbside Refuse: all of Queens[28]

We see that Queens monthly refuse generation per household is, on an annual average basis, around 140 pounds a month.[29]

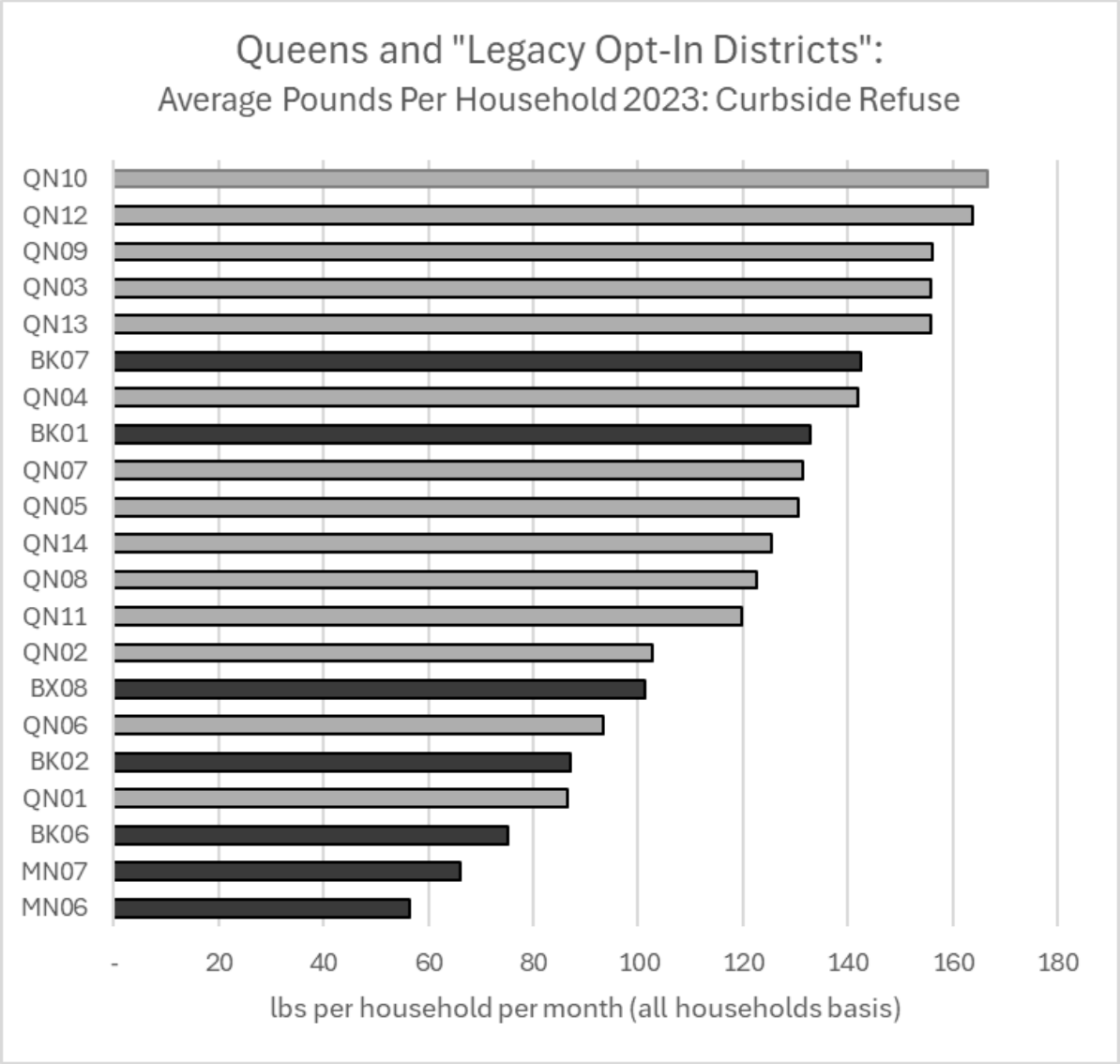
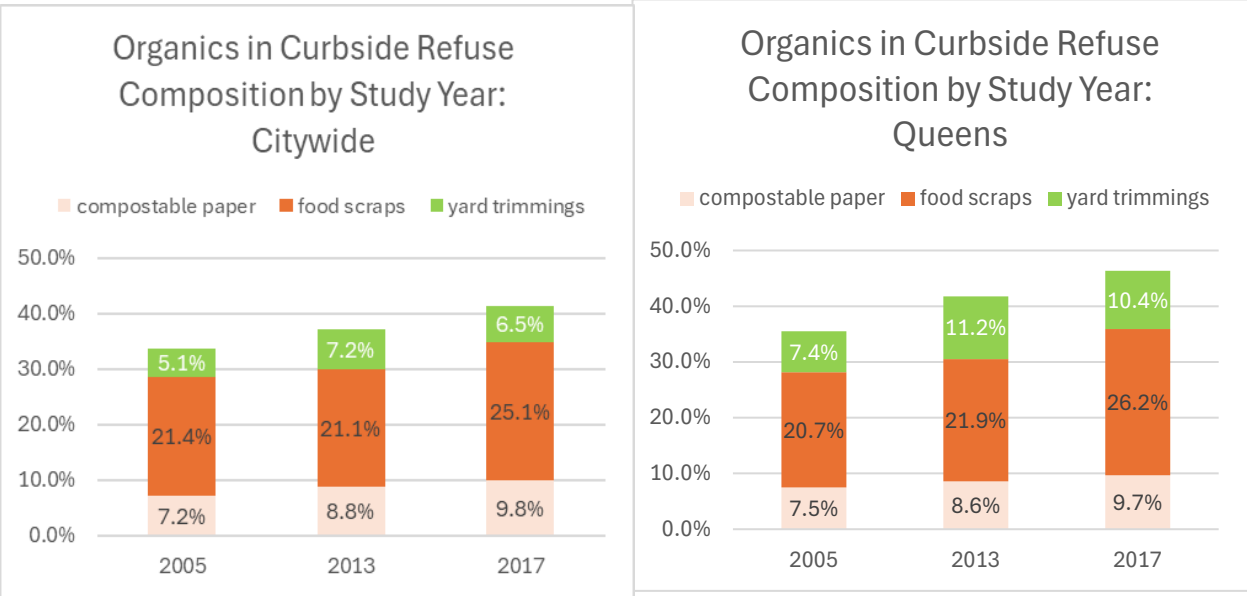


Figure 10. Queens and "Legacy Opt-in Districts" Average pounds per household 2023: Curbside Refuse [30]

Figure 10 above shows that Districts in Queens, as well as Legacy Opt-in Districts, generate varying amounts of refuse on an average monthly household basis. Not surprisingly, highly dense Districts in Manhattan generate the least. Attention to variation among Districts in refuse generation, as well as organics, is important because Districts with more trash may be generating more food scraps, yard trimmings, and/or compostable/soiled paper in that trash. Residents in some areas have more "potential", in terms of what they could, if they chose to, separate for Curbside Organics Collection, than other areas with less of these materials in refuse. Fortunately, there is another way to handle this with data analytics, using the results of waste characterization.

DSNY plans to release the results of its most recent Waste Characterization Study (WCS) sometime in 2024, but has not, at the time of this writing, done so. The most recent study before that was in 2017; it assessed the composition of NYC curbside refuse, recycling, and separated organics by Borough, but not by District. A study with similar scope was also conducted in 2013, and a more complete study in 2005.

These studies took hundreds of samples from curbside collections in each Borough, sorted them into a large number of categories, and quantified them using statistical techniques that establish that the results are representative of the entire Borough described. Out of all the categories, of relevance here are three: food scraps, yard trimmings (sum of leaves, grass clippings, and stumps/limbs), and compostable/soiled paper (such as napkins and paper plates).[31] Figure 11 below shows results across three studies, comparing Queens-specific results to Citywide average results. We see that for Citywide and Queens specifically, compostable organics make up an increasing percentage of refuse, reaching over 40% in 2017.



Please note: the often-quoted statistic of 1/3 or 33% of NYC's residential waste being compostable still stands, because that statistic refers to the percentage out of all curbside generation (refuse, paper recycling, MGP recycling, and separated organics). Here what is shown is specifically refuse composition, for reasons explained in the notes section.

Figure 11. Organics in Curbside Refuse – Composition by Study Year: Citywide and Queens[32]

Applying Waste Characterization Study (WCS) Results to Calculate a Residential Curbside Organics Capture Rate

From the forgoing results we know that (1) some Queens Districts set out more Curbside Organics than others, (2) some Queens Districts set out more refuse than others, and (3) that Queens refuse, at least when measured in 2017, contained over 40% compostable organics. Armed with this knowledge, we can calculate a **Capture Rate**.

The Capture Rate calculates how much could be diverted from disposal, out of the sum of both diversion and disposal, for a particular material category or group. Its strength is that it considers how much of that category a household, or a District or Borough, is getting rid of overall (sometimes called "generation") before assessing how much is separated for composting/anaerobic digestion (or recycling in other inquiries). For example, a District with many single-family homes and big lots will generate more yard waste than a dense neighborhood of attached houses. Some Districts generate more refuse on a per household basis than others, due to consumption patterns and recycling achievement. To "judge" an area on how well it is participating in Curbside Organics requires looking at how much organics are generated to begin with in refuse. You can't separate what you don't generate, as they say.

