



The City of New York Department of Sanitation



2025 Annual Report on Alternative Fuel Vehicle Programs Pursuant to Local Law 38 of 2005 / 140 of 2023



NYC's First Battery-Electric Bike Lane Sweeper

Javier Lojan, Acting Commissioner
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I. Introduction

The Department of Sanitation (DSNY) operates a sizeable fleet of trucks and other vehicles to carry out its mission to keep New York City clean, safe, and healthy by collecting, recycling and dis-posing of waste, cleaning streets, attacking the scourge of illegal dumping, and clearing snow and ice. In 2005, the City Council enacted Local Law 38 (LL38/2005), which directs DSNY to report annually on its use and testing of alternative fuel vehicles.¹ This report, which is submitted to the Mayor, the Comptroller and the City Council in accordance with LL38/2005, discusses the testing, analyses and assessments of DSNY's alternative fuel sanitation collection vehicles and street sweepers, and the feasibility of incorporating new alternative fuel sanitation vehicles and technology into DSNY's fleet. As explained in prior annual reports, DSNY previously completed the LL38/2005-mandated evaluation pilot study of Compressed Natural Gas (CNG) sweepers in four sanitation districts with one district in an area with high rates of asthma among residents.

DSNY endeavors to operate the cleanest possible fleet and therefore seeks to minimize emissions of concern from such operations, notably particulate matter (PM), nitrogen oxides (NO_x), and greenhouse gases (GHGs) such as carbon dioxide (CO₂). As of December 2025, DSNY's active fleet of 6,270 vehicles consists of:

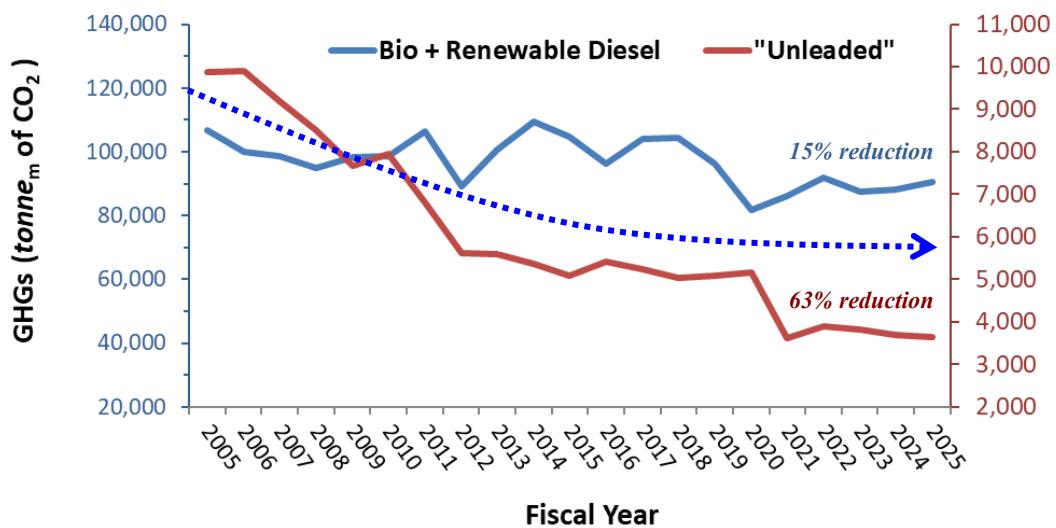
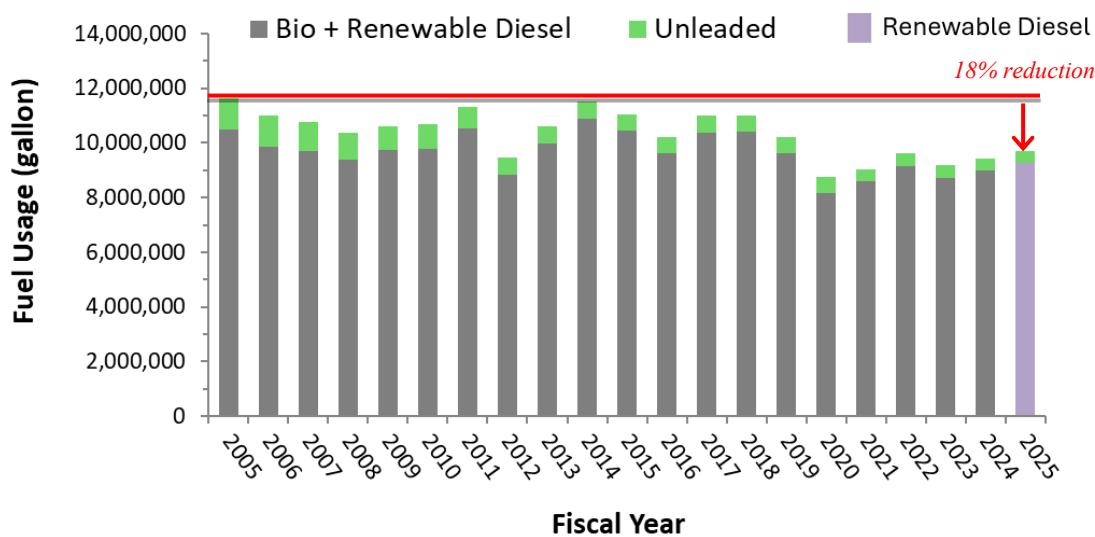
Vehicle Type	# of Vehicles
Collection Trucks	2,419
Street Sweepers	447
Salt Spreaders	780
Front End Loaders	495
Light-Medium Duty Vehicles	1,224
Emergency Equipment (<i>i.e.</i> Snow Melters)	168
Other Supporting Vehicles	737

