PRIVATE CARTING STUDY

Executive Summary

August 17, 2016

INTRODUCTION

In New York City, the Department of Sanitation (DSNY) collects waste and recyclables from residential buildings, government agencies, and institutions. Private carting companies, licensed by the Business Integrity Commission (BIC), collect waste and recyclables from commercial establishments, office buildings, and other businesses. The commercial waste market is a highly competitive one, with several hundred firms providing a range of services and service levels to customers.

Supporters of the open market system argue that competition drives down prices and offers increased customer choice. However, opponents argue that this system results in unnecessary truck trips, with multiple carters at times serving the same block at the same time, in addition to other negative externalities.

In recent years, cities such as Los Angeles and San Jose have established exclusive commercial waste franchise systems with exclusive hauler districts or zones. Proponents of this system believe this model empowers municipalities to achieve multiple environmental, economic, and labor-related policy goals in exchange for the right to operate in a given zone. The effects of creating commercial waste zones and bidding them out to one or more private carters would certainly be significant.

In April 2015, Mayor Bill de Blasio released "One New York: The Plan for a Strong and Just City." That plan established bold goals and specific targets for a strong, sustainable, resilient, and equitable city, including reducing the city's greenhouse gas emissions by 80 percent by 2050, embracing Vision Zero and sending zero waste to landfills by 2030. As part of that plan, the City committed to "conduct a comprehensive study of commercial waste collection zones," to determine "if there are substantial inefficiencies in the way waste is collected and if so, whether exclusive collection zones would reduce those inefficiencies and possibly create ancillary benefits such as improved recycling rates, working conditions, and wages."[1]

To meet this goal, in October 2015 the City commissioned an independent private carting study, including a market analysis, cost assessment, benchmarking study, and cost impact study. The study was completed by a team of consultants that included Buro Happold Engineering, Appleseed, Sam Schwartz Engineering, and Paul Carpenter Associates. The following summary has been prepared by DSNY and BIC to highlight the key takeaways and conclusions from each of the deliverables provided by the consultant team. The full set of deliverables is available at nyc.gov/privatecarting.

[1] *One New York: The Plan for a Strong and Just City*, pp. 186, http://www.nyc.gov/html/onenyc/downloads/pdf/publications/OneNYC.pdf.

Market and Cost Analysis

The market and cost analysis used the BIC Customer Register, interviews, and other available information to assess the overall structure of the private carting industry including: the number, type, and characteristics of carting companies and customers; customer service and satisfaction; customer rates and cost structure; and pricing sensitivity under a potential commercial collection zone system.

Market Analysis

The industry segment that is the principal focus of this study is comprised of 90 companies licensed by the Business Integrity Commission (BIC) to collect putrescible and/or recyclable waste generated from approximately 107,800 customers in New York City – office buildings, retail establishments, restaurants, hotels, factories, distribution centers, etc.

In assessing the current dynamic of the New York City private carting industry, a number of key takeaways emerge, including:

- The industry is predominantly privately-owned with nearly half of local revenues collected by non-NYC carters.
- The market is highly concentrated and reflects a 'long-tail' dynamic, with a few carters holding the majority of customer accounts and collecting a significant proportion of local revenues.
- This market concentration exists in every borough, with a few carters collecting 90 percent of the market and many carters competing for the last 10 percent of the market. See **Figure 1**.
- While large carters naturally have a widespread geographical reach, nearly 40 percent of small carters operate in a dispersed manner by covering three or more boroughs.
- The economics of commercial waste collection requires carters to provide comprehensive services and serve a diverse customer base, with 80 percent of carters providing both putrescible and recycling pick-up services, and 70 percent of carters serving more than five customer types.
- Carter-customer relationships are generally direct, informal, and can change often.
- Carters operate on very thin margins, with half reporting an operating loss in 2013.
- The solid waste collection industry in New York City has seen relatively strong employment and wage growth in recent years.
- While wages are relatively high at the occupational level, earnings can vary widely.

