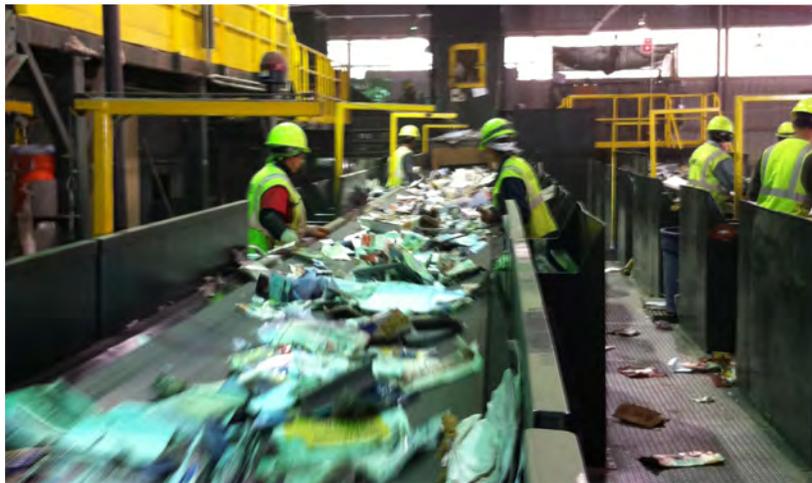


Transform Don't Trash NYC

How to Increase Good Jobs, Recycling, and
Justice in the Commercial Waste Industry



Acknowledgements

This report was authored by Maya Pinto and Kristi Barnes of ALIGN.

Many thanks to Joan Levine of the Morningside Heights/West Harlem Sanitation Coalition, Eddie Bautista and Juan Camilo Osorio of the New York City Environmental Justice Alliance, Gavin Kearney and Kyla van Buren of New York Lawyers for the Public Interest, Laura Haight and Joe Stelling of the New York Public Interest Research Group, Ben Beach and Hays Witt at the Partnership for Working Families, Angela Tovar of Sustainable South Bronx, Cassandra Ogren and Michael Mignano of the International Brotherhood of Teamsters, Bernadette Kelly of the International Brotherhood of Teamsters Joint Council 16, Sean Campbell of the International Brotherhood of Teamsters Local 813, and Elizabeth Yeampierre of UPROSE, for their research, review, and contributions to this report. Thanks to the Los Angeles Alliance for a New Economy, the Partnership for Working Families' Transforming Trash campaign, and the Tellus Institute for past research that informed this report.

Photo credits:

Page 1 photos courtesy of Sustainable South Bronx

Cover photo and page 3 photos courtesy of the NYC Environmental Justice Alliance / Organization of Waterfront Neighborhoods

Transform Don't Trash NYC

© September 2013 ALIGN: The Alliance for a Greater New York

About Us

ALIGN's mission is to create good jobs, vibrant communities and a sustainable democracy for all New Yorkers. Our work unites worker, community, and other allies to build a more just and sustainable New York. Visit www.ALIGNny.org for more information.

The Transform Don't Trash NYC coalition is a growing coalition dedicated to transforming New York City's commercial trash industry to reduce waste and pollution, foster clean and healthy communities for all New Yorkers, and create good jobs.

Endorsements

Organizations endorsing this report include ALIGN, the American Lung Association of the Northeast, Good Jobs NY, the International Brotherhood of Teamsters Joint Council 16 & Locals 813, 831 and 210, Laborers Local 108, the New York City Central Labor Council, the New York City Environmental Justice Alliance (and its member organizations El Puente, the Morningside Heights/West Harlem Sanitation Coalition, Nos Quedamos, The Point, Sustainable South Bronx, UPROSE, and Youth Ministries for Peace and Justice), New York Communities for Change, New York Lawyers for the Public Interest, the Pratt Center for Community Development, the Service Employees International Union Local 32BJ, and WE ACT for Environmental Justice.

Table of Contents

1	Executive Summary	2
2	Commercial Waste Handling in New York City	4
3	Inefficient Commercial Waste Collection is Costly and Polluting.....	6
4	Low-Income Communities and Communities of Color are Disproportionately Burdened by Solid Waste Handling	9
5	Private Sector Waste Workers Face Low Wages and Poor Working Conditions.....	10
6	Landfilling and Incinerating Waste is Costly and Polluting	12
7	Policy Recommendations	15
8	Endnotes	17



Executive Summary

All New Yorkers want to live and work in safe, healthy communities. New York City has taken some steps in recent years to build the cleaner, more sustainable city we all want, increasing green space and the energy-efficiency of its building stock. The City has also begun to build a more equitable and sustainable solid waste management system, expanding residential recycling programs, and developing a plan to more fairly distribute waste facilities throughout the five boroughs. Unfortunately, the City has largely overlooked the commercial waste sector, to the detriment of local communities and workers, and to the detriment of the local environment, economy, and the City's long-term sustainability.

New York City's restaurants, offices, and businesses generate a staggering 3.2 million tons of solid waste each year, and bury and burn over 2 million tons of that waste in landfills and incinerators. Commercial waste is collected by a highly dysfunctional and oversized private system. Excess garbage trucks on the road contribute to some of the worst smog in the country,¹ violations of clean air standards year after year,² and intense noise pollution.³ Vast quantities of waste and inefficient collection have helped earn New York the dubious distinction of "America's Dirtiest City."⁴

Inefficient Commercial Waste Collection is Costly and Polluting

New York City's commercial waste collection industry is a "Wild West" lacking adequate regulatory oversight. While a handful of carters struggle to maintain high labor and environmental standards, hundreds of companies deploy thousands of dirty trucks to service customers along crisscrossing routes, needlessly wearing down city streets and emitting pollution that damages truck drivers' and residents' health. Moreover, the large number of companies and trucks makes industry oversight nearly impossible, and unlicensed activity is widespread, the City is losing licensing revenue and licensed companies are losing business to unlicensed haulers.

Low-Income Communities and Communities of Color are Disproportionately Burdened by Solid Waste Handling

The vast majority of waste handled in New York City is transported by heavy trucks to and from waste transfer stations in a handful of low-income communities and communities of color. The City took a significant step toward addressing this gross inequity with its 2006 Solid Waste Management Plan (SWMP). When fully implemented, it will more equitably distribute waste transfer stations and replace long-haul truck transport of residential solid waste with rail and barge transport to reduce diesel emissions. Unfortunately, the SWMP does little to address how commercial waste is managed. Unless changes are made to improve how the commercial waste sector operates, low-income communities and communities of color will continue to shoulder the burden of dealing with New York City's solid waste, and will continue to suffer the negative health impacts, such as asthma, of being exposed to waste truck and facility emissions.

Private Sector Waste Workers Face Low Wages and Poor Working Conditions

Many workers in the commercial sector are paid poverty wages and lack benefits and full-time, permanent jobs. Waste work is amongst the most dangerous work in the nation, consistently ranked in the top ten deadliest occupations. While municipal waste workers have been able to secure livable wages, benefits, and improved safety training for workers through their union, commercial workers experience far worse working conditions and are largely non-union.

Landfilling and Incinerating Waste is Costly and Polluting

New York City landfills and incinerates the majority of its commercial waste even though that waste could be recycled or composted. Over 90 percent of commercial waste is recyclable or

compostable, but the City estimates that just 40 percent is recycled. Landfilling and incineration generates excess greenhouse gas emissions. It also subjects residents in the Eastern and Midwestern U.S. who live near landfills and incinerators receiving the city's waste to toxic emissions. Thousands of jobs that could be created through recycling represent a tremendous opportunity cost of the current system. And, already high and rising waste export costs will see haulers and local businesses footing larger bills for waste disposal.