Capture rate is widely used in waste management analytics to assess performance. Although DSNY no longer publishes a Paper/MGP Recycling capture rate on Open Data, it is known from legacy data that it averages around 60% Citywide (see Table 5 below).[33]

Aggregation of Monthly, District Specific Paper/MGP Capture Rates Presented in DSNY's "Recycling Diversion and Capture Rates" Dataset on Open Data					
DSNY calculates Paper and MGP Capture Rate as "Total ((Total Recycling - Leaves (Recycling)) / (Max Paper + Max MGP))x100"					
DSNY Presents Rates per Fiscal Year and Sanitation Zone rather than conventional Borough					
Zone	2016	2017	2018	2019	
Bronx	50.2%	52.7%	54.1%	56.7%	
Brooklyn North	45.9%	48.5%	50.0%	51.2%	
Brooklyn South	60.6%	63.5%	64.2%	64.3%	2020 and
Manhattan	60.3%	62.3%	62.8%	63.1%	on: no
Queens East	64.1%	67.6%	70.7%	70.6%	data
Queens West	68.3%	72.7%	74.5%	73.8%	
Staten Island	74.2%	79.3%	78.4%	78.7%	
Average	58.2%	61.2%	62.4%	63.1%	

Table 5. Aggregation of Monthly, District Specific Paper/MGP Capture Rates Presented in DSNY's "Recycling Diversion and Capture Rates" Dataset on Open Data[34]

It is important to note that Capture Rates are *estimated*. They require results of a Waste Characterization Study, and those results are calculated using samples. Study results may "age" over time. Using the 2017 WCS data means that calculations are based on Annual data (as opposed to seasonal results), and for Queens as a whole, not specific Districts. Nonetheless, calculating the Capture Rate is a valid means to compare Borough performance over time, assessing how well Queens *could be doing*, vs what it is doing.

Performance Trends

With these calculations behind us, we are finally able to ask and answer some important questions about how the current residential Curbside Organics Program is performing in Queens.

Trend 1: The Queens Curbside Organics Program performed slightly better in the period 2018 to 2020 than the period 2022 to 2023.

As shown below in Figure 12, Queens Borough-wide organics capture rates, and average monthly pounds of organics per Queens household, were highest in the Program year 2018, the first year the Program was in place for nine (9) Queens Districts. They declined, then appeared to rebound in 2022, although this spike is no doubt due to the fact that only three, Fall months of collection took place in 2022. As shown in Figure 15 in the following pages, Fall collections are always peak collections.

Overall, reviewing performance since 2018, what is clear is a trend of decline.

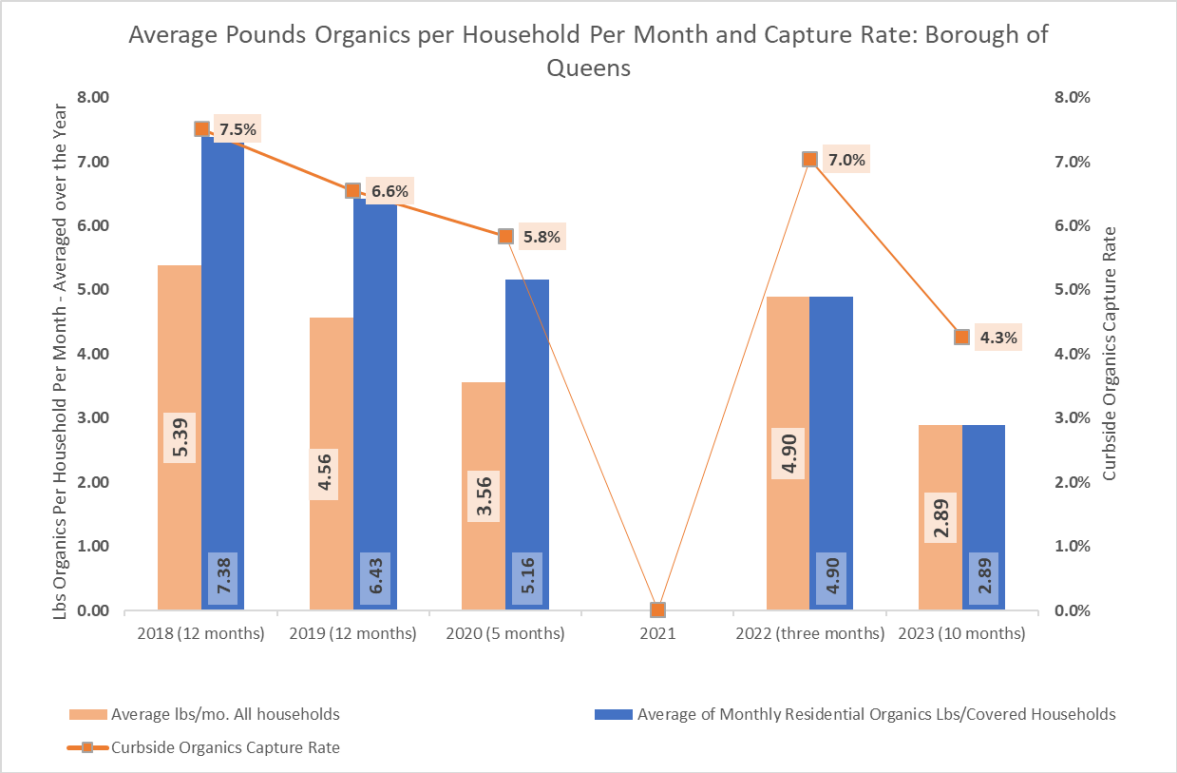


Figure 12. Average Pounds of Organics per Household per Month and Capture Rate: Borough of Queens[35]

Trend 2: Queens Districts that participated in the residential Curbside Organics Program before 2020 outperformed Districts newly added to the current Program in 2022. Legacy Opt-In Districts in the Bronx and Brooklyn were, on average, comparable to newly added districts. Legacy Opt-In Districts in Manhattan performed very poorly.

Fig 4 in the earlier part of this report showed average monthly for Districts that were new to the Curbside Organics Program, as of October 2022, vs. those that had begun the program earlier and restarted in October 2022. Figure 13 below shows the same information but by month in the years of 2022, and 2023. Districts that had been in the Curbside Organics Program under the prior curbside program shown at right (dark orange); new Districts in light orange. On an average basis, Districts with more experience in Curbside Organics performed slightly better in terms of capture rate, and pounds/household/month. Legacy Opt-In Districts are also shown for comparison.

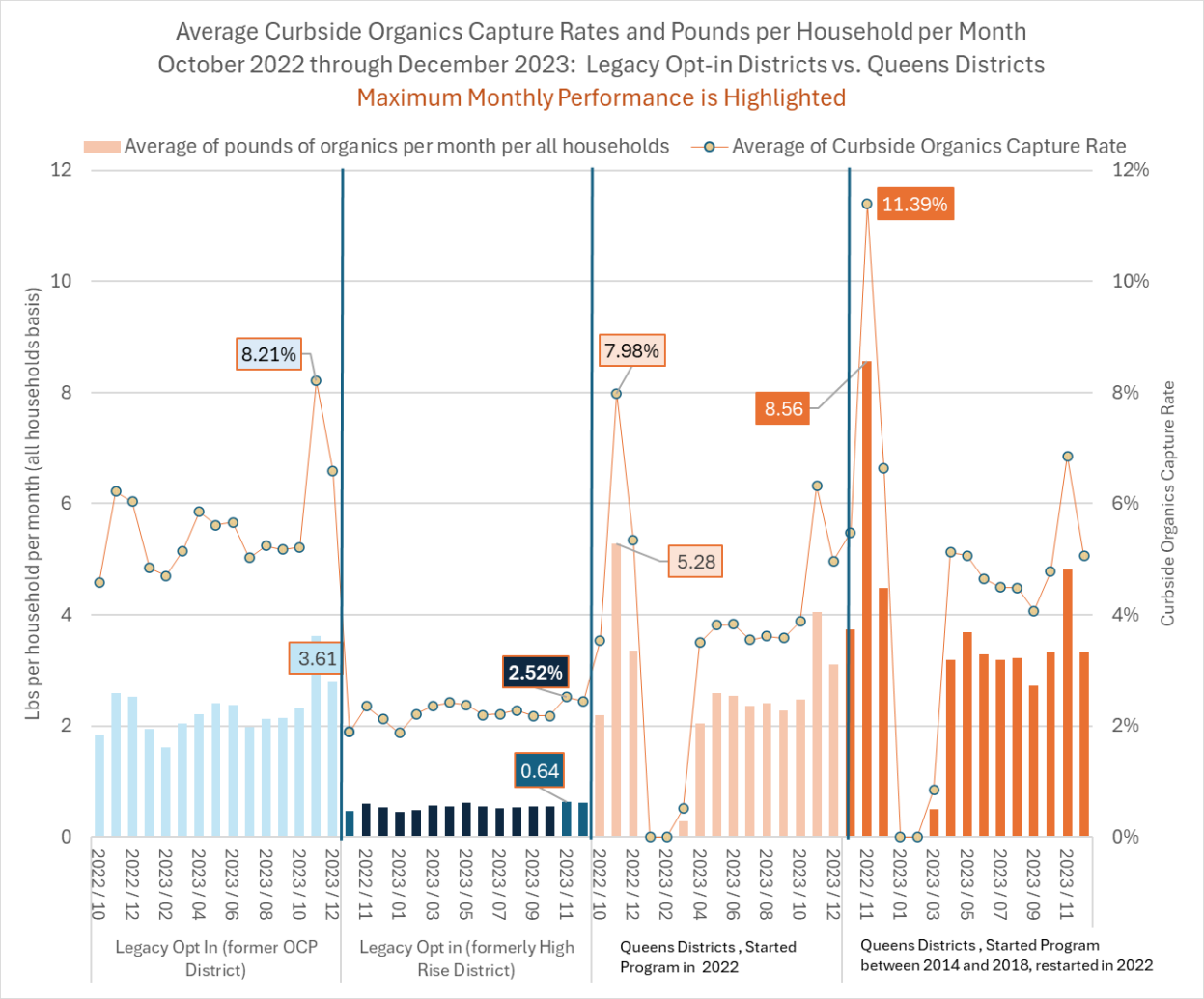


Figure 13. Average Queens Curbside Organics Capture Rates and Pounds per Household per Month, Calendar Years 2022 and 2023[36]

Trend 3: Performance is strongest in the Fall, followed by Spring and Summer. Winter performance is the lowest.