Based on Fiscal Year (FY) 2025 figures, DSNY's diesel fleet consumed approximately 9.3 million gallons of renewable diesel fuel (RD99) and 423,473 gallons of unleaded gasoline (E10). Since 2005, DSNY's fleet has cut annual diesel fuel use by 12% and cut its light duty fleet gasoline use by 63%. Since LL 38/2005 was passed, DSNY's heavy-duty truck fleet relies mostly on clean diesel technology while the Department's light- duty fleet utilizes renewable fuel (E10) and increasingly incorporates hybrid-electric, plug-in hybrid-electric and all-electric technology to minimize vehicular emissions.

This report includes the total number of alternative fuel "sanitation vehicles" owned or operated by DSNY by type of alternative fuel used, discusses notable advances in DSNY's clean

¹ NYC Administrative Code § 24-163.2(c)(1) & (2)

diesel fleet and provides information regarding DSNY efforts to further incorporate alternative fuel vehicles into its fleet to further reduce emissions, including GHGs, in accordance with City air quality and sustainability goals. “Sanitation vehicles” are defined by LL38/2005 as vehicles used by DSNY “for street cleaning purposes or for the collection of solid waste or recyclable materials.”² The figures below illustrate the overall downward trends of fuel consumption and greenhouse gas (GHG) emissions over the 21-year period.



II. Zero by 2038 Program (LL140/2023): *Electrification*

Despite the success of clean diesel in minimizing PM and NOx from DSNY fleet emissions, further improvements are possible as technology advances. DSNY therefore continues an active program of testing other kinds of fuels and technologies. Under LL38/2005, “alternative fuels” include natural gas, liquefied petroleum gas, hydrogen, electricity, and any other fuel that is at least eighty-five percent, singly or in combination, methanol, ethanol, or any other alcohol or ether. Including collection trucks, sweepers, and light-duty vehicles that are not used to collect refuse or recyclables, DSNY currently has 846 vehicles that operate on various alternative fuels, including electric and hybrid-electric vehicles. Additionally, 88 light-duty battery electric utility vehicles are planned for introduction in 2026, replacing equivalent-class gasoline vehicles.

Vehicle / Technology	Count
Hybrid Electric Passenger Vehicles	270
Hybrid Electric Street Sweepers	19
Hybrid Electric Rack Trucks	6
Hybrid Electric Tire Trucks	5
Hybrid Electric Plug-in Passenger Vehicles	303
Battery Electric Passenger Vehicles	219
Battery Electric Bike Line Sweepers	11
Battery Electric Street Sweepers	1
Battery Electric Collection Trucks	13

In October 2023, Mayor Adams signed Local Law 140 (LL 140/2023), formally codifying Executive Order 90 of 2021. According to LL 140/2023:

By July 1, 2035, all light-duty vehicles and medium-duty vehicles in active operation shall be zero emission vehicles subject to the commercial availability and reliability of zero emission light-duty vehicles and medium-duty vehicles, and the technical and physical availability of related planned infrastructure, including but not limited to charging stations and depots for zero emission light-duty vehicles and medium-duty vehicles.