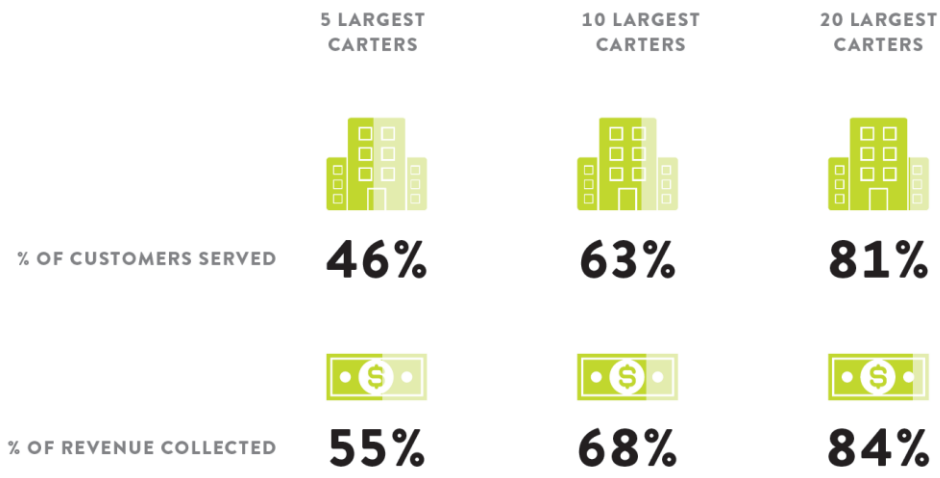

FIGURE 1: MARKET SHARE OF LARGEST CARTERS

COST ANALYSIS

When Local Law 42 came into force in 1996, BIC (known as the Trade Waste Commission at the time) set maximum rates at $14.70 per cubic yard of loose waste and $46.70 per cubic yard of pre-compacted waste. In 1997, rates were lowered to $12.20 and $30.19, respectively. In response to carter concerns about the higher costs of servicing heavy or wet waste, the option of a weight-based rate, set at $8.00 per 100 pounds, was introduced in 2003. At the same time, the pre-compacted waste rate was eliminated. Subsequently, the rate caps were adjusted in late 2008 and again in 2013. They are currently at $18.27 per cubic yard and $11.98 per 100 pounds of waste. In February 2016, BIC proposed a rate increase by 3.3 percent to $18.87 per cubic yard and $12.38 per 100 pounds respectively.

In analyzing the customer rates and level of service in the New York City commercial waste market, a number of key takeaways emerge, including:

- As a result of how carter-customer relationships are initiated and the myriad of factors influencing pricing, there is no consistent formula and little transparency on how rates are established.
- Commercial customers in New York City pay an average rate of $12.68 per cubic yard, approximately 30 percent lower than the rate cap set by BIC of $18.27 per cubic yard.
- There is no relationship between the size of the carter and average rates charged, implying that underlying operational models or cost structures have little influence on prices charged.
- With the exception of Staten Island, there is little connection between rates and geography, even though each borough is unique in terms of commercial density, proximity to transfer stations, carters active in the borough, or actual waste produced.

- While there are clear distinctions between industry types in the type and amount of waste produced, there is minimal correlation between a customer's industry and rates.
- The size of customers has a significant impact on rates, with large customers paying on average approximately 38 percent less than small customers. See **Figure 2**.
- The average rate for recyclables is only 5 percent less than that of putrescible waste, indicating that the current market pricing does not reflect actual waste material produced.

FIGURE 2: AVERAGE RATES BY CUSTOMER SIZE

BENCHMARKING

Customer rates are highly contingent on the local context and influenced by multiple factors, such as pick-up frequency and recycling requirements. In open-market and non-exclusive systems, rates depend on the pricing negotiated between individual carters and their customers and are hard to verify as they generally differ highly between customers. In contrast, under a regulated, exclusive system, there is a rate schedule that defines rates for all customers according to the size of container and pick-up frequency.

The study includes case studies from three other cities that have moved to implement commercial waste zones: Seattle, San Jose, and Los Angeles. In Seattle, two carters were awarded zones, and operational efficiencies led to a decrease in customer rates of approximately eight percent. In 2012, San Jose implemented a citywide commercial waste franchise with two hauling and disposal vendors. There, 58 percent of customers saw their rates decrease, while 42 percent of customers saw rates increase. While Los Angeles has not yet completed its transition to franchising, a study commissioned by the City of Los Angeles showed that in Los Angeles County, rates were lower on average in municipalities with exclusive or non-exclusive commercial waste franchises than in the City of Los Angeles open market system.