If we examine seasonal performance since 2018, it confirms that highest achievement is in the Fall, lowest in the Winter, with Spring and Summer in between. Missing bars for certain years mean that there was no collection during those months that year. For example, in 2022, Districts started collection in the Fall months. For that year, annual averages reflect Fall performance only. In 2023, collection was halted for January and February, with very little collection in March, so annual averages only reflect Spring, Summer and Fall performance.

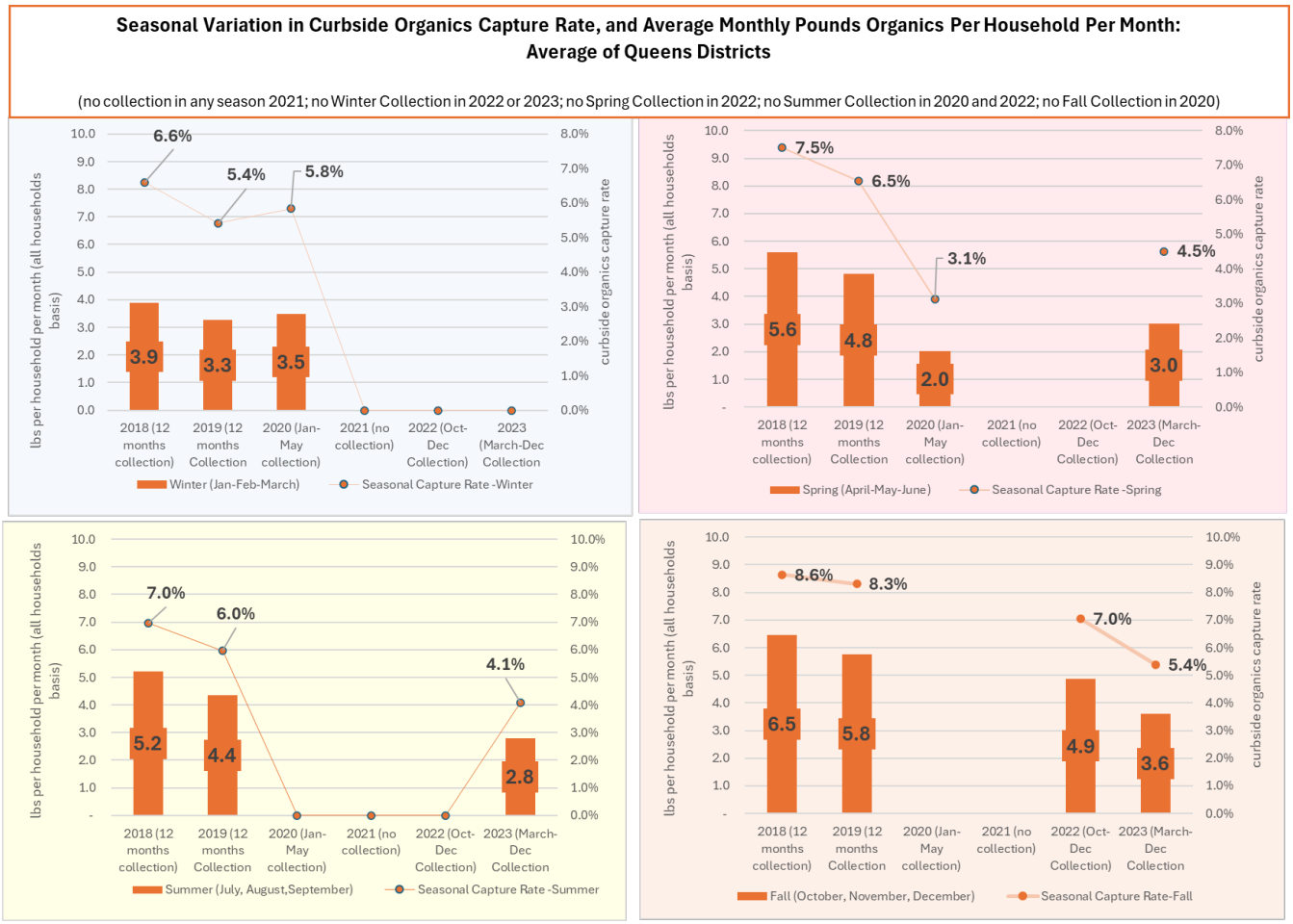


Figure 14. Seasonal Variation in Curbside Organics Capture Rate, and Average Monthly Pounds Organics per Household per Month: Average of Queens Districts [37]

One obvious conclusion from this seasonal variation is that Fall tonnages should not be benchmarks. They are exceptional, and they highlight the big role that yard waste plays in the Curbside Organics Program. Conclusions from Fall Queens tonnages should not extend to assumptions about tonnages in other seasons, or Boroughs.

Trend 4: There is substantial variation in performance by District.

Queens Districts that had been in the prior Curbside Organics Program are shown below, for years 2015 through 2023. The longer time range of years is appropriate at the District level because no Borough average is presented here.

District 11 led consistently in capture rate and per household organics. Queens Districts 7, 8, 9, 10, and 13 were close behind, attaining double digit capture rates during their first Program years. Queens Districts 2, 5, and 14 struggled the most.

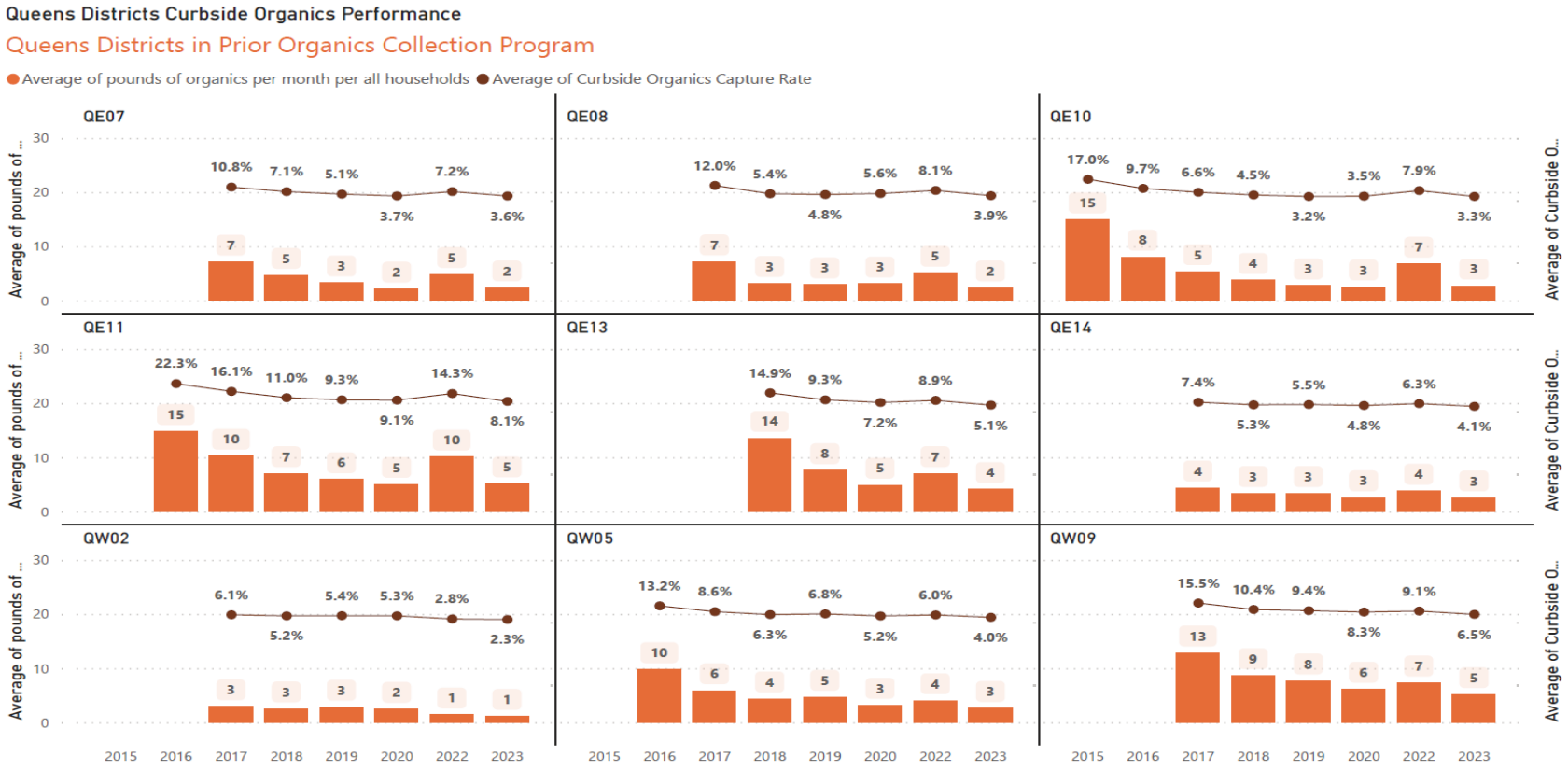


Figure 15. Queens Districts Curbside Organics Performance: Queens Districts in Prior Organics Collection Program[38]

For Individual Adams-Era Districts, Queens 12 was an obvious leader. It had a peak capture rate of 11% in the Fall of 2022, and an annual capture rate (reflecting Spring, Summer and Fall 2023 performance) of 7.2%. Queens 1 and 6 both attained over a 4% capture rate, while Queens 3 and 4 struggled the most.