By July 1, 2038, all heavy-duty and specialized motor vehicles shall be replaced with zero emission vehicles subject to the commercial availability and reliability of zero emission heavy-duty and specialized motor vehicles, and the technical and physical availability of related planned infrastructure, including but not limited to charging stations and depots for zero emission heavy-duty and specialized motor vehicles.

² NYC Administrative Code § 24-163.2(a)(6)

II-1. Light-Duty Vehicles

DSNY's light duty fleet currently includes 792 advanced low- or zero-emission vehicles, such as hybrid-electric, plug-in hybrid-electric (PHEVs), and battery-electric vehicles (BEVs). Hybrid-electric vehicles operate on gasoline assisted by battery technology. Plug-in hybrid-electric vehicles can operate in battery mode for a certain distance before the gasoline engine must be used. BEVs operate on electric battery power alone. Consistent with LL38/2005 and LL140/2023, DSNY expects to increase its fleet of light-duty electric vehicles.

Vehicle / Technology	Count	Manufacturer	Model
Battery Electric (BEV)	219	Chevy	Bolt, Silverado
		Ford	E-Transit, F-150, Mach E
		Nissan	Leaf
Hybrid Electric (HEV)	270	Ford	Escape, Fusion
		Toyota	Camry, Highlander, Prius, RAV4
Plug-In Hybrid Electric (PHEV)	303	Chevy	Volt
		Ford	Energi
		Mitsubishi	Outlander

Zero-emission vehicles offer significant opportunities to improve local air quality, reduce fuel costs, and lower greenhouse gas (GHG) emissions compared to DSNY's current hybrid fleet. However, the deployment of battery electric vehicles (BEVs) requires additional charging infrastructure and may limit DSNY's operational flexibility for certain sedan applications. BEVs may also present operational flexibility challenges during winter emergency snow operations due to charging duration requirements and the absence of four-wheel-drive capability, which is critical for responding effectively to severe winter weather. Accordingly, DSNY currently prioritizes hybrid or plug-in hybrid SUVs with four-wheel drive over BEVs and/or plug-in hybrid sedans that lack this capability for jurisdictions responsible for snow-removal operations.

Electric vehicle chargers, also referred to as Electric Vehicle Supply Equipment (EVSE), are a key enabler of fleet electrification. DSNY currently owns and operates 259 EVSE charging units, consisting of 163 Level 2 EVSEs (220v), 77 Direct Current Fast Chargers (480v), and 19 Level 2 Solar-powered charging units. Several units are configured with dual-port access, resulting in a total of 363 available charging access points. Of the DCFC, 62 units were funded by the department of Citywide Administrative Services (DCAS).

DCFC chargers deliver high charging rates and are well suited for heavy-duty vehicles with large battery packs, while Level 2 chargers provide relatively lower charging rates and are more appropriate for light-duty passenger vehicles. Both Level 2 and DCFC chargers are available with a range of power outputs (kilowatts), allowing charging infrastructure to be tailored to operational needs.

Many of DSNY's existing facilities currently lack sufficient electrical capacity to support full fleet electrification without targeted electrical service upgrades, subject to utility provider timelines and power availability. In many cases, these upgrades would involve facility redesign, construction work, and specialized consulting services, representing a significant capital investment.

As zero-emission vehicle technologies continue to advance and infrastructure capacity expands, DSNY remains committed to evaluating the economic and operational feasibility of strategically integrating additional alternative-fuel light-duty vehicles into its fleet in support of long-term sustainability goals.

II-2. Medium- and Heavy-Duty Vehicles

In the past few years, the development of heavy-duty BEVs has advanced. Cummins, Freight-liner, Kenworth, and Mack Trucks are among the truck manufacturers who have announced on-going development of Class-8 BEVs. As noted above, DSNY's EV charging infrastructure has grown over the years to accommodate the increased number of plug-in vehicles in the DSNY fleet. To build on DSNY's experience and success in deploying a fleet of light-duty EVs and continue the progress of reducing GHG emissions from heavy-duty vehicles, DSNY expressed interest to Mack Trucks and Global Environmental Products about exploring the development of a BEV collection truck and street sweeper, respectively. Based on DSNY's pioneering R&D record and expressed interest, both Mack Trucks and Global Environmental Products agreed to begin development of a BEV collection truck and BEV street sweeper, respectively. The pilot/prototype BEV street sweeper and collection truck are among the first in the country in their weight-class. In anticipation of this pilot, DSNY installed its first DCFC at DSNY's Brooklyn District 1 Garage, where the BEV collection truck was assigned.