Rates between cities are difficult to compare due to the particularities of each commercial waste collection system. The study found that New York City customers generally pay less than those in many other major U.S. cities for their waste collection.

Pricing Sensitivity Analysis

To establish a more comprehensive perspective on the trade-offs involved in establishing and implementing a commercial waste collection zone system, the study team conducted a high-level cost impact study to estimate the potential net change in customer rates as a result of changes in market conditions. In order to use operating margins as the key driver to rate changes, a range of target margins were set to determine an associated range of potential rate impacts to customers. Based on financial statement submissions to BIC, a typical large private carter is currently estimated to have an operating margin of about 6 percent. This analysis assessed a range of potential operating margins under a zone system of 5 percent (low), 10 percent (medium) and 15 percent (high). If operating margins were to fall to 5 percent, customer rates would decrease by about 2 percent. If operating margins were to increase to 15 percent, customer rates would increase by about 10 percent.

The effect of zone collection on customer rates would be contingent on the various requirements set out in the zone procurement. In order to account for this variability, the sensitivity analysis demonstrates potential rate impacts under two scenarios: one in which private carters experience a 10 percent increase in operations-based expenses, and one in which they experience a 10 percent decrease in operations-based expenses.

Should a franchising agreement include provisions or requirements that increase the operational costs for private carters, these expenses may be passed on to customers in order for the carters to achieve the operating margins established previously. Examples of such requirements may include prevailing wage standards, facility or fleet requirements, diversion targets, infrastructure investment, or safety-related measures. Based on revenue required in a scenario where operations-based expenses increase by 10 percent, average rates would need to increase by 8 percent from current average rates to achieve a low operating margin, 14 percent for a medium operating margin, and 21 percent for a high operating margin.

However, a zone system could also generate cost savings for carters as a result of improvements to collection efficiency, including reductions in truck maintenance, fuel consumption, and overtime costs. Additionally, the guaranteed customer base would remove the revenue volatility risk that currently faces private carters. Based on revenue required in a scenario where operations-based expenses decrease by 10 percent, average rates would decrease by 11 percent from current average rates for a low operating margin, 6 percent for a medium operating margin, and 1 percent for a high operating margin.

By changing the operational structure of the industry, the implementation of a zone system would inevitably have employment impacts within the commercial waste collection industry. Based on the routing analysis, the zone system would require 43 fewer routes per day, a decrease of 13 percent. Intuitively, this increased efficiency would likely lead to a reduction in demand for drivers and helpers. However, much like the rate impacts, any total job impacts are highly dependent on the type and details of

the franchising agreement established. This is particularly the case in relation to employment, as an agreement that establishes aggressive targets in labor and wage standards, diversion targets, or infrastructure investment could see net employment in the waste industry increase, even when factoring in potential direct job reductions as a result of routing efficiencies. As the specific details of such an agreement have yet to be considered, this analysis does not project job impacts as any estimate would be highly speculative at this stage.

Routing Analysis

The goal of the truck routing analysis was to quantify the total annual vehicle miles traveled (VMT) by the private carting industry today and to compare that with a hypothetical zone collection system. The analysis focused on the 90 carters that pick up recyclable and putrescible waste. Data on the existing customers, carters, and the trucks routes were provided by BIC and analyzed using ArcGIS software, Excel, and Python.

The general approach to the study was to map each carter's reported truck routes in order to estimate total annual VMT of the private carting industry. The BIC Customer Register was then used to create 11 hypothetical zones covering the five boroughs, where zones consisted of one or more community districts and were roughly equal in terms of the number of customers per zone. New hypothetical truck routes were then mapped in each zone to estimate the annual VMT of a zone system. These results were then compared to the existing conditions to estimate the change in VMT resulting from a zone system.[2]

Results

The study found that private collection trucks travel more than 23.1 million miles per year to collect commercial waste and recyclables in New York City. This includes some travel in adjacent counties, where many garages and transfer stations are located. Many existing routes are geographically dispersed, often serving several neighborhoods across multiple boroughs. Routes from the same and different carters often overlap along key routes and neighborhood streets, creating duplicative services across the city. For many routes, garages and transfer stations are far from the core service area of the route.