Over-reliance on landfilling and incineration, as well as an inefficient and polluting collection system, releases greenhouse gas emissions that contribute to climate change. New Yorkers are experiencing the devastating consequences of climate change, as extreme weather events have become "the new normal."⁵ Thousands of New Yorkers are still recovering from 2012's Superstorm Sandy, which damaged or destroyed thousands of city homes and businesses, as well as city infrastructure, costing the City and its residents \$19 billion.⁶

Ensuring High-Road Environmental and Labor Practices in the Commercial Waste Industry

New York City deserves better. By transforming the commercial waste industry, it is possible to reduce pollution, foster cleaner and healthier communities for all New Yorkers, save the City money, lift thousands of waste industry workers and their families out of poverty, and create new, quality jobs in recycling and recycling-reliant industries. The City can achieve these goals via an exclusive franchise system, an approach being utilized by cities like Seattle and Los Angeles.

A franchise system for commercial waste collection would utilize a competitive bidding process to select commercial haulers to service franchise zones established across the city. The franchise system would ensure high-road environmental and labor practices, halting the current race to the bottom in the private waste sector. Franchise awardees would be required to meet **environmental standards** that increase recycling rates, reduce truck emissions, and more equitably distribute waste handling across the city; to meet **labor standards** that improve the safety and quality of jobs; and to ensure the new recycling jobs that are created are good jobs. In return, franchisees would benefit from a steady, efficiently located base of customers. The franchise system would ensure accountability through reporting requirements and increased City oversight.



Commercial Waste Handling in New York City: Historical and Regulatory Context

Source

Each year, New York City's restaurants, offices, and businesses generate a staggering 3.2 million tons of putrescible solid waste (excluding construction and demolition waste and fill dirt).⁷ Commercial establishments produce almost as much waste as the residential/public sector,⁸ but the commercial waste sector receives far less attention from the City in terms of oversight and public policy.

New York City Local Law 87, passed in 1992, requires commercial establishments to do some recycling. Commercial office buildings are required to recycle paper, cardboard, textiles, bulk metals, and construction waste, but not plastic and glass. Food and beverage service establishments are required to recycle cardboard, bulk metal, metal, glass, plastic, and construction waste.⁹ Many materials that could be recycled do not have to be recycled under City Law. In addition, lax enforcement of the recycling law and inadequate oversight of private haulers and waste facilities, and an absence of financial incentives encouraging businesses to recycle has resulted in low rates of commercial recycling.

Collection

Commercial waste collection in New York City was privatized in the 1950s, creating a deregulated system in which organized crime thrived. In the 1990s, the City created the Trade Waste Commission, now known as the Business Integrity Commission, to license carters and set maximum rates for commercial waste collection, thus promoting competition and preventing extortion. The City's singular focus on promoting competition and eliminating organized crime through a largely stagnant rate cap, and the absence of a rate floor, has led to a race to the bottom that depresses labor and environmental standards.¹⁰

Waste Transfer and Materials Recovery

In the 1980s, the City raised waste tipping fees at the transfer stations serving Staten Island's Fresh Kills Landfill, triggering the proliferation of private transfer stations in low-income communities and communities of color like Williamsburg-Greenpoint, the South Bronx, Red Hook, Sunset Park, and Southeast Queens.¹¹ Private materials recovery facilities are located in the same neighborhoods as waste transfer stations.¹²

Export

Since the closure of New York City's last incinerator in 1999 and of the Fresh Kills Landfill in 2001, solid waste has been exported to landfills and incinerators outside the city, at great economic and environmental cost.¹³

Recycling-Reliant Industry

New York City lacks a robust local recycling-reliant manufacturing industry, largely due to low recycling rates in the city and the absence of a steady supply of high-quality recycled materials.¹⁴

COMMERCIAL WASTE SYSTEM: FROM SOURCE TO HANDLING TO END PRODUCT



* Putrescible solid waste, excluding construction and demolition waste and dirt fill

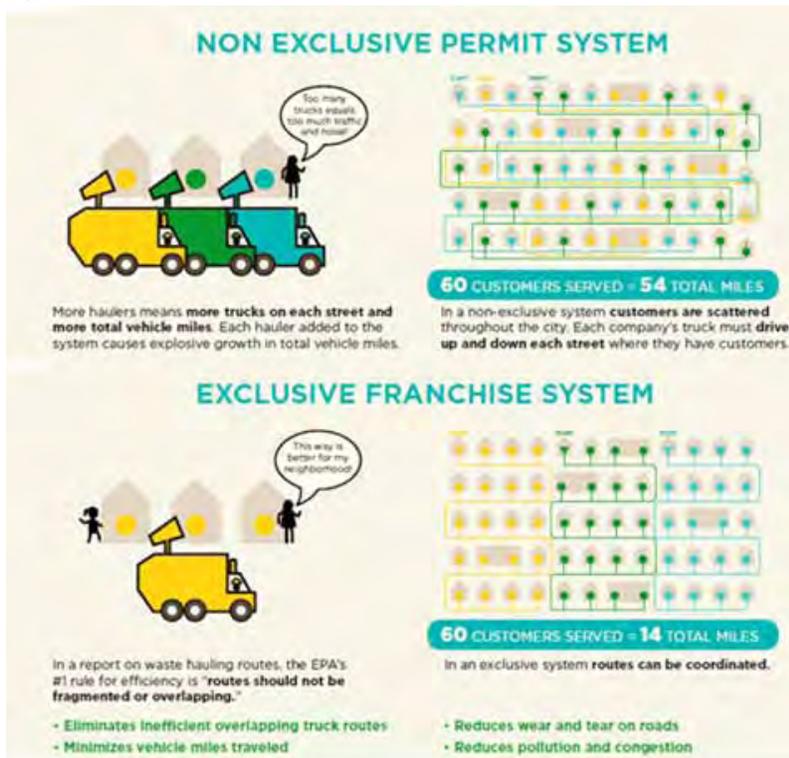
Inefficient Commercial Waste Collection is Costly and Polluting

Too Many Trucks, Inefficient Routes

A typical New York City block in a commercial area is serviced by multiple carting companies. Under the current, haphazard system, a single private waste truck's collection route may take it to multiple boroughs to pick up waste. Inefficient routes subject city streets to unnecessary pavement-damaging truck trips, and subject city residents to unnecessary air and noise pollution and traffic congestion.

"[Waste truck] routes should not be fragmented or overlapping. Each route should be compact, consisting of street segments clustered in the same geographical area."
 – Environmental Protection Agency¹⁵

HOW FRANCHISING INCREASES EFFICIENCY



Source: Los Angeles Alliance for a New Economy

A competitive franchise system involving a single carter servicing a designated zone eliminates truck miles travelled, reducing pavement damage, pollution, and road congestion.

RESIDENTIAL WASTE COLLECTION IN NEW YORK CITY IS 5 TIMES MORE EFFICIENT THAN COMMERCIAL WASTE COLLECTION

	COMMERCIAL	RESIDENTIAL
Volume of waste	3.2 million tons ¹⁶	3.9 million tons ¹⁷
Number of trucks	4,000 ¹⁸	1,640 ¹⁹
Miles travelled per truck per year	11,665 miles ²⁰	6,900-9,000 miles ²¹
Total truck miles travelled in a year	47 million miles	12 million miles
Ratio of truck mile to waste ton	15:1	3:1

Costly Damage to Roads

Waste collection trucks are amongst the heaviest and most damaging vehicles on New York City roads. An average waste truck weighs 33,000 pounds.²² In 2012, New York City filled over 230,000 potholes and spent millions on road resurfacing.²³ A single garbage truck exerts pavement damage equivalent to 1,429 cars.²⁴



Unlicensed Activity Costs the City Revenue and Licensed Carters Business

The proliferation of private hauling companies²⁵ and commercial waste trucks enables unlicensed activity.²⁶ Currently, not all private commercial waste haulers operating in the city are legally licensed to do so. The City is losing potentially millions of dollars in licensing fees per year, and licensed companies are losing business to unlicensed companies. While there has been a recent crackdown to penalize unlicensed carters—the City Council passed a local law increasing penalties for unlicensed carting activity,²⁷—tracking these carters will remain a huge challenge with hundreds of companies and over 4,000 private waste trucks on city streets.

Diesel Pollution Harms Human Health

Diesel pollution causes serious, sometimes fatal, health impacts.