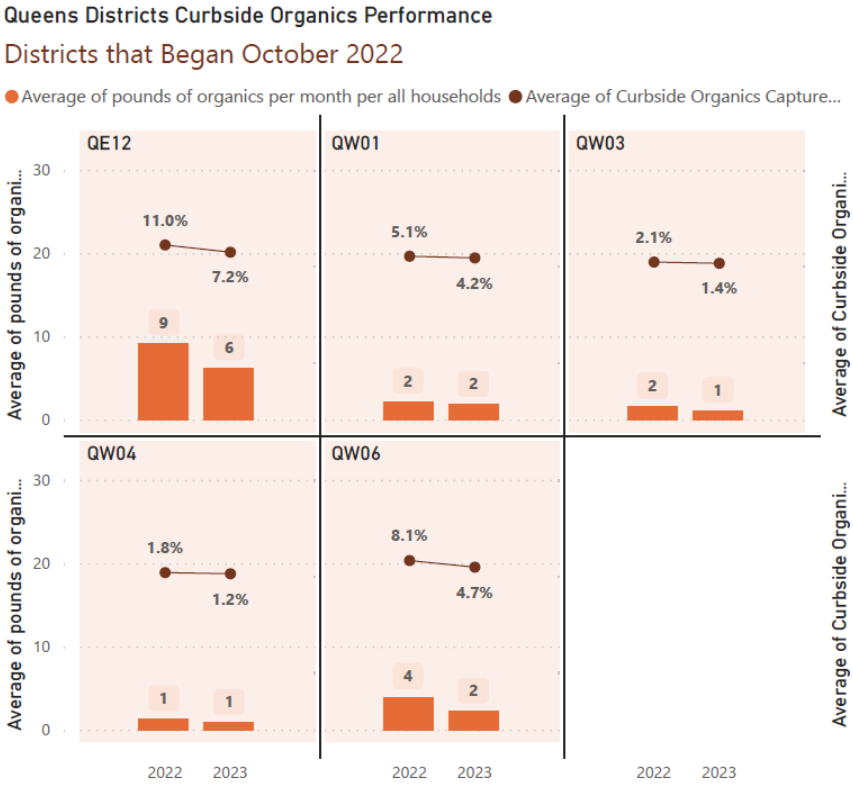


Figure 16. Queens Districts Curbside Organics Performance: Queens Districts that Began October 2022[39]

Trend 5: The "best" performing Districts are the least dense Districts.

It makes intuitive sense that Districts that have more yards and tree-lined streets will perform better in residential Curbside Organics Collections, because they have more leaves, grass, and clippings generated to begin with. The statistics bear this out. Shown below are "scatterplots", which contrast two variables to visually depict possible correlations between them. Each dot represents a Queens District, and the trendline shows the direction of the correlation suggested.

The first two graphs plot the 2023 Capture Rate for each District against the percentage of 1-to-2-unit residential buildings (the most common buildings to have yards and landscaping activities), and the second against the percentage of households living in 1-to-2-unit residential

buildings. Both show the same phenomenon. Districts with higher percentages of 1-to-2-unit buildings, and households in those buildings, have higher capture rates.

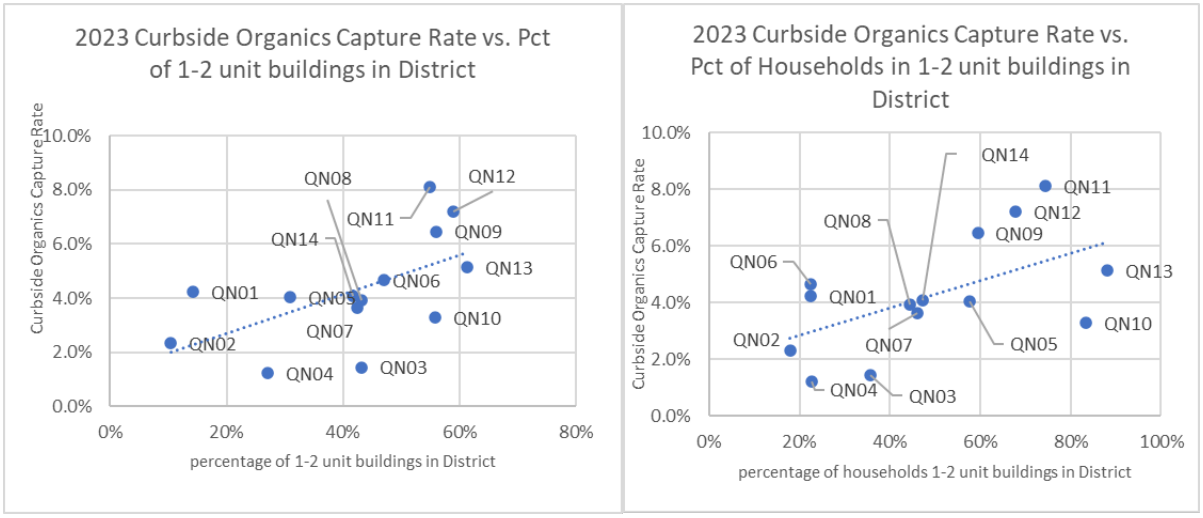


Figure 17. Curbside Organics Capture Rate vs. Percent of 1-2 Unit Buildings, and Percent of Households in 1-2 Unit Buildings in District[40]

The next two graphs measure density in a different way but confirm the intuitive finding. As persons per square mile goes up, the capture rate goes down. Interestingly, larger Queens Districts in terms of area (square miles) also perform better on average than physically smaller Districts.

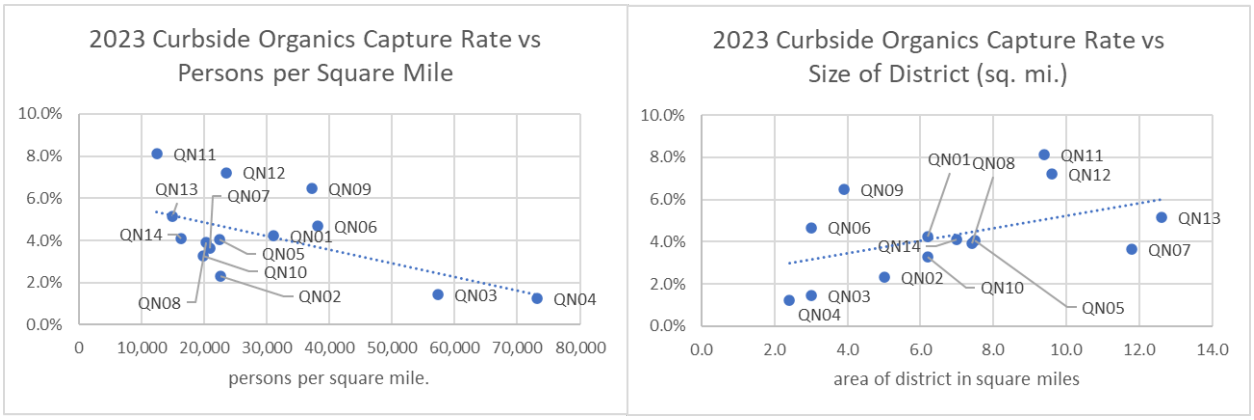


Figure 18. 2023 Curbside Organics Capture Rate vs. Persons per Square Mile, and Size of District (sq. mi.) [41]

Trend 6: For Queens, other demographic factors do not appear correlated with performance.

Other geographic, housing, and socioeconomic indicators monitored by the US Census's American Community Survey and compiled by the NYC Dept. of City Planning by District[42] do not show clear trends. Median household income, level of education, and other measures of people's origin, employment, income, etc. do not, at least in Queens, appear related to performance. I have not presented the scatterplots to show this here, but the data is available for anyone interested in running such correlations, as well as to explore other statistical inquiries. It is important to note that correlation does not imply causation, that the curbside organics capture rate is driven by multiple, interacting factors, and that a sample size of fourteen (14) Districts is not large enough to make statements that are statistically predictive.

Trend 7: In comparison to other cities with curbside organics, and in comparison to NYC residential Curbside Recycling, the capture rates of Queens and Legacy Opt-in Districts are quite low and have been for the life of both the DeBlasio- and Adams-era Programs.

In cities where there are established, pause-free, educationally intensive curbside organics programs (and which publish Open Data on tonnages and waste characterization, like Seattle), the capture rates for the residential sector range are around 60%. For Single-Family homes in Seattle, this rate is nearly 80%. For multifamily homes, the rate is far lower – only 15%, down from a high of around 20% in the mid 2010's.[43]

It took a long time to reach those levels; Seattle's Curbside Organics program began in the late 1990's and has been maintained, steadily without interruption, since then. Seattle also has a "Pay as You Throw" system, so there is an incentive to separate organics that does not exist in NYC. And, Seattle has a lot more yard waste on average than dense NYC. And In Seattle, Multi-Family housing is a smaller percentage of total housing, in comparison to NYC, as shown below. All of these factors should be acknowledged in comparing achievement in NYC to that in Seattle.