BEV Collection Truck

Under a Memorandum of Understanding (MOU) and at no cost to the City, on November 18, 2020, DSNY commenced pilot-testing one of the first Mack (Model LRe) BEV refuse collection trucks. The cab/chassis specifications of the Mack LRe are identical to the current DSNY diesel collection truck (72,000 lb. GVW). DSNY installed its first DCFC to accommodate the charging needs of the Mack LRe. After one year (term of MOU) of rigorous testing in the streets of NYC, the Mack LRe yielded impressive test results (payload, state of charge [SOC], uptime, performance) and was well received by DSNY sanitation workers.⁴

Taking into consideration the introduction of LL 140/2023 which orders the City fleet to be 100% electric by 2038, and as a result of the performance metrics described above, for the next phase of testing (R&D) and in the interest of collecting in-use data, DSNY decided to move forward with the procurement of seven (7) Mack LRe units. DSNY utilized federal Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds to help pay for the incremental cost of the seven Mack LRe units.

The next R&D phase will allow DSNY to evaluate the Mack BEV LRe units for refuse collection and snow removal, and expand testing to one truck per geographical zone. The seven LRe units have been in service since FY2024. In addition, DSNY has been developing a 10-cubic-yard, fully battery-electric collection truck in partnership with Crane Carrier Company (CCC). Following CCC's merger with Battle Motors on December 31, 2022, which assumed all existing contractual obligations, DSNY has continued its collaboration with Battle Motors, purchasing six units in February 2024 and contracting for an additional six in May 2024. Six units are currently in service, and the remaining units are scheduled for delivery in 2026.

BEV Street Sweeper

DSNY is the first agency to run pilots for a full electric BEV street sweeper both in public and private sectors in the United States. Under a Research and Development grant funded by the New York State Energy & Research Development Authority (NYSERDA), DSNY was awarded \$255,000 towards the incremental cost of a full electric BEV street sweeper (compared to the base cost of a diesel HEV street sweeper).³

The DSNY's BEV street sweeper is manufactured by Global Environmental Products (GEP) with an existing hybrid M4 model (currently in use by DSNY). The BEV sweeper incorporates redesigns and upgrades from the existing propulsion system on DSNY's hybrid M4 model, as provided by the US Hybrid Corporation (Torrance, CA). Among many added features, the regenerative braking system is designed to capture kinetic energy during braking events when in travel or sweeping modes to improve the range of BEV. It features a fully integrated electric powertrain with a single traction motor and a 180 kWh battery pack.

In January of 2020, DSNY conducted a preliminary shakedown testing and identified several minor technical issues. On May 6, 2021, the first BEV sweeper was officially assigned to Brooklyn chosen due to its geographical representation. In this area, the street sweeping routes represent approximately 95 percent of New York City's community routes. After one year of testing following the same procedure as the Mack LRe, the BEV sweeper yielded impressive results based on payload, state of charge, uptime, and operational performance—as well positive evaluation from DSNY sanitation operators. However, its maintenance cost was nearly double that of a conventional diesel street sweeper.⁴ The fact that the first unit was a pre-production prototype may be attributed to these the preliminary test results.

Despite the negative cost yield, DSNY still expects the performance of future BEV street sweepers to improve and have a significant impact on the Department's ability to electrify its fleet. Furthermore, DSNY has launched another pilot study with a PHEV street sweeper, also designed by Global Environmental Products. The pilot unit will feature a 35 kWh battery pack, providing an EV range of approximately 30 miles to efficiently support its sweeping operations.