The estimated 2010 impacts of diesel pollution in New York State:²⁸

- 1,159 premature deaths
- 2,249 non-fatal heart attacks
- 39,429 asthma attacks
- 848 cases of chronic bronchitis

Diesel pollution poses a three times greater cancer risk than all other 181 EPA-tracked air toxins combined.²⁹

According to the Clean Air Task Force, spending one dollar to reduce the diesel particulate matter emitted from truck engines results in \$13 in monetized health benefits.³⁰

Excess Waste Trucks Endanger Pedestrians and Cyclists

More waste trucks on the road put pedestrians and cyclists in danger. When companies put profit over the safety of workers, the community, and the environment, the results can be deadly. A lack of oversight combined with aggressive cost cutting can mean rushed, overworked drivers and dangerous, faulty trucks on the roads. Dozens of New York City pedestrians and cyclists have been killed by waste trucks in recent years.³¹ Accidents involving trucks are three times more likely than those involving cars to result in death.³²

Diesel Pollution Is a Significant Contributor to Climate Change

Diesel-burning waste trucks emit particulate matter, which includes black carbon, a global warming agent 2,000 times more potent over a 20-year period than carbon dioxide. Half of the black carbon in the U.S. is emitted by diesel fuel engines.³³

The Department of Sanitation of New York has installed diesel particulate filters on over 1,500 City waste collection trucks,³⁴ cutting particulate matter emissions by over 90 percent.³⁵ A similar program for the commercial waste fleet could greatly reduce black carbon emissions.

John Shehas

Works in Astoria, Queens

John Shehas is a twenty-two-year veteran of the commercial waste hauling industry, starting his career when he was just 19 years old. Although he enjoys his work, he acknowledges that it's a hard job with lots of hazards. "I pulled my back. It's just the line of work we do—picking up heavy bags, it could go any time," says John. "It's either arthritis, your knees, or your back. I don't know anyone who's doing it over 25 years."



John believes that increasing recycling and proper sorting of trash by consumers would be safer for workers. He and his co-workers have been injured on the job because of improperly discarded materials. "My partner just got a gash. He should have got 18 stitches on his leg. A lot of people just throw glass in black bags, which is very dangerous for us. I had paint thinner splashed in my eyes. I had to go the hospital and get it washed out. The customers are not really aware of what you can put in a container or not," says John.

He's worked for his current employer, Cinelli Carting, for the past 13 years. John typically works 35-40 hours a week and is happy with his wages, salary, health and pension benefits. He describes Cinelli as one of the few good guys in the industry. "My company puts safety first," says John. "You can see that my boss fixes his trucks. All the lights work. If we need containers changed, he's on the ball."

His boss believes in building good relationships with the customers, and this dedication to service and high quality work has paid off. As the number of carting companies has grown in the last decade, Cinelli has lost business to companies that are able to charge low rates by gutting workers' wages and benefits. But they have kept a lot of loyal customers, too. "If you talk to my customers, they love my boss. They love the workers. They're just very happy," says John.

John feels fortunate that he's always worked for union companies. He's seen too many companies doing the wrong thing. "It's to the point that it's like the Wild Wild West out there with these carters," he says. "Jumping on the wrong side of the street to just pick up a stop, running lights. There are laws. Drivers can't drive after 10 hours—but they don't abide by that rule."

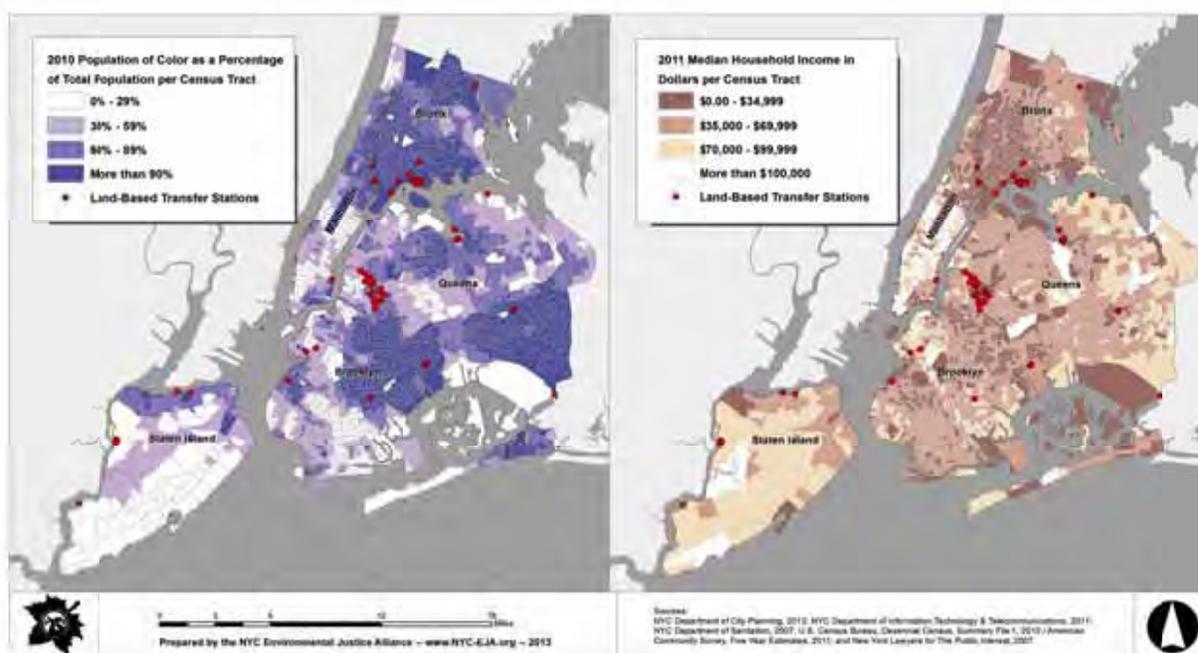
John feels the long hours and law-breaking at many companies is dangerous—for both workers and people in the community. "Bottom line--you're going to hurt yourself. Because you're working nights, so your sleep is not really good during the day. I don't care how much you sleep—when 3 am comes, you're tired," he says. "Now you're overtired because you're working 10-12 hours. It's a disaster waiting to happen. You could hurt someone driving, or you could hurt yourself."

"Why can't the city stop this? I've been to other cities, and they recycle and everything runs smooth. They'll tell you that New York is a different place. I can't even believe that all this garbage is on the streets. I think we can do better."

Low-Income Communities and Communities of Color are Disproportionately Burdened by Solid Waste Handling

New York City's more than 8 million residents experience the negative impacts of the polluting commercial waste system. However, **New Yorkers living in low-income communities and communities of color in the South Bronx, North Brooklyn, Sunset Park, and Southeast Queens, where the vast majority of solid waste transfer stations, recycling facilities, and commercial waste carter garages are located, experience the environmental and health impacts of commercial waste handling most acutely.** It is these communities that face the most direct exposure to truck traffic and diesel exhaust, and waste facility pollution, and that suffer elevated rates of asthma.³⁶

RACE, INCOME, AND NYC WASTE TRANSFER STATION SITING

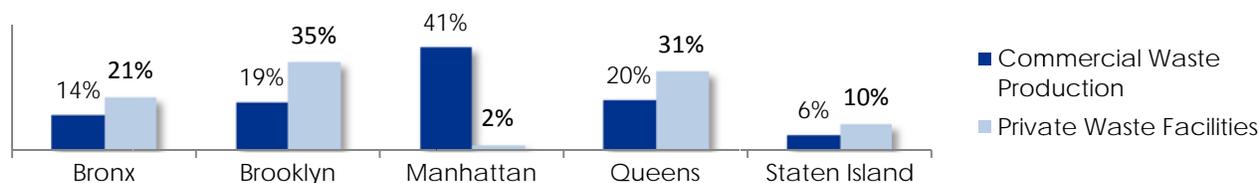


Facilities that process commercial waste are currently not located where most commercial waste is generated. **Manhattan produces over 40 percent of the city's commercial waste, but houses just 2 percent of the city's waste transfer stations.**³⁷ Brooklyn produces 19 percent of the city's commercial waste, but houses 35 percent of the private waste facilities.³⁸

COMMERCIAL WASTE MANAGEMENT BURDEN BY BOROUGH

	Bronx	Brooklyn	Manhattan	Queens	Staten Island
Share of Commercial Waste Production ³⁹	14%	19%	41%	20%	6%
Share of Commercial Waste Carter Garages ⁴⁰	17%	39%	1%	31%	11%
Share of Solid Waste Transfer Stations ⁴¹	25%	36%	2%	27%	11%
Share of Recycling Facilities ⁴²	21%	30%	3%	36%	9%

SHARE OF COMMERCIAL WASTE PRODUCTION vs. PRIVATE WASTE FACILITIES





Private Sector Waste Workers Face Low Wages and Poor Working Conditions

Thousands of private sector waste and recycling collection workers in New York City earn extremely low wages and face numerous safety hazards on the job.