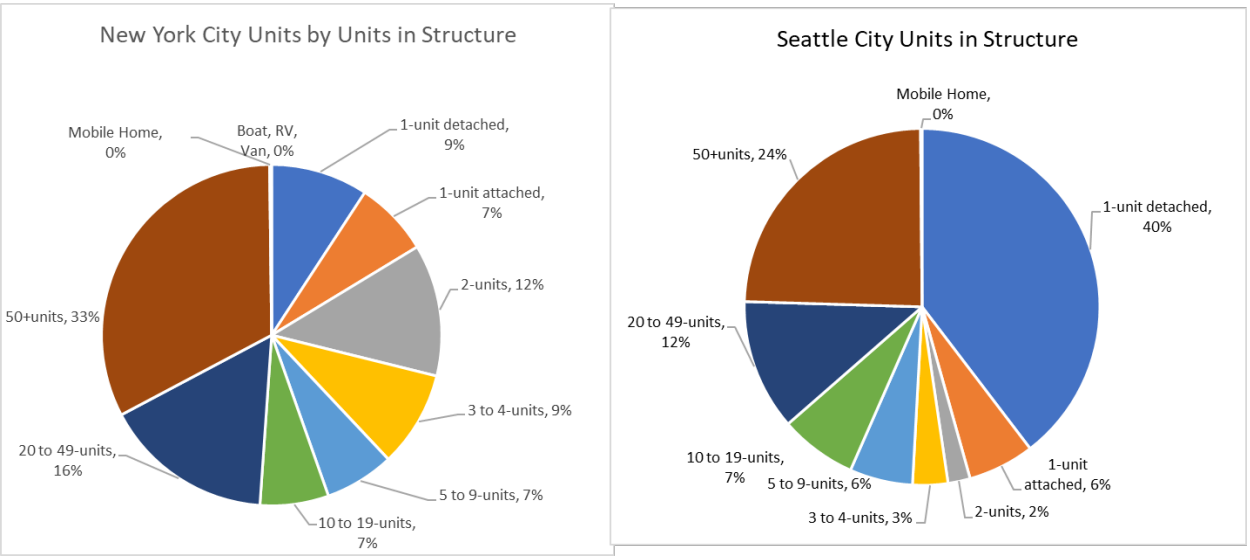


Figure 19. New York City and Seattle Distribution of Units in Structure[44]

The differential between Single-Family and Multi-Family tonnage in Seattle can be seen in the charts below that show the comparison of tonnages by Sector.

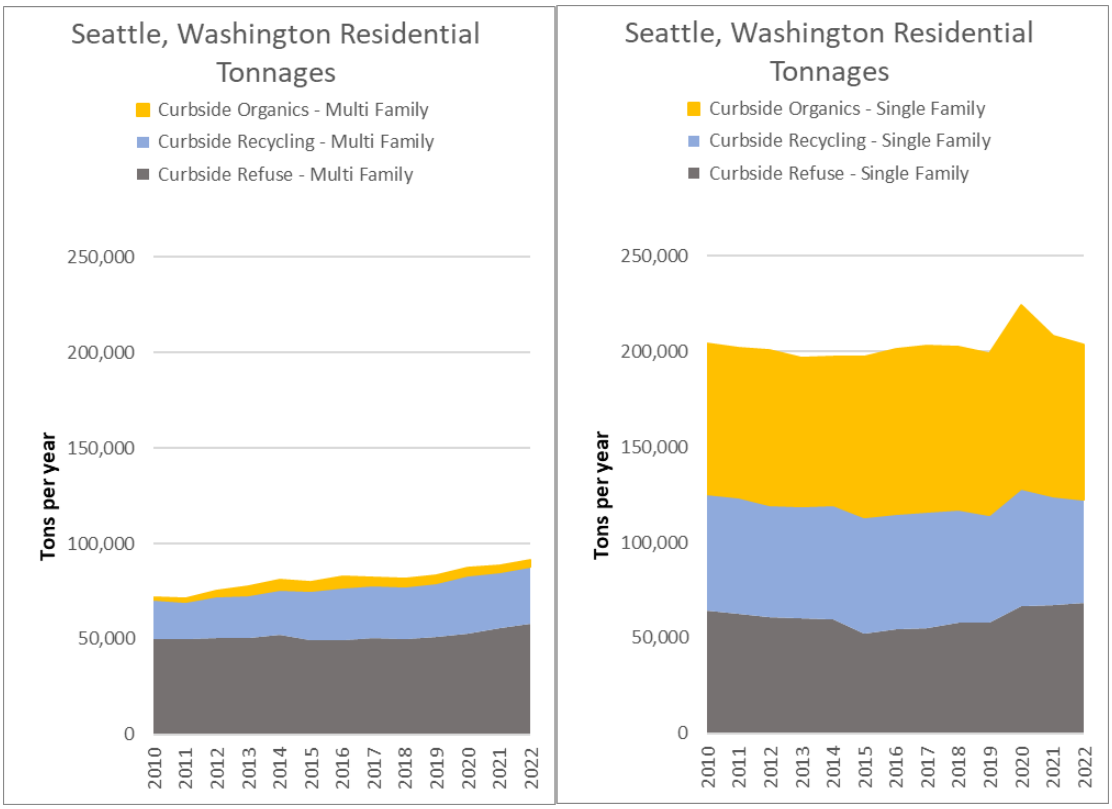


Figure 20. Seattle, Washington Curbside Organics, Recycling and Refuse Tonnages, Multi-Family and Single-Family[45]

For NYC, as well as Queens Borough and Queens Districts, we don't have a precise way to differentiate between Single-Family and Multi-Family generation or collection in terms of total tonnage. Our collection in NYC is organized differently – in Seattle, their private contractor system treats Single- and Multi-Family sectors separately in terms of programming, and keeps distinct records, based on distinct routes, by sector. In NYC, for reasons of efficiency and because we have universal collection rules for refuse and recycling (and now organics), we can't make overall sector comparisons like this. Furthermore, private carters collect from residences in Seattle. They are organized under a franchise system that also serves commercial generators. Seattle therefore may be more flexible in terms of routing and load allocations than is NYC, making a (now) 15% capture rate for the Multi-Family sector in Seattle tenable in terms of collection efficiency.

Looking at NYC and Queens tonnages in comparison to Seattle tonnages as a whole, over time, however, does shed light on what our total generation looks like graphically, and starkly shows the paltry quantity of organics – including not just Curbside Organics but also School Organics (which include Smart Bins), Leaf Collections, and Xmas Tree Collections that have been diverted in NYC from disposal over time.

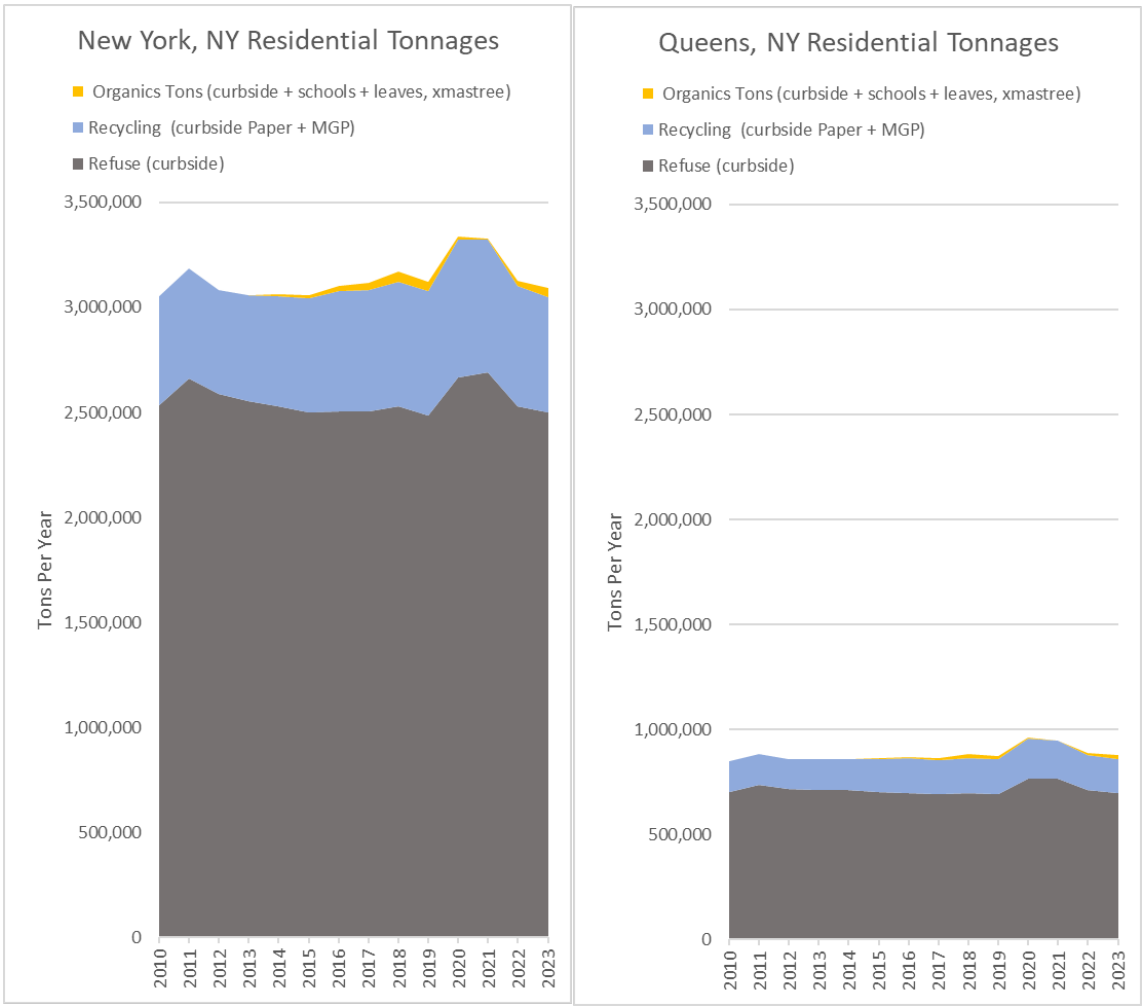


Figure 21. New York City total, and Queens Borough **Curbside Organics, Recycling and Refuse Tonnages**[46]

Trend 8: Low capture rates mean that from Queens alone, 300,000 to 400,000 tons of compostable organics are headed for landfills and waste-to-energy incinerators every year.

Another way to look at performance is to follow the quantity of compostable organics, for which there are now programs in place, that is still going to disposal. Applying the estimated fraction of refuse that is compostable organics to the refuse tonnage trends, we can see an enormous, environmentally and socially consequential wasting going on.