Figure 3 below shows the density of VMT of the routes from the analysis of existing conditions. There are heavy concentrations of VMT (and therefore private carting trucks) in all of Manhattan and the Bronx, along the Gowanus, Brooklyn-Queens, and Long Island expressways, and in parts of South Brooklyn and central Queens. **Figure 4** shows the density of VMT of the routes from the analysis of a hypothetical zone system. Concentrations of VMT remain in the Manhattan central business district and along some major highways, but to a much lesser degree when compared to the Existing Conditions. The heat map for the zone analysis was subtracted from that of the existing conditions analysis, resulting in a new heat map that shows how the density of VMT

[2] For a detailed description of traffic study methodology, visit nyc.gov/privatecarting.

would change across the city with the implementation of a zone collection system. Overall, VMT density was reduced nearly everywhere in the city. In **Figure 5**, the dark green areas show where the greatest VMT decrease occurred: Manhattan, the Bronx, and along the BQE and LIE.

This routing analysis found that a zone system could reduce the VMT of the private carting industry by a range of 49 to 68 percent because the routes in a zone system could be expected to be as much as three times more efficient than the existing system.

Under a zone system, every neighborhood in the city would likely see a decrease in truck traffic, as measured in VMT, and in related emissions. However the areas with the highest concentrations of VMT under the existing conditions stand to see the greatest benefits.