Many Workers Receive Low Wages

Recycling sorter wages have remained extremely low, below \$25,000, during the last decade.

The median annual wage for a recycling sorter is just \$24,320,⁴³ below the self-sufficiency standard for a single adult living almost anywhere in New York City, and far below the self-sufficiency standard for a family in the city.⁴⁴

Collection worker wages have been declining. Between 2006 and 2011, real wages fell in the commercial waste hauling industry for new hires in the Bronx, Brooklyn and Staten Island.⁴⁵ In Staten Island, new hires earned just below \$20,000 in 2011.⁴⁶

Disparities in waste hauler wages along lines of race and citizenship status are significant.

People of color comprise more than 60 percent of the waste collection workforce,⁴⁷ and these workers earn significantly less than their white counterparts. More than half of Latino waste collection workers (33 percent of the private collection workforce)⁴⁸ and about one third of black waste collection workers (27 percent of the private collection workforce)⁴⁹ earn under \$35,000 per year, while 12 percent of white private sector waste collection workers earn under \$35,000 per year.⁵⁰ Almost three-quarters of collection workers who are non-citizens earn under \$35,000, and 100 percent of non-citizen Latino collection workers earn under \$35,000 in a year.⁵¹

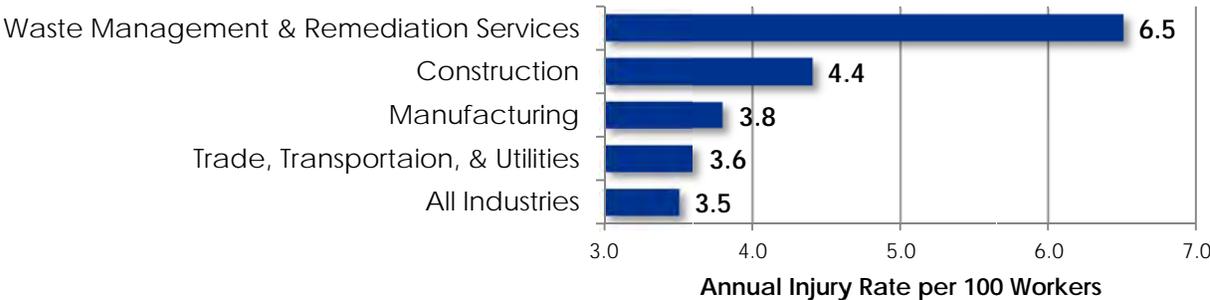
Workers Face Numerous Workplace Hazards

Workers face serious health hazards like exposure to poisons, toxins, infectious diseases, sharp objects, rodents and other disease vectors, ergonomic injuries, and injuries from accidents involving heavy machinery. Because waste truck drivers inhale large quantities of diesel exhaust from old, dirty trucks, they face increased risks of lung cancer, nervous system impairment, stroke, chronic bronchitis, and asthma, among other ailments.⁵²

Waste work is amongst the deadliest work in the country. Waste work has been ranked amongst the ten deadliest occupations in the country for years.⁵³ The fatal injury rate for waste work is 8 times the rate for all occupations.⁵⁴

In New York, occupational injury rates in the waste industry are higher than those in the construction, manufacturing, and transportation industries.⁵⁵ While waste workers face numerous occupational health and safety risks, proper safety training and equipment can reduce injury and fatality rates.

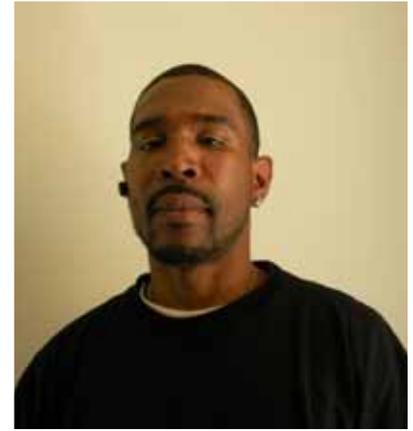
OCCUPATIONAL INJURY RATES, NEW YORK, 2011



Kwhane Bennett

Resident of Jamaica, Queens

Kwhane Bennett has been working in the commercial waste industry for twelve years. Although he has worked as a driver for several different carting companies, there have been a lot of similarities across his employers. "Some of the companies I worked for, you have to look for your money," said Kwhane. "Some of the companies paid you under the table. If you didn't like it, they tell you just to go home."



Kwhane is used to working long hours with no breaks. A typical workday is a night shift-- 8pm to 9am, for which some companies pay a flat wage, no matter how many hours you work. "They don't want to pay you no overtime—just put it like that. Some of these dudes will just pay you \$80 a day. They don't care how long you're out there—they just don't care. You can be out there 15-16 hours. When I used to work at [company], I used to start at 8 o'clock at night and I was out there till 10 in the morning. I had to come back at 8 [pm] again, and I had a 7 day schedule. It used to kill me."

There are more than 200 commercial waste hauling companies operating in New York City; many of them cut corners and break the law to underbid the competition. Kwhane explains, "Some of these companies say 'I don't care how you do it, just get it done.' You can mess your license up. I've been with a lot of companies where the dude's license is suspended, totally, and they're still driving. When I was at [company], the truck was messed up. It rev[ved] up and went out of gear, and it backed up into one of my partner's legs and it broke his leg. They had to cut his boot off. The bone had busted out of the skin, so he had to get surgery on that. And they still have the truck to this day. The same truck."

He also knows first-hand what it's like to live near commercial waste transfer facilities. Kwhane lives near a facility in Jamaica, Queens, where three workers were killed a few years ago. Although his home is not along one of the main trucking routes, his street still gets truck traffic, and the noise, pollution, and stink that comes with it. "Spillage is crazy. The trucks just spill juice everywhere. That stinks," says Kwhane.

Kwhane has worked as a fill-in driver for a union company for the past few years, where he says that safety comes first, and he is hopeful that a permanent position will open up. But the good companies are few and far between. In the meantime, he continues to pick up work at the non-union carting companies that are typical of the commercial waste industry. He says, "You've got some bosses that talk to you just any type of way. You can't say anything to them, or you'll get fired. And they really just don't care—about nothing. They just treat you bad."



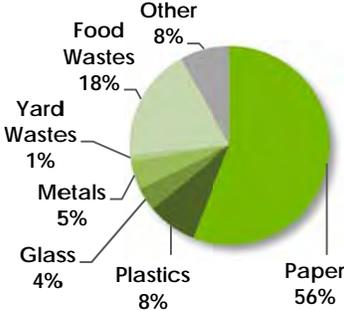
Landfilling and Incinerating Waste is Costly and Polluting

In one year, 2 million tons of New York City's commercial waste is sent to landfills and incinerators. In 2011, restaurants, offices, and businesses produced 3.2 million tons of solid waste.⁵⁶

Over 90 percent of commercial waste is recyclable or compostable,⁵⁷ but only an estimated 40 percent is recycled.⁵⁸

According to the City, 92 percent of the commercial waste stream is comprised of recyclable or compostable material such as paper, plastic, and food.⁵⁹

COMMERCIAL PUTRESCIBLE WASTE STREAM



Landfilling and Incinerating Waste Squanders Tremendous Job Creation Opportunities

Recycling and composting creates more jobs than landfilling and incinerating waste.⁶⁰

Waste Handling Process	Jobs per 10,000 Tons of Waste per Year
Landfilling/ Incineration	1
Composting	5
Recycling Sorting	20

Over 15,000 good green jobs can be created in New York City with increased commercial recycling.⁶¹ Right now, just a fraction of those recycling jobs exist in the city,⁶² and many of them are poorly-paid and dangerous.⁶³ Recycling processing facilities employ fewer than 500 workers,⁶⁴ and there are few manufacturers utilizing recycled materials in New York City.