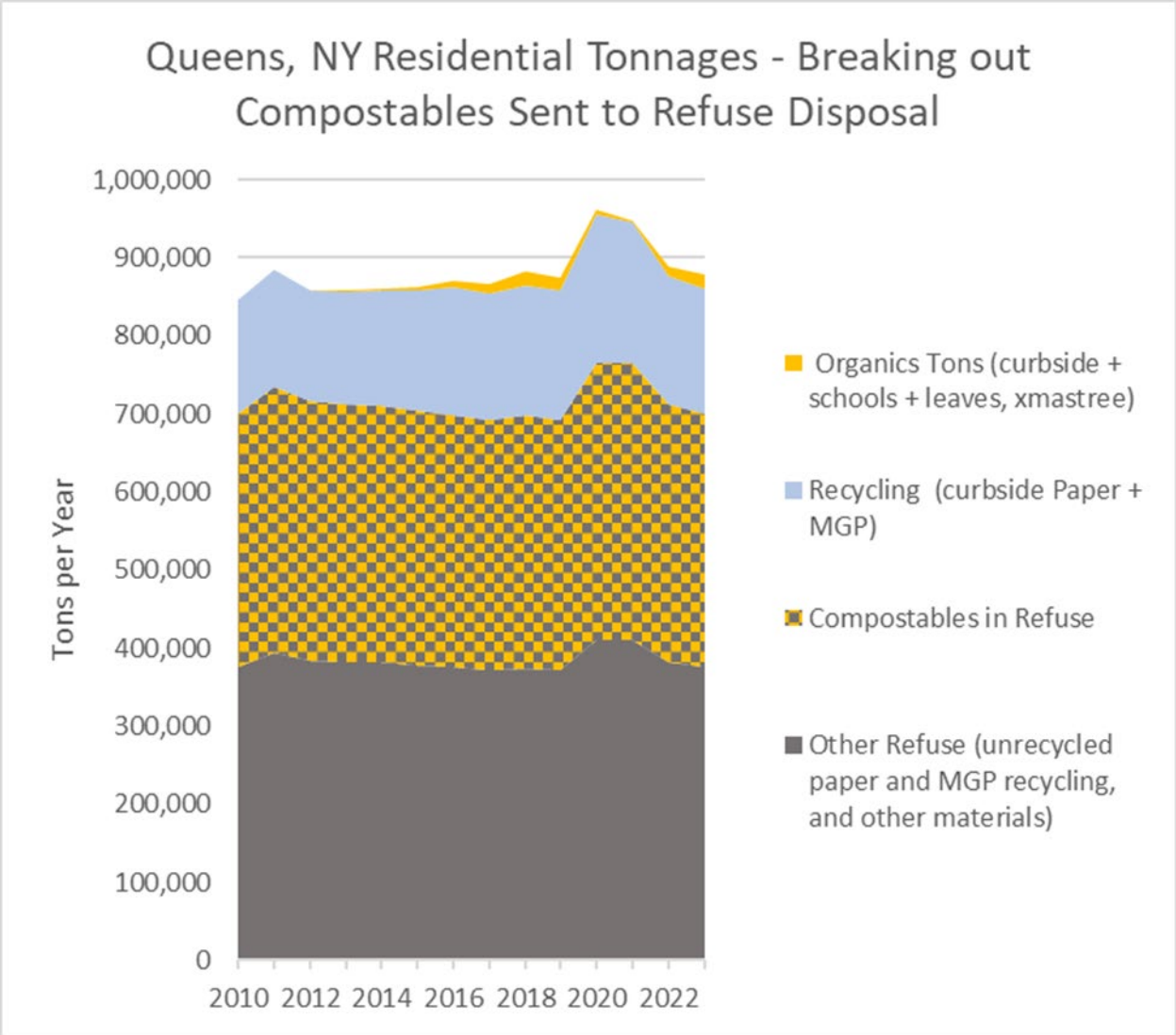


Figure 22. Queens, NY Residential Tonnages – Breaking out Compostable Sent to Refuse Disposal.[47]

Looking at data on transfer station activity, we can see that Queens refuse, which is over 40% organics, moves through several consolidation points in the Borough.

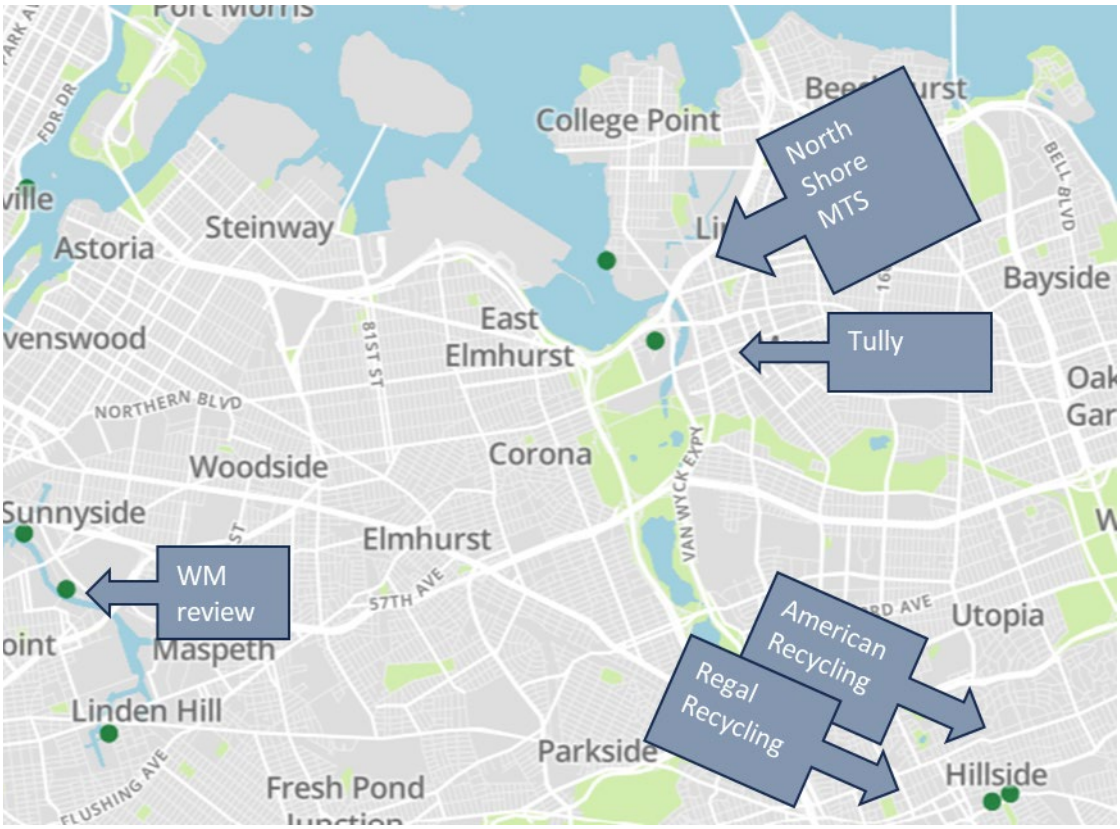


Figure 23. Map of Transfer Stations used by DSNY in Queens[48]

Five transfer stations used by DSNY are in three Queens Districts (Queens 2, 7 and 12), specifically:

Queens Neighborhood	Home District	Transfer Station Name
Corona	QN07	Tully
Jamaica	QN12	American Recycling
Long Island City	QN02	Waste Management - Review Ave.
Flushing	QN07	North Shore Marine Transfer Station
Jamaica	QN12	Regal Recycling

Table 6. List of Transfer Stations used by DSNY in Queens, with Home District [49]

DSNY compiles quarterly and annual data that tracks the trajectory of tonnages from transfer stations to various landfill and WTE incinerator destinations. This information is not made public at present except in occasional summaries in Solid Waste Management Plan (SWMP) updates. Through FOIL, I have obtained this information for 2019 to 2021 in an analyzable format.[50] Drawing on this source, we see that in 2021, over 900,000 tons of DSNY-managed

refuse moved through the five transfer stations in Queens (American Recycling and Regal Recycling, despite their names, accept and consolidate refuse for export as well as carry out recycling). It is important to note that this total does not include commercial refuse, which would raise the total to a much higher figure.

Queens Transfer Station	Contracted Tons Per Day	Delivered by DSNY to Transfer Station Per Year	Tons/day deliverd from Transfer Station to Disposal Site	Tons/Year to Disposal Site (tpd x302 workdays)	Disposal Site
WASTE MANAGEMENT, REVIEW AVE.	1,800	333,294	162	48,924	Atlantic Waste Waverly,VA-landfill
			943	284,786	High Acres,NY-landfill
			1	302	Amelia/Maplewood ,VA -landfill
TULLY-CORONA	1,345	39,983	11	3,322	Commonwealth Envir Systems,PA-landfill
			57	17,214	Seneca Meadows,NY-landfill
			64	19,328	Keystone ,PA-landfill
			1	302	Superior Greentree,PA-landfill
REGAL RECYCLING JAMAICA	250	9,692	7	2,114	Covanta - Hempstead,NY-WTE incinerator
AMERICAN RECYCLING, JAMAICA	750	12,549	42	12,684	Seneca Meadows,NY-landfill
NORTHSHORE MTS	3,672	528,963	608	183,616	Covanta - Delaware Valley - Chester,PA-WTE incinerator
			1137	343,374	Covanta - Niagara,NY-WTE incinerator
			12	3,624	Lee County,SC-landfill
QUEENS TRANSFER STATION EXPORT TON TOTALS		**924,481.59**	**(1)**	**919,590.00**	**(1)**

(1) note: due to DSNY's rounding of tons/day per disposal site, export tons delivered to transfer stations, and those delivered from transfer stations to disposal sites, will vary slightly. This is a data artifact.

Table 7. Refuse Tonnage Trajectories from Queens-based Transfer Stations to Landfill/WTE Incinerator destinations. DSNY-managed refuse only. [51]

Where are these landfills and WTE incinerators, and how much Queens refuse do they take? How much of that refuse could have been separated for Curbside Organics Collection, other types of organics collection, or even community-based composting? Using the same source, I show estimated quantities for the most recent year available, 2021.