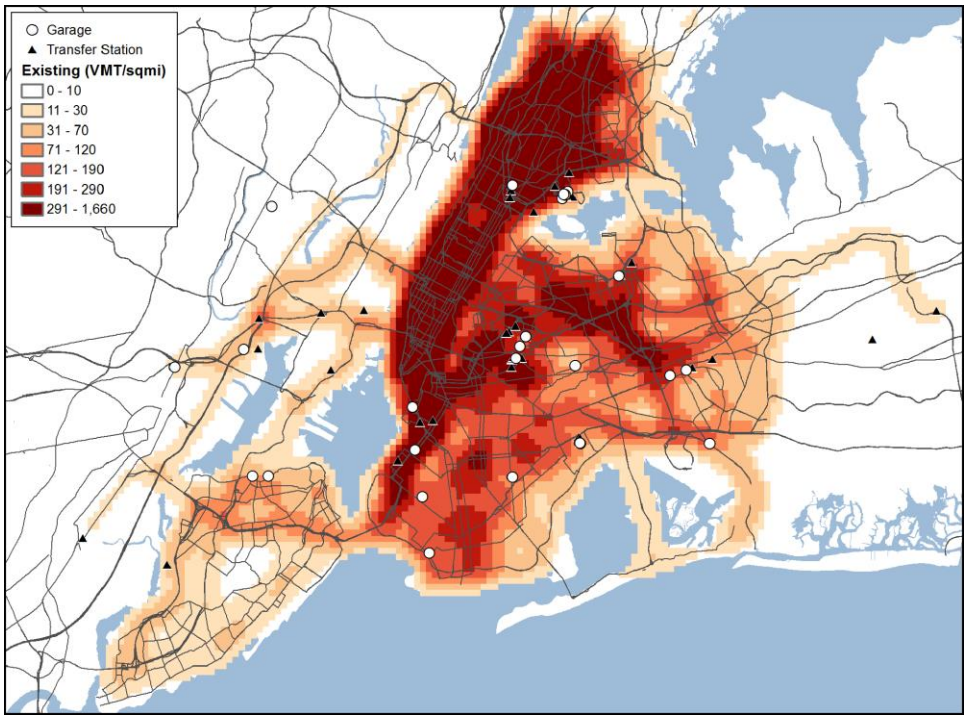

FIGURE 3: VMT DENSITY OF EXISTING ROUTES

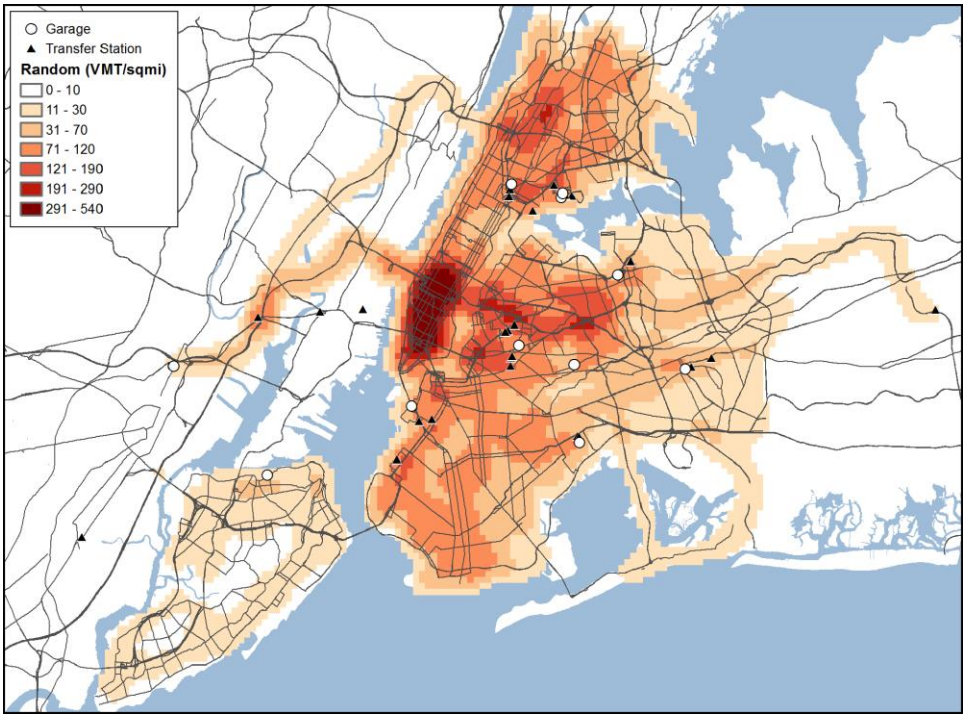

FIGURE 4: VMT DENSITY OF ROUTES IN A HYPOTHETICAL ZONE SYSTEM

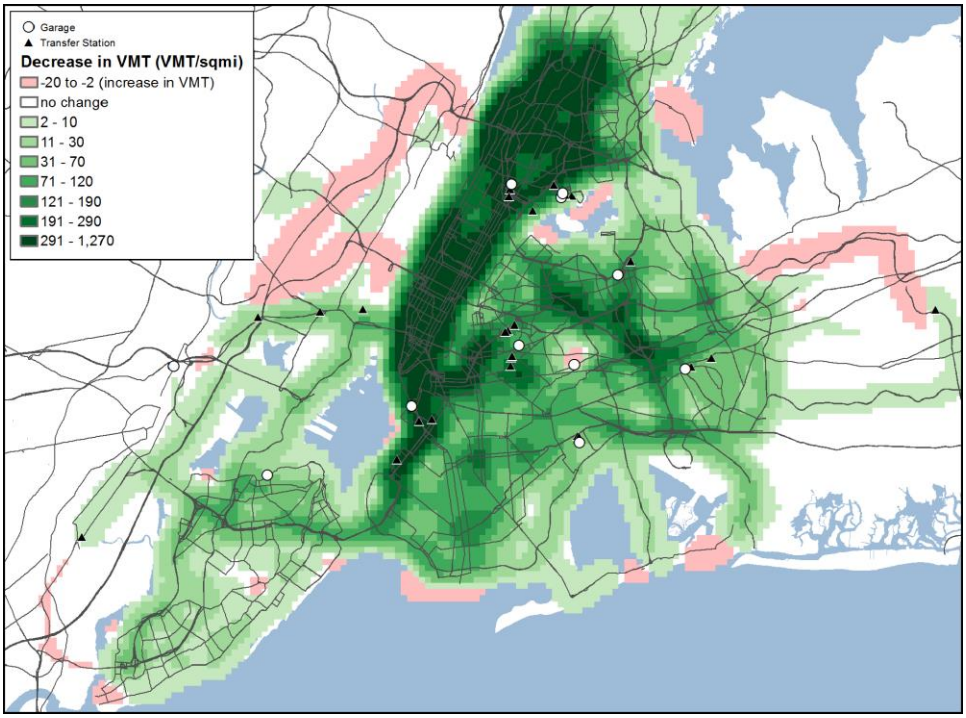

FIGURE 5: CHANGE IN VMT DENSITY BETWEEN THE EXISTING AND ZONED ROUTES

There are many factors that could influence the VMT outcomes of an actual zone system being implemented in New York City, including the geography of the zones, the number of zones there are, the number of carters that service each zone, other policies and regulations applied to the carting industry, and changes to the locations of garages and transfer stations, among many others. This analysis clearly shows that the current system, from a truck traffic and geographic efficiency standpoint, is highly inefficient and duplicative in terms of the overlap of existing carter ranges. Furthermore, it is clear that implementing an exclusive zone system would dramatically decrease the VMT (and therefore the emissions) associated with the private carting industry. A zone system, by the nature of its geographic constraints, would create a more efficient private carting collection system in New York City.

In addition to the air pollutant and greenhouse gas emissions reductions discussed below, the reduction in truck traffic can lead to several other beneficial outcomes. These include reductions in traffic congestion, roadway wear and tear, roadway maintenance costs, and nighttime noise associated with duplicative collections, in addition to traffic safety improvements associated with less overall truck travel. The benefits of a zone system would be felt citywide and in particular in the neighborhoods that are most disproportionately impacted by the current system.

Air Quality Analysis

Based on the outcome of the traffic study, air pollutant emissions associated with the private carter industry were estimated for calendar years 2016 and 2020.[3] However, as New York City Local Law 145 of 2013 takes effect in 2020, emission comparisons discussed in the study focus on 2020 results. The air quality analysis shows significant pollutant reductions when comparing the current system to a zone system. Emission reductions directly correlate with VMT reductions estimated by the zone system. Even with slightly higher emissions factors resulting from slower average travel speeds, the zone system still yields large emissions reductions nearly on par with the VMT reductions discussed above.