THE RECYCLING JOB POTENTIAL IN NYC'S COMMERCIAL SOLID WASTE

Material	2011 Tonnage ⁶⁵	RECYCLING PROCESSING		+	RECYCLING-RELIANT INDUSTRY		=	TOTAL	
		Jobs per 1,000 tons ⁶⁶	# Jobs		Jobs per 1,000 tons ⁶⁷	# Jobs		# Jobs	
Metal	148,708	2	297		4 to 17	595 to 2,528		892 to 2,825	
Glass	120,232	2	240		8	962		1,202	
Plastic	253,120	2	506		10	2,531		3,037	
Paper	1,771,840	2	3,544		4	7,087		10,631	
TOTAL JOB POTENTIAL:			4,588	+		11,175 to 13,108	=	15,763 to 17,696	

The Cost of Waste Export to Landfills and Incinerators is Rising

The cost of waste export is expected to rise in coming years as landfills reach capacity and gasoline prices increase. The City currently spends almost \$300 million per year to export residential waste to landfills and incinerators across the Eastern and Midwestern U.S., and the private sector likely spends hundreds of millions of dollars doing the same. Private haulers and their customers will feel the impacts of the growing export costs. Increased diversion via recycling and composting can significantly reduce the amount of waste being exported and save money for businesses and consumers.

Landfilling and Incineration Contribute to Climate Change

Landfills emit methane, a global warming agent 20 times more potent than carbon dioxide.⁶⁸ In fact, over 20 percent of all methane emissions in the United States come from landfills.⁶⁹ In 2012, solid waste landfills in the United States emitted over 103 million metric tons of greenhouse gases (GHGs).

Incinerators emit the greenhouse gases carbon dioxide and nitrogen oxide. In 2012, waste incinerators in the U.S. emitted 12 million metric tons of GHGs. While U.S. advocates of incineration or “waste-to-energy” often tout its use in Europe as evidence that it is a sustainable waste management practice, they fail to note that its use is declining. The European Parliament passed a resolution in May 2012 calling for a phase-out of landfilling and incineration of recyclable waste by 2020.⁷⁰

Recycling a ton of waste emits 30 times less greenhouse gas than disposing of that waste in a landfill.⁷¹ Recycling all paper, glass, plastic, and metal waste, and composting food and other organic waste from the city’s commercial establishments versus landfilling the same represents a difference of more than 8 million metric tons of GHG emissions.⁷²



Landfills and Incinerators Emit Toxins into the Environment

Much of New York City’s waste is exported great distances. Residents in communities across the Eastern and Midwestern U.S. where landfills and incinerators receiving New York City’s waste are located are subjected to toxic emissions from the city’s waste.

Landfill runoff, known as leachate, often contains hazardous toxins like volatile organic chemicals and heavy metals. When leachate breaches containment systems, it can contaminate soil and ground water and cause grave environmental and health impacts. Even the most state-of-the-art landfill liners degrade over time, and will allow toxins from landfilled waste into the environment.⁷³

Incinerators, even those utilizing allegedly cutting-edge technology, emit highly potent toxins such as dioxins and mercury, which harm human health and the environment even in small amounts.⁷⁴ Mercury is a neurotoxin that can impair cognitive, sensory, and motor functioning. Incinerators are the primary human-caused source of dioxins, which can cause cancer and birth defects, disrupted sexual development, and immune system damage, among other grave health impacts.⁷⁵

Sarah Martin

Resident of Harlem

Sarah Martin has lived in Harlem for nearly sixty years and has seen a lot of changes during that time. There are many things that keep her living in the neighborhood, but she admits, “I don’t like walking around the area: the smell, the garbage, the trash—the quality of life that a lot of us are living leaves a lot of room for improvement.”

The neighborhood has a busy commercial corridor with lots of truck traffic and commercial waste. It’s also close to a sewage treatment plant. “We have a lot of truck traffic moving through our community,” says Sarah. “There’s a law that’s supposed to direct trucks the right way, but they go and take short cuts. Therefore they go through our communities, and the law is not being enforced.”

Sarah suffers from chronic asthma, and environmental triggers prevent her from leaving her home some days. “Clean air needs to be addressed. This is the dirtiest city I’ve ever been in in my life,” she says.

Through the Morningside Heights/West Harlem Sanitation Coalition, Sarah has been working to improve quality of life in the community, and has seen some progress in reducing waste and pollution. She lives in the Grant Houses, a public housing development, and works closely with neighbors from the middle-income co-op development across the street. “We started doing little things like taking looks at vacant lots where there was so much debris and garbage piled up. We would track down the owners and hold them responsible for clean-up. Then we addressed things like rats, because we shared rats. Our rats went over there, and their rats came over here. So we joined forces.”

Sarah is concerned about the impacts of waste beyond her neighborhood and believes people need to join forces on a larger scale. She says, “We all make garbage—we all should be responsible for it. The private sanitation trucks still dump in poor people of color neighborhoods. It’s an injustice. I’m concerned about quality of air, clean air, equity when it comes to trash. And holding people accountable. That would make a better community, a better city.”





Policy Recommendations

New York City's commercial waste management system is fraught with problems: inefficient and polluting waste collection practices, inequitable waste facility siting and collection routes, low wages and dangerous conditions for waste workers, and low recycling rates. While cities around the country are working toward ambitious zero waste goals, discovering the economic value in expanded recycling programs, and establishing high-road environmental and labor standards in their solid waste management systems, New York City lags behind.

In 2011, as part of PlaNYC 2030, a blueprint for building a "greener, greater New York," the City set a goal of 75 percent waste diversion by 2030. Unfortunately, the City considers 'waste-to-energy' a diversion strategy, potentially undermining an expanded recycling program. A goal of 30 percent residential recycling by 2017 was set in early 2013, but no other explicit recycling goals have been set. The 2006 Solid Waste Management Plan (SWMP) laid out plans for increased regulation of the commercial waste sector,⁷⁶ but those plans have not been fully implemented.

New York City can do better. The City should enact high-road labor standards, environmental standards, and establish accountability mechanisms in the commercial waste industry in order to reduce waste and pollution, foster clean and healthy communities for all new Yorkers, and create good jobs:

Environmental Standards

- **Diversion Goal:** A commercial waste diversion goal and a requirement that private waste companies operating in the city develop and execute plans to meet it.
- **Clean Trucks:** Vehicle emissions standards for commercial waste trucks.
- **Smart Routing:** Designated truck routes that minimize waste truck miles traveled.

Labor Standards

- **Wage Standards:** Livable wages for private hauling and waste and recycling facility workers.
- **Safety Standards:** First-rate safety training and equipment for private hauling and waste and recycling facility workers.

Accountability Mechanisms

- **Reporting:** Reporting requirements for private haulers and waste and recycling facilities that ensure compliance with high-road environmental and labor standards.
- **Increased Enforcement:** Regular inspections and audits by the City.
- **Fair and Standardized Hauling Rates:** A single rate structure that ensures all hauling customers pay the same rate for the same level of service, and that incentivizes recycling and composting.

How Franchising Can Improve Standards and Increase Accountability in the Commercial Waste Industry

The City could achieve and exceed its PlaNYC and SWMP goals, improve labor and environmental standards, and increase accountability in the commercial waste industry by adopting an approach to solid waste management being used by more and more cities around the country: franchising. An exclusive franchise system could reduce truck traffic and emissions, increase licensing revenue, more equitably distribute waste handling across the city, improve the safety and quality of jobs, increase the recycling rate, and create thousands of good recycling jobs.