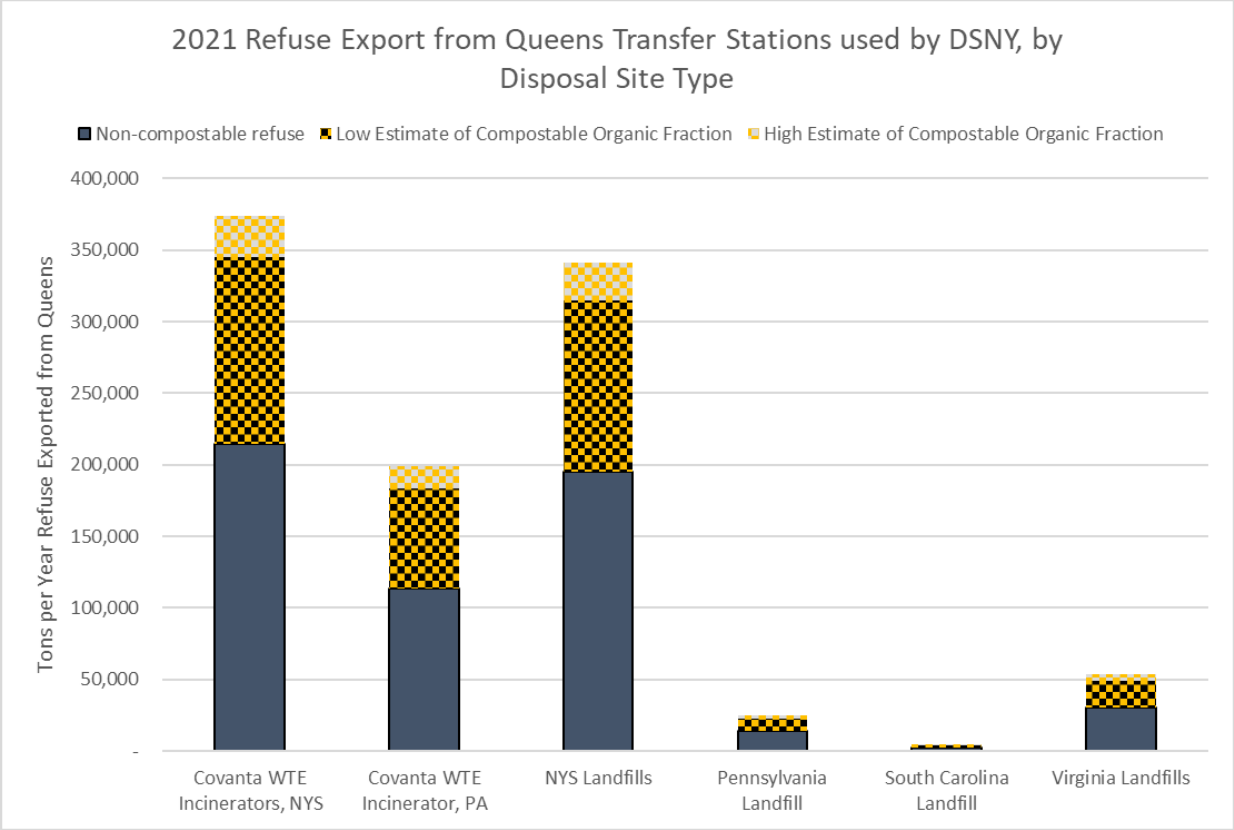


Figure 24. 2021 Refuse Export from Queens Transfer Stations used by DSNY, by Disposal Site Type[52]

I present a low and high estimates of the compostable organics fraction of these exports because the total tonnage reported by DSNY as having passed through Queens transfer stations is, as shown above, over 900,000 tons for FY 2021, whereas solely curbside refuse collected in Queens that same year totaled around 700,000 tons. The difference is likely made up of other types of refuse collection not listed in DSNY's Monthly Tonnages on Open Data, such as lot cleaning, other agency refuse, and street cleaning functions[53], and possibly deliveries of refuse from Boroughs outside of Queens.[54]

Follow Up Details

In a separate Policy Brief to this Performance Analysis, I make several recommendations that follow from information presented in this report. I do not repeat these here, but instead present a list of datasets that should be posted on Open Data, and updated regularly so that City Council members, independent agencies, research NGOs, students, scholars, and any member of the public has full, timely and accurate information on the progress of Curbside Organics Performance, and related Zero Waste statistics.

Dataset	Update Frequency	Geographic Specificity
Collection cost per ton, and cost per ton fully loaded, for the following organics streams: residential Curbside, School Organics (minus Smart Bin), leaves, Xmas trees, and Smart Bins. Should include detail on what additional costs beyond collection are included in fully loaded estimates.	Annually	Citywide, Borough and District.
Separate Column for monthly tonnages of Smart Bin collections, breaking out actual School Organics collections from Smart Bin tonnages – preferably actual data; if not feasible, estimates with open methodology published.	Monthly	Borough and District, or Borough and School Truck Route
Separate columns for tonnages of School Refuse, School Paper and MGP Recycling tracked in DSNY's data systems, so that School Performance is distinct from other Curbside Programs (understanding that schools are also served on residential curbside routes, and that School Trucks also serve other collection purposes)	Monthly	Borough and District, or Borough and School Truck Route
DSNY Private Vendor Disposal Sites: The disposal facilities used by the NYC Department of Sanitation to process DSNY-managed waste, how much is handled by each facility, and the final disposal locations used and the associated tonnage. FOILed and requested for Open Data posting in February 2023. Currently promised by DSNY on Open Data by 07/31/2024.	Annually for Calendar and Fiscal Years	Transfer Station address and community district, destination address, city, state; transportation mode; distance to disposal site.

Tonnages of Curbside, SmartBin, School, Leaves, Xmas and other organics delivered to processing destinations, with detail on location, processing method, and tip fee/revenues.	Monthly	Transfer station used, collection mode, processing destination address, city, state
Zero Waste Outreach and Education full time equivalent (FTE) staff counts, with details on assignment by commercial vs. residential vs. institutional Zero Waste and Cleanliness programs; and if applicable contracting organization details. DSNY personnel DSNY-contracted personnel	Monthly	N/A
Metrics quantifying outreach and education field activities including door knocking, tabling, special event appearances, building visits upon resident request, and any other onsite or field Outreach and Education activities including but not limited to those tracked in DSNY's outreach database or successor database(s).	Monthly, with activities listed by activity date	Borough and District
Quantification of print mail and fulfillment activities, by mailer subject and type, as tracked in DSNY's fulfillment databases.	Monthly	Borough and District, or Borough and Zip code
Results Tables for 2024 Waste Characterization Study, including per household generation and recycling/organics capture calculations, and recycling/organics contamination estimates.	One Time	Citywide and Boroughs

Table 8. Datasets Needed for Public Disclosure of Program Performance [55]

Conflict of Interest

I have not been paid or funded by any party to create this Performance Analysis. I am the sole author of this document, and all content is my own. I sell no product, service, technology solution, or commodity. I do not stand to gain financially; I am not a consultant and have no plans to contract with the City. I am affiliated with no political party or politician. I am a retired NYC civil servant, and pro-bono Advisor to Earth Matter, a community composting organization formerly funded under the NYC Compost Project. I am a paid faculty member at Baruch College, Marxe School of Public and International Affairs.

About the Dataset and Calculation Accuracy

Because I have familiarity with concepts like capture rate and composition estimates that are standard in waste management analytics[56], I present results as public information. If I have erred in any of my calculations, I will be happy to publicly acknowledge as much after review of alternate datasets, calculation formulas, or other information that will lead to understanding.

The dataset I have compiled for this analysis is available upon request. I have compiled this information solely to inform members of the public on the performance of Queens Districts in the new Curbside Organics Program, and to share what I have learned.

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End Notes

[1]. As will be detailed in this report, for average monthly Curbside Organics capture rate, I calculate capture rate by District, counting only months in which residential Curbside Organics Collection took place. In 2023, residential Curbside Organics collection took place March – December. On a straight annual basis, the capture rate comes out lower: 3.8% for 2023. In March 2023, there was little collection as service was resuming. If March is omitted, the annual capture rate for Queens 2023 is 4.7%. If all Organics (including leaves, School Organics [Smart Bin], and Xmas trees) are counted, the Boroughwide capture rate calculated for months in which any collection took place is 5.3%. Decisions on which months and streams to include yield different rates, but all are below 6%.

[2] Data Source: New York City Department of Sanitation. Last updated February 8, 2023. "DSNY Monthly Tonnage Data", Open Data Portal. Hereafter: DSNY Monthly Tonnages. New York City Department of Sanitation. "Waste Characterization: Reports for 2017", accessed January 20, 2024, at https://www.nyc.gov/assets/dsny/site/resources/reports/waste-characterization. Hereafter: DSNY 2017 WCS.

[3] Data Source: DSNY Monthly Tonnages, DSNY 2017 WCS, American Community Survey (ACS) 2021, NYC Department of City Planning.

[4]. Sections of Districts in Queens began collection as early as 2014, but not full Districts.

[5] 570K 1-9 unit households in 2018

[6] Data Source: DSNY Monthly Tonnages, DSNY 2017 WCS

[7] Data Source: DSNY Monthly Tonnages, DSNY 2017 WCS. Monthly figures are averages of Districts in each group.

[8] Data Sources: DSNY Monthly Tonnages, OATH Violations - Open Data. Diversion rates may not match DSNY published rates exactly due to omission of school refuse/recycling and containerized refuse/recycling on Open Data, but are consistent with overall trends.