When compared to the 2020 modeled existing system, the implementation of a zone system yields 42 to 64 percent reductions in greenhouse gas emissions as measured in CO_2e from the baseline of more than 56,000 tons per year. This would reduce diesel fuel consumption by the private carting industry by 3.5 million gallons per year. In addition, the analysis shows that a zone system would reduce the emission of criteria air pollutants, those most closely linked to asthma and other respiratory illnesses, by between 34 and 62 percent. See **Table 1** for the emissions reductions of specific pollutants.

[3] For a detailed description of traffic study methodology, visit nyc.gov/privatecarting.

TABLE 1: ESTIMATED EMISSIONS REDUCTIONS IN A ZONE SYSTEM (2020)

	Pollutant	Percent Reduction
Criteria Pollutants	CO	38% - 59%
	PM10	34% - 51%
	PM2.5	34% - 56%
	NOx	39% - 62%
	VOCs	32% - 54%
GHG Emissions	CO2e	42% - 64%

SAFETY ANALYSIS

The safety analysis made use of three sources of information: publicly available safety data, interviews, and a review of training materials. The safety data analysis was intended to provide a foundational understanding of the breadth and depth of safety incidents, while the interviews and training materials review would provide additional qualitative information in an effort to develop a well-rounded understanding of safety challenges and opportunities in private hauling. Initially, the project sought to identify potential relationships between challenges identified through the data analysis and training/adherence to policy. However, the low frequency of reported private hauler incidents found in the available datasets and limited availability of training materials made this difficult. The results did, however, identify some opportunities for improved safety efforts and raise some questions about the reliability of these publicly available safety datasets as a tool for understanding private hauler safety.

It is important to note that given the size and scope of this effort, these results should be viewed as initial information with the potential to develop a more detailed understanding primarily through additional interviews.

The three key takeaways from the safety analysis are:

- Safety culture is of critical importance. This requires an ongoing commitment to safety at all levels and relies on the empowerment of employees to promote a safe work environment among their peers and with their supervisors.
- Relying solely on safety data to understand the breadth and depth of safety challenges may be misleading. The low frequency and high severity of incidents reported across safety datasets combined with information gathered during interviews indicates that less serious incidents may not be regularly reported to appropriate authorities.
- The balance between safety and efficiency can be challenging. Employees at the driver/helper and supervisor levels may be financially motivated to focus on efficiency, sometimes at the expense of safety.