WASTE COLLECTION FRANCHISING: EXAMPLES FROM CITIES ACROSS THE U.S.

Cities around the country have adopted franchise systems for waste collection with great success. Major U.S. cities like Miami, Houston, San Jose, Seattle, Portland, and Los Angeles have used franchising systems⁷⁷ to improve waste collection efficiency, clean up truck fleets, raise wage and benefit standards for workers, and increase recycling and composting rates.

San Jose, CA — Within six months of establishing a commercial franchise system, San Jose saw its commercial recycling rate more than triple, rising from 22 to 70 percent. The franchise system has provided all businesses with simple recycling guidelines and consistent services, placing San Jose on a path to achieving 75 percent diversion by the end of 2013, and enabling the City to set a goal of zero waste by 2022.⁷⁸ San Jose's system has also cleaned up commercial trucks and raised wages for workers.

Seattle, WA — Seattle's exclusive franchise system features clean truck standards, prevailing wage and health and retirement benefit standards for collection workers,⁷⁹ and has helped to raise the commercial recycling rate to over 60 percent.⁸⁰ Franchisees collect source separated waste, recyclables, and organics from businesses and deposit collected materials at facilities designated by the City. In 2009, Seattle adopted a "zero waste strategy" that places a cap on the amount of waste the City sends to landfills and set aggressive recycling and composting goals.⁸¹

Los Angeles, CA — The Los Angeles City Council recently approved a plan to collect commercial and multifamily building waste via an exclusive franchise system. LA's franchise system will include clean truck standards, living wage and health benefit standards for workers in collection and at facilities where discarded material is deposited, and a recycling target. The City considers the franchise system crucial to achieving an ambitious zero waste goal of 90 percent diversion by 2025.⁸²

A franchise system of commercial waste collection would see New York City selecting commercial haulers via a competitive bidding process to service franchise zones across the city. Each franchise awardee would hold the exclusive right to collect waste and recyclables within its zone. Waste processing facilities would be required to obtain certification from the City to receive waste, recyclables, and organics from city franchisees to ensure that the facilities meet City standards.

In order to create a level playing field for responsible small businesses, small- to medium-sized franchise zones in each borough would serve as incubator areas for responsible small- and medium-sized haulers. Small and medium haulers would be subject to the same high-road standards as other franchisees, but they would service zones designed to accommodate their smaller capacity. Franchise awardees would be encouraged to hire experienced waste workers. Anti-competitive monopolization of the industry would be prevented by capping the market share awarded to any single hauler, as Los Angeles has done.⁸³

A franchise system of commercial waste collection would raise environmental and labor standards, and halt the current race to the bottom in the industry. This system would enable New York City to build a more sustainable, equitable, and efficient commercial waste system. Through a franchise system, the City would be able to clean up the commercial waste truck fleet, reduce pollution, ensure more equitable waste management practices, increase recycling rates, and create more high-quality jobs throughout the city. New York can no longer afford the environmental and economic costs of overlooking nearly half of its waste stream. It is time to transform trash in New York City.

Endnotes

8

- ¹ "New Report: New York City and Long Island Rank in the Top Twenty Smoggiest Large Metropolitan Areas in the Country." 21 Sep 2011. Available at: <http://www.environmentnewyork.org/news/hye/new-report-new-york-city-and-long-island-rank-top-twenty-smoggiest-large-metropolitan-areas>.
- ² Babin, J. "NYC Region Exceeds Smog Standards: EPA." WNYC.org. 2 May 2012. Available at: <http://www.wnyc.org/articles/wnyc-news/2012/may/02/blog-nyc-region-exceeds-smog-standards-epa/>.
- ³ Metcalfe, J. "Yo, I'm Trying to Sleep Here! New York's Wonderful Map of Noise." *The Atlantic Cities*. 15 Apr 2013. Available at: <http://www.theatlanticcities.com/neighborhoods/2013/04/yo-im-trying-sleep-here-new-yorks-wonderful-map-noise/5279/>.
- ⁴ "America's Dirtiest Cities." *Travel and Leisure*. Jul 2012. Available at: <http://www.travelandleisure.com/articles/americas-dirtiest-cities/2>.
- ⁵ Abad-Santos, A. "The New Normal of Extreme Weather." *The Atlantic Wire*. 29 Oct 2012. Available at: <http://www.theatlanticwire.com/national/2012/10/new-normal-extreme-weather/58474/>.
- ⁶ Gormley, M. "Sandy Cost New York \$42 Billion, According To Source In Governor's Office." *Huffington Post*. 26 Nov 2012. Available at: http://www.huffingtonpost.com/2012/11/26/sandy-cost-new-york-42-billion-dollars_n_2193127.html.
- ⁷ Putrescible solid waste contains organic material. Source: "A Greater, Greener New York," Office of the New York City Mayor, April 2011. Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.
- ⁸ "A Greater, Greener New York," Office of the New York City Mayor, April 2011. Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.
- ⁹ "Recycling: It's Not a Choice, It's the Law. A Handbook for NYC Businesses." City of New York. 23 July 2009. Available at: <http://www.nyc.gov/html/nycwasteless/downloads/pdf/materials/Commercial.pdf>.
- ¹⁰ Rice, K. *Dignity and Respect: The History of Local 831*. New York: Uniformed Sanitationmen's Association, Local 831, IBT, 2009.
- ¹¹ Department of City Planning Community District Profiles. Available at: http://www.nyc.gov/html/dcp/html/neighbor_info/nhmap.shtml. Accessed 27 Aug 2013.
- ¹² "Active Recyclables Handling & Recovery Facilities." New York Department of Environmental Conservation. 30 Dec 2011. Available at: http://www.dec.ny.gov/docs/materials_minerals_pdf/rhflist.pdf. Accessed on 20 Sep 2013.
- ¹³ Martin, D. "City's Last Waste Incinerator Is Torn Down." *The New York Times*. 6 May 1999; Eddings, A. "Ten Years After Closure, Fresh Kills Is Still a Landfill in Transition," wnyc.org. 21 March 2011. Available at: <http://www.wnyc.org/blogs/wnyc-news-blog/2011/mar/21/fresh-kills/>.
- ¹⁴ Izeman, MA, et al. "Recycling Returns: Ten Reforms for Making New York City's Recycling Program More Cost-Effective." NRDC. Apr 2004. Available at: <http://www.nrdc.org/cities/recycling/returns/returns.pdf>.
- ¹⁵ "A Five-Stage Improvement Process for Solid Waste Collection Systems." EPA. Available at: <nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=9100RVVR.txt>.
- ¹⁶ "A Greater, Greener New York," Office of the New York City Mayor, April 2011. Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.
- ¹⁷ "A Greater, Greener New York," Office of the New York City Mayor, April 2011. Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.
- ¹⁸ "A Greater, Greener New York," Office of the New York City Mayor, April 2011. Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.
- ¹⁹ "NYC Fleet Daily Service Report." NYC Mayor's Office of Operations. Accessed 17 Sep 2013. Available at: <http://www.nyc.gov/html/ops/html/data/fleet.shtml>.
- ²⁰ Inform, Inc. "New York City's Commercial Waste Hauling Fleets: An Opportunity for New York City to Ensure Cleaner, Quieter Waste Collection Operations." Feb 2006. Available at: <http://www.informinc.org/NYCCCommercial2.pdf>. See p3. Miles travelled per truck per year calculated using 9.6 million miles travelled in one year / 823 trucks = 11,665 miles per truck per year.
- ²¹ "2012 Annual Report on Alternative Fuel Vehicle Programs Pursuant to Local Law 38 of 2005." New York City Department of Sanitation. March 2013. Available at: http://www.nyc.gov/html/dsny/downloads/pdf/pubinfo/annual/Hybrid/LL38_2013_Final.pdf.
- ²² Inform, Inc. "New York City's Commercial Waste Hauling Fleets: An Opportunity for New York City to Ensure Cleaner, Quieter Waste Collection Operations." Feb 2006. Available at: <http://www.informinc.org/NYCCCommercial2.pdf>.
- ²³ "Preliminary Mayor's Management Report," *City of New York*, February 2013, p128. Available at: http://www.nyc.gov/html/ops/downloads/pdf/pmmr2013/2013_pmmr.pdf.
- ²⁴ "Washtenaw County Recycles: Residential Solid Waste Profile & Assessment Report." Washtenaw County. May 2005. p12. Available at: http://www.ewashtenaw.org/government/departments/environmental_health/recycling_home_toxics/solid-waste/profile_and_assessment_report/sw_report.pdf.
- ²⁵ "Licensed Carters." NYC Business Integrity Commission. Available at: <http://www.nyc.gov/html/bic/downloads/pdf/pr/licapproved.pdf>. Accessed 17 Sep 2013.
- ²⁶ "Trade Waste Advisory Board Meeting Minutes." NYC Business Integrity Commission. 3 Apr 2012. Available at: http://www.nyc.gov/html/bic/downloads/pdf/twab_minutes_4_3_2012_final.pdf; Preliminary Mayor's Management Report 2013: Business Integrity Commission." Office of the New York City Mayor. Available at: <http://www.nyc.gov/html/ops/downloads/pdf/pmmr2013/bic.pdf>.