[9] Except for comparison to Opt-In Districts, I have limited this analysis to one Borough, Queens, because it is too early to analyze performance in Brooklyn, which only started Borough-wide collection in the Fall of 2023. I have also limited comparisons to the period 2018 to 2023, because the varying numbers of Districts and months of coverage before then make comparisons unwieldy. Were average capture rates and per household tonnages to be calculated for the years 2015 to 2017, they would show higher performance than 2018 and forward. Individual District performance is shown over a longer period, reflecting these trends.

[10]. New York City Department of Sanitation. 2022. "Queens organics: first fall season is a MAJOR SUCCESS!", posted at https://dsny.cityofnewyork.us/wp-content/uploads/2023/01/queens-organics-collection-progress-december2022.pdf

[11]. I was not able to find a dataset of bin locations by Borough and District, but current Bin locations are posted on a map at https://www.nyc.gov/assets/dsny/site/services/food-scraps-and-yard-waste-page/nyc-food-scrap-drop-off-locations. Totals and District locations were hand compiled from this map as of 1/23/2024.

[12] Data Source: DSNY Monthly Tonnages

[13]. I base the 30% capture requirement on conversations I had with Chiefs and analysts in DSNY's Operations Management Division between 2015 and 2020, confirmed informally by collections professionals outside the agency. As this is not a published estimate, I am happy to be corrected by DSNY if sufficient data and analytics on collection efficiencies and costs are shared. The Independent Budget Office's October 2021 "Going Green: Can the Organics Collection Program Be Fiscally & Environmentally Sustainable?" (available at https://ibo.nyc.ny.us/iboreports/going-green-can-the-organics-collection-program-be%20fiscally-and-environmentally-sustainable-fiscal-brief-october-2021.pdf) presents additional, and excellent, discussion of the relationship between diversion rates, tonnages, and collection cost efficiencies.

[14]. For Paper and MGP recycling, I present diversion rates rather than capture rates because, for reasons discussed in the methodology section, calculating capture requires waste composition data, which comes from periodic waste characterization studies, and which changes over time. DSNY did conduct waste characterization studies in 1990, 2004-5, 2013 and 2017 (and is set to release of its most recent study some time in 2024); however, applying different composition results to different periods is a complex effort that is outside the scope of the current Performance Analysis. Generally, diversion rates parallel capture rates.

[15] MGP recycling was "paused" between 2002 and 2004.

[16]. New York City Department of Sanitation. 2022. "Queens organics: first fall season is a MAJOR SUCCESS!", posted at https://dsny.cityofnewyork.us/wp-content/uploads/2023/01/queens-organics-collection-progress-december2022.pdf

[17] Source: ACS 2021, NYC Department of City Planning.

[18]. From DSNY tonnage data, it would appear that March collections were only partial, but March 2023 is included in the analysis because I do not have a means of verifying this. Effects on overall conclusions are negligible.

[19] Data Source: Author's memory and review of news coverage 2014 to present.

[20]. We are using the U.S. short ton system in which there are 2,000 pounds in a ton.

[21]. Might this approach omit important information on 10+ unit participation in Queens pre-2021? Probably not. DSNY does not publish borough-specific statistics on the number of 10+ unit buildings that chose to complete what has been called by some a "complicated, confusing" enrollment process. It is safe to assume, however, that the number of 10+ unit households served by curbside collection in Queens prior to 2021 was relatively low. Per DSNY data, at the end of Fiscal Year 2018, over 255,000 "default" 1-to-9-unit buildings, as opposed to 670 "enrolled" 10+ unit buildings, were receiving curbside collection citywide. Drawing from memory of my time at DSNY, many, though not all, of these were in Manhattan. On this basis, it is reasonable to adjust a per household served count in the manner outlined above.

[22] Data Source: DSNY Monthly Tonnages, 2018-2021 ACSs for households by units in structure.

[23] Data source: DSNY Monthly Tonnages, 2021 American Community Survey for households by units in structure. Both per household measures are shown for continuity with prior graphs, even though they are the same under the new, post 2022 Program.

[24] DSNY Open Data on Monthly Curbside Ton Data source: DSNY Monthly Tonnages, 2021 American Community Survey for households by units in structure.

[25]. The analysis of Fall Queens performance is presented in a document by the New York City Department of Sanitation. 2022. "Queens organics: first fall season is a MAJOR SUCCESS!". This document makes total tonnage comparisons between Queens Districts and Legacy Opt-in Districts in Brooklyn, the Bronx and Manhattan. Interestingly, this analysis does not compare Queens Districts to themselves over time. See document posted at https://dsny.cityofnewyork.us/wp-content/uploads/2023/01/queens-organics-collection-progress-december2022.pdf.

[26] Data source: DSNY Monthly Tonnages, 2021 American Community Survey for households by units in structure.

27. Some households are served by containerized refuse collection, which is not reflected in these statistics. Curbside refuse collection accounts for approximately 90% of all collection.

[28] Data source: DSNY Monthly Tonnages, 2018-2021 American Community Survey for households by units in structure

29 Note also that the quantity of household generation of refuse changes year by year, with 2020 and 2021 showing higher rates than other years. Was this solely because Curbside Organics Collection was "paused" during those years, and nothing was separated as organics? This is unlikely, as is obvious from the scale of increase in refuse, which added about 10 pounds a month on an average all households basis to refuse collections – across Districts, and time periods. Refuse, furthermore, increased in all Boroughs of the city during that time, Curbside Organics Collection aside. More probably, per household refuse generation increased because of pandemic-related causes, a topic on which space precludes elaboration here.

[30] Data source: DSNY Monthly Tonnages, 2021 ACS

31. All other categories, including those grouped in DSNY WCS's as "organic" like textiles, leather, or wood furniture, are not compostable under a curbside collection scenario. Quantities of compostable plastics, furthermore, were so tiny as to be irrelevant for this inquiry.

[32]. New York City Department of Sanitation. "Waste Characterization: Reports for 2017, 2013 and 2005", accessed January 20, 2024 at https://www.nyc.gov/assets/dsny/site/resources/reports/waste-characterization

33. New York City Department of Sanitation. Last updated February 7, 2020. "Recycling Diversion and Capture Rates", Open Data portal see https://data.cityofnewyork.us/Environment/Recycling-Diversion-and-Capture-Rates/gaq9-z3hz/about_data

[34] Data source: New York City Department of Sanitation. Last updated February 8, 2020. "Recycling Diversion and Capture Rates", NYC Open Data Portal.

[35] Data source: DSNY Monthly Tonnages, 2017 WCS

[36] Data Source: DSNY Monthly Tonnages and 2017 WCS

[37] Data source: DSNY Monthly Tonnages, 2017 WCS

[38] Data Source: DSNY Monthly Tonnages on Open Data, 2017 WCS

[39] Data Source: DSNY Monthly Tonnages, 2017 WCS

[40] Data sources: DSNY Monthly Tonnages on Open Data, ACS 2021, PLUTO

[41] Data sources: DSNY Monthly Tonnages on Open Data, ACS 2021, PLUTO

42. New York City Department of City Planning. "Population American Community Survey (ACS) Data Tables" accessed November 2023 through February 2024 at https://www.nyc.gov/site/planning/planning-level/nyc-population/american-community-survey.page.page

[43]. Personal communication, M. Morrigan, Seattle Public Utilities, February 6, 2024

[44] Data Source: US Census American Community Survey, Years 2022 and 2021

[45] Data sources: Seattle Public Utilities. 2022. "2022 Waste Prevention & Recycling Report." Seattle Public Utilities. 2020. "Residential Garbage and Recycling Stream Composition Study

[46] Data Source: DSNY Monthly Tonnages

[47] Data Source: DSNY Monthly Tonnages, 2017 WCS

[48] New York City Department of Sanitation. February 22, 2024. "DSNY Disposal Vendors", Open Data Portal https://data.cityofnewyork.us/City-Government/DSNY-Disposal-Vendors/mf9g-zhbw/about_data, Hereafter "DSNY Disposal Vendors"

[49] Data Source: DSNY Disposal Vendors

50. I am regularly following up on my February 2023 request to DSNY to post this Annual data on Open Data.

[51] Source: DSNY FOIL request 2023-827-00029 (hereafter, DSNY FOIL request)

[52] Data source: DSNY FOIL request, DSNY 2017 WCS

53. Such extra tonnages will not have the same composition as curbside refuse, so a 40% estimate of their organics content may not apply.

54 As of 2023, Queens curbside refuse totals just under 700,000 tons, having declined from 2021. However, given that this post-pandemic decline has been seen across Boroughs and even in other cities, and given that the difference between 2021 and 2023 curbside refuse tonnages is around 66,000 tons, it is unlikely that the Queens curbside organics collections in 2023 (a little over 12,000 tons), or even additional organics collections from Schools (which are said to reflect Smart Bin collections as well), leaf collection, and Xmas tree collection, explain this decline.

Curbside Collection Totals, for Comparison				
Year	Refuse	Curbside Organics	Other DSNY-managed Organics (School, Leaves, Xmas)	Total Diverted Organics
2021	**765,697**	-	775	**775**
2022	**711,611**	6,396	4,883	**11,279**
2023	**699,379**	12,735	5,440	**18,174**
Difference 2023-2021	***(66,318)***	*12,735*	*4,665*	***17,399***

Totals are shown here for all refuse, not just the fraction of refuse that is compostable organics.

The total tonnage of refuse coming from Queens transfer stations is around 900K tons per year, around 700K of that being curbside refuse. Using DSNY's Waste Characterization results, we know that 46.3% of curbside refuse collections consist of compostable organics. Therefore, we can estimate that some 300,000 to 400,000 tons of compostable organics are making their way to landfills and incinerators annually.

[55] Source: Author's past and present experience with DSNY datasets, databases and data storage structures, and Open Data posting procedure

[56] Most people do not, and should not be expected to develop these skills for an accurate assessment of any waste reduction Program in NYC – including composting/anaerobic digestion, recycling, e-waste/HHW management, reuse, or prevention.