-
- ²⁷ "Cardboard Picking Target of NYC Law." *Recycling Today*. 24 Jul 2013. Available at: <http://www.recyclingtoday.com/cardboard-theft-new-york.aspx>.
- ²⁸ "Diesel Emissions: A Serious Threat to Public Health and Our Environment." *New York Public Interest Research Group*. Available at: <http://www.nypirg.org/enviro/air/diesel/>.
- ²⁹ "Federal Efforts to Protect Public Health by Reducing Diesel Emissions, Testimony of Conrad G. Schneider Advocacy Director, Clean Air Task Force, before the Clean Air Subcommittee of the Environment and Public Works Committee, United States Senate." 12 May 2011. Available at: http://www.catf.us/resources/testimony/files/20110512-CATF_EPW_Testimony.pdf.
- ³⁰ "Federal Efforts to Protect Public Health by Reducing Diesel Emissions, Testimony of Conrad G. Schneider Advocacy Director, Clean Air Task Force, before the Clean Air Subcommittee of the Environment and Public Works Committee, United States Senate." 12 May 2011. Available at: http://www.catf.us/resources/testimony/files/20110512-CATF_EPW_Testimony.pdf.
- ³¹ "See a Pattern of Deadly Dump Trucks? Don't Bother Federal Safety Officials." *Streetsblog.org*. 13 July 2010. Available at: <http://www.streetsblog.org/2010/07/13/see-a-pattern-of-deadly-dump-trucks-don%E2%80%99t-bother-federal-safety-officials/>.
- ³² "The New York City Pedestrian Safety Study & Action Plan." New York City Department of Transportation. August 2010. Available at: http://www.nyc.gov/html/dot/downloads/pdf/nyc_ped_safety_study_action_plan.pdf.
- ³³ "Federal Efforts to Protect Public Health by Reducing Diesel Emissions, Testimony of Conrad G. Schneider Advocacy Director, Clean Air Task Force, before the Clean Air Subcommittee of the Environment and Public Works Committee, United States Senate." 12 May 2011. Available at: http://www.catf.us/resources/testimony/files/20110512-CATF_EPW_Testimony.pdf.
- ³⁴ "2012 Annual Report on Alternative Fuel Vehicle Programs Pursuant to Local Law 38 of 2005." New York City Department of Sanitation. March 2013. Available at: http://www.nyc.gov/html/dsny/downloads/pdf/pubinfo/annual/Hybrid/LL38_2013_Final.pdf.
- ³⁵ "Best Practice: Retrofitting Sanitation Fleet." *New York City Department of Sanitation*. 10 Aug 2010. Available at: http://www.nyc.gov/html/unccp/gprb/downloads/pdf/NYC_Retrofitting%20Sanitation%20Fleet.pdf.
- ³⁶ "State of New York City's Housing and Neighborhoods 2012." Furman Center for Real Estate and Urban Policy, New York University. Available at: <http://furmancenter.org/research/sonychan>.
- ³⁷ The waste transfer station in Manhattan Community District 6 is a fill dirt station managed by Con Edison. Source: Manhattan Community District 6 Profile. Last Modified 11 June 2013. New York City Department of City Planning. Available at: <http://www.nyc.gov/html/dcp/pdf/lucds/mn6profile.pdf#profile>. Accessed on 19 Sep 2013.
- ³⁸ "Table 3.4-1: Origins and Destination of Putrescible Waste, 2003." Commercial Waste Management Study: Volume II, Commercial Waste Generation and Projections. *New York City Department of Sanitation*. March 2004. P.20. Available at: <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>; Department of City Planning Community District Profiles. Available at: http://www.nyc.gov/html/dcp/html/neigh_info/nhmap.shtml. Accessed 27 Aug 2013.
- ³⁹ "Table 3.4-1: Origins and Destination of Putrescible Waste, 2003." Commercial Waste Management Study: Volume II, Commercial Waste Generation and Projections. *New York City Department of Sanitation*. March 2004. P.20. Available at: <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>.
- ⁴⁰ Department of City Planning Community District Profiles. Available at: http://www.nyc.gov/html/dcp/html/neigh_info/nhmap.shtml. Accessed 27 Aug 2013.
- ⁴¹ Department of City Planning Community District Profiles. Available at: http://www.nyc.gov/html/dcp/html/neigh_info/nhmap.shtml. Accessed 27 Aug 2013.
- ⁴² Department of City Planning Community District Profiles. Available at: http://www.nyc.gov/html/dcp/html/neigh_info/nhmap.shtml. Accessed 27 Aug 2013.
- ⁴³ According to the BLS, "BLS does not have data specifically for recycling sorters at MRFs; however, these workers are included in the occupation laborers and freight, stock, and material movers, hand." <http://www.bls.gov/green/recycling/>; "Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates, New York-Northern New Jersey-Long Island, NY-NJ-PA." Bureau of Labor Statistics. 2002- 2012. See median annual hourly wage for 53-7062; annual wage = median hourly wage * 2,000 hours.
- ⁴⁴ Fiscal Policy Institute. "Self-Sufficiency Tables: All Families, All Counties, 2010." Available at: http://www.fiscalspolicy.org/SelfSufficiencyTables_AllFamiliesAllCountiesNYS_2010.xls.
- ⁴⁵ Quarterly Workforce Indicators, U.S. Census Bureau.
- ⁴⁶ Quarterly Workforce Indicators, U.S. Census Bureau.
- ⁴⁷ EEO tabulation of 2010 American Community Survey data. U.S. Census Bureau.
- ⁴⁸ EEO tabulation of 2010 American Community Survey data. U.S. Census Bureau.
- ⁴⁹ EEO tabulation of 2010 American Community Survey data. U.S. Census Bureau.
- ⁵⁰ EEO tabulation of 2010 American Community Survey data. U.S. Census Bureau.
- ⁵¹ EEO tabulation of 2010 American Community Survey data. U.S. Census Bureau.
- ⁵² Clean Air Task Force. "Occupational Exposure to Diesel Exhaust." 18 March 2008. Available at: http://www.catf.us/resources/factsheets/files/20080318-Occupational_Health.pdf.
- ⁵³ Johnson, J. "Trash, recyclable collector deaths spike in 2011." *Waste and Recycling News*. 20 Sep 2012. Available at: <http://www.wasterecyclingnews.com/article/20120920/NEWS01/120929999/trash-recyclable-collector-deaths-spike-in-2011>.

⁵⁴ National Census of Fatal Occupational Injuries in 2012 (Preliminary Results)." Bureau of Labor Statistics, U.S. Department of Labor. 22 Aug 2013. Available at: <http://www.bls.gov/news.release/pdf/cfoi.pdf>.

⁵⁵ U.S. Bureau of Labor Statistics, U.S. Department of Labor, Survey of Occupational Injuries and Illnesses, in cooperation with participating State agencies, November, 2012. Available at: <http://www.bls.gov/iif/oshwc/osh/os/pr116ny.pdf>.

⁵⁶ "A Greater, Greener New York," Office of the New York City Mayor, April 2011. p137 (See "Diversion Rate by Waste Stream" bar graph.) Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf

⁵⁷ Commercial Waste Management Study. Volume II – Appendix B: Employment-Based Estimate of Putrescible Waste Generation Year 2002. Available at (p7 of Volume II – Appendix B is p87 of the 220-page pdf): <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>

⁵⁸ "A Greater, Greener New York," Office of the New York City Mayor, April 2011. p137 (See "Diversion Rate by Waste Stream" bar graph.) Available at: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf

⁵⁹ Commercial Waste Management Study. Volume II – Appendix B: Employment-Based Estimate of Putrescible Waste Generation Year 2002. Available at (p7 of Volume II – Appendix B is p87 of the 220-page pdf): <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>

⁶⁰ "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." Tellus Institute with Sound Resource Management. 2011. Available at: http://www.tellus.org/publications/files/More_Jobs_Less_Pollution.pdf.

⁶¹ The Tellus Institute devised metrics for estimating job creation based on waste tonnage. See "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." 2011. Available at: http://www.tellus.org/publications/files/More_Jobs_Less_Pollution.pdf; Commercial waste tonnage 2011 * Waste type percentage = Tonnage. Commercial waste figure from: A Greater, Greener New York, Office of the New York City Mayor, April 2011, p136, available at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf. Waste type percentage from: Commercial Waste Management Study. Volume II – Appendix B: Employment-Based Estimate of Putrescible Waste Generation Year 2002, New York City Department of Sanitation, available at (p7 of Volume II – Appendix B is p87 of the 220-page pdf) <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>.

⁶² Residential/public waste tonnage 2011 * Waste type percentage = Tonnage. Residential/public waste figure from: A Greater, Greener New York, Office of the New York City Mayor, April 2011, p136, available at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf. Waste type percentage from: A Greater, Greener New York, Office of the New York City Mayor, April 2011, p139, available at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.

⁶³ American Community Survey. 2010 County Business Patterns.

⁶⁴ U.S. Census Bureau, 2010 County Business Patterns.

⁶⁵ Commercial waste tonnage 2011 * Waste type percentage = Tonnage. Commercial waste figure from: A Greater, Greener New York, Office of the New York City Mayor, April 2011, p136, available at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf. Waste type percentage from: Commercial Waste Management Study. Volume II – Appendix B: Employment-Based Estimate of Putrescible Waste Generation Year 2002, New York City Department of Sanitation, available at (p7 of Volume II – Appendix B is p87 of the 220-page pdf) <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>.

⁶⁶ The Tellus Institute devised metrics for estimating job creation based on waste tonnage. See "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." 2011. Available at: http://www.tellus.org/publications/files/More_Jobs_Less_Pollution.pdf.

⁶⁷ The Tellus Institute devised metrics for estimating job creation based on waste tonnage. See "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." 2011. Available at: http://www.tellus.org/publications/files/More_Jobs_Less_Pollution.pdf.

⁶⁸ "Overview of Greenhouse Gases." *Environmental Protection Agency*. Available at: <http://epa.gov/climatechange/ghgemissions/gases/ch4.html>. Accessed on 26 Aug 2013.

⁶⁹ "Reducing Food Waste for Businesses." *Environmental Protection Agency*. Available at: <http://www.epa.gov/foodrecovery/>. Accessed on 26 Aug, 2013.

⁷⁰ "European Parliament resolution of 24 May 2012 on a resource-efficient Europe (2011/2068(INI))." Available at: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2012-0223+0+DOC+XML+V0//EN>.

⁷¹ "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." 2011. P.46. Available at: http://www.tellus.org/publications/files/More_Jobs_Less_Pollution.pdf.

⁷² "GHG Emissions Analysis — Summary Report." EPA WARM model. Available at: <http://epa.gov/epawaste/conserva/tools/warm/index.html>. Waste type percentage from: Commercial Waste Management Study. Volume II – Appendix B: Employment-Based Estimate of Putrescible Waste Generation Year 2002, New York City Department of Sanitation, available at (p7 of Volume II – Appendix B is p87 of the 220-page pdf) <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp/cwms/cwms-ces/v2-cwgp.pdf>. Residential/public waste tonnage 2011 * Waste type percentage = Tonnage. Residential/public waste figure from: A Greater, Greener New York, Office of the New York City Mayor, April 2011, p136, available at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf.

⁷³ "Zero Waste Cradle-to-Cradle Principles for the 21st Century." Sierra Club. Sep 2009. Available at: <http://www.sierraclubmass.org/pdf/msw-landfill-advisory.pdf>.

⁷⁴ Chen, J. "IES Romoland Emission Tests, status update." 17 April 2006. *South Coast Air Quality Management District, Emerging Technologies Forum*. Cited by Cipler, D. "An Industry Blowing Smoke." Jun 2009. *Global Alliance for Incinerator Alternatives*.

⁷⁵ "An Industry Blowing Smoke." Global Alliance for Incineration Alternatives. Jul 2009. Available at: http://florida.sierraclub.org/docs2009/WTEB_report.pdf.

⁷⁶ The SWMP laid out the following proposed actions to increase commercial waste sector regulation: "Hold privately owned waste transfer station to higher operational standards, thereby reducing the impacts of these facilities; Identify the best means of reducing putrescible transfer station capacity in the two or three communities with the greatest concentration of transfer stations as the Converted MTSs become operational; and Reduce the impacts on those communities that are along truck routes leading to transfer stations by evaluating alternate routing options "Comprehensive Solid Waste Management Plan." *City of New York Office of the Mayor and New York City Department of Sanitation*. September 2006. pp4-7 to 4-8. Available at: <http://www.nyc.gov/html/dsny/downloads/pdf/swmp/swmp-4oct/chapter4.pdf>.

⁷⁷ "Survey of Other Cities' Waste Agreements." City of Los Angeles. 2 Feb 2012. Available at: http://www.lacitysan.org/solid_resources/pdfs/2012/Other_Cities_Survey_Response.pdf.

⁷⁸ Jansen, K. "Sort system helps San Jose triple commercial recycling rate." *Waste and Recycling News*. 26 Mar 2013. Available at: <http://www.wasterecyclingnews.com/article/20130326/NEWS02/130329958/sort-system-helps-san-jose-triple-commercial-recycling-rate>; "Commercial Solid Waste System Redesign and Enhancement Options." San Jose Environmental Services Department. 15 Nov 2007. Available at: http://www3.sanjoseca.gov/clerk/CommitteeAgenda/TE/120307/TE120307_6.pdf.

⁷⁹ "Solid Waste Collection and Transfer Contract Between the City of Seattle and Waste Management of Washington, Inc." City of Seattle. 11 Apr 2008. Available at: http://www.seattle.gov/util/groups/public/@spu/@garbage/documents/webcontent/spu01_005943.pdf.

⁸⁰ "Seattle Public Utilities 2012 Recycling Rate Report." City of Seattle. 1 Jul 2013. Available at: http://www.seattle.gov/util/groups/public/@spu/@garbage/documents/webcontent/01_026636.pdf.

⁸¹ "Council Passes Zero Waste Strategy: Legislation will increase recycling, reduce waste, and improve transfer stations." 16 Jul 2007. Available at: <http://www.seattle.gov/council/newsdetail.asp?id=7530&dept=28>.

⁸² "Final Implementation Plan for Exclusive Commercial and Multifamily Franchise Hauling System." The City of Los Angeles. 12 Apr 2013. Available at: http://www.lacitysan.org/pdf/2013/franchise_Implementation_Plan_4_12_13_final.pdf.

⁸³ "Final Implementation Plan for Exclusive Commercial and Multifamily Franchise Hauling System." The City of Los Angeles. 12 Apr 2013. Available at: http://www.lacitysan.org/pdf/2013/franchise_Implementation_Plan_4_12_13_final.pdf.