³ The cost of an HEV street sweeper is \$431,817; the cost of a BEV street sweeper is approximately 42 percent higher (\$614,860)

⁴ CALSTART, DSNY Battery Electric Street Sweeper: Final Report, January 2023

BEV Bike Lane Sweepers

The challenge of sweeping and cleaning over 600 protected bike lane miles in New York City has become one of DSNY's key responsibilities. As the number of protected bike lane miles continues to grow, DSNY seeks to facilitate the sweeping service in an environmentally friendly and sustainable approach. Mindful of the environment, DSNY decided to test the effectiveness of utilizing battery-powered bike lane sweepers. The Department's first full electric compact sweeper, the *eSwingo 200+*, was manufactured by AEBI Schmidt and arrived in April of 2023. The vehicle has demonstrated excellent suitability for routine cleaning and sweeping operations within inner-city environments and pedestrian walkways. It is powered by a 75 kwh battery, providing up to 10 hours of continuous operation on a single charge and ensuring consistent, reliable, and efficient performance throughout extended periods of use.

To date, DSNY runs 11 battery-electric bike lane sweepers in total. Due to the battery charging limits, the *eSwingo 200+* can only be charged only with a Level 2 charger, meaning it requires approximately 8 hours to full charge. DSNY looks forward to the testing and addition of battery-electric bike lane sweepers to its portfolio of electric vehicles in the fleet.

III. Sustainable Energy Program: Renewable Diesel

Renewable Diesel (RD) is another type of sustainable biofuel, recycled from fats, vegetable oil, and other waste oils and chemically re-processed to meet the ASTM D975 specification for the usage of petroleum fuel in the United States. RD can be used as a direct (100 percent) replacement for conventional diesel fuel, or in conjunction with any amount of petroleum diesel. In California, RD has been widely used due to economic benefits under the Low Carbon Fuel Standard and many other benefits such as:

- **Engine and Infrastructure Compatibility:**
RD meets the conventional petroleum ASTM D975 specification allowing it to be used in existing infrastructure and diesel engines without large modification.
- **Less Emissions**
Based on the United States National Renewal Energy Laboratory (US NREL) and California state studies, RD shows significant reduction on both CO₂ and NO_x emissions compared to conventional diesel.
- **More Economical and Sustainable Biofuel**
Due to the flexibility of fuel feedstocks, RD has been less affected by market changes. It also supports domestic agriculture, reduce waste, and promote recycling industries.

In June of 2018, DSNY was one of several city agencies that participated in utilizing RD fuel as a pilot project, as well as the first City agency to deliver RD in the field. With a blend of 99 percent RD and 1 percent Ultra Low Sulfur Diesel (ULSD), DSNY expanded the RD pilot to 17 district

garages in all 5 boroughs. During the pilot program (FY18~FY19), DSNY consumed 690,540 gallons of RD with assistance from the New York City Fire Department (FDNY: *Pilot Study Commencement*). Test results of random fuel samples indicated that the RD met all ASTM testing specifications with no negative impact shown to DSNY's fleet or its operation. Furthermore, no major mechanical adjustments were needed for the preventive maintenance.

On November 29, 2023, the New York City Mayor's office and the DCAS outlined a plan to make New York City the first city on the East Coast to transition all diesel-powered vehicles in the city's fleet from fossil to renewable fuel. On September 1, 2023, DSNY became the first City Agency to begin the transition to RD citywide. At the time of this report (FY25), 100 percent of the diesel-powered vehicles in the DSNY fleet utilize RD. To date, the DSNY diesel fleet has consumed well over 17.4 million gallons of RD.

IV. Conclusion

DSNY endeavors to operate its fleet in the most environmentally sustainable manner consistent with available resources and has adopted and tested many innovative technologies to reduce fuel consumption, greenhouse gas emissions, and other criteria mobile source emissions. The Department is currently working with various manufacturers to help advance the commercialization of environmentally friendly technologies designed for heavy-duty vehicles.

LL 140/2023 seeks to expand on the City of New York's leadership in fleet sustainability and will allow the City to serve as a national model for other megacities in fighting climate change. Its goal is for the City of New York to achieve full electric fleets by the year 2038. DSNY will continue to assess the industry's ability to produce and deliver BEVs across every vehicle class and type. DSNY seeks to incorporate more zero emission light-, medium-, and heavy-duty BEV vehicles into its fleet. Furthermore, the implementation and adoption of alternative bioenergy such as renewable diesel offers an additional sustainable and environmentally friendly option to the Department to overcome the technical challenges of electrifying heavy-duty fleet.

DSNY will continue to participate in the research and development of new technologies, as well as work with all stakeholders to overcome the challenges of electrifying the large fleet of heavy-duty vehicles. In addition, DSNY plans to keep expanding its EV charging infrastructure enough to support the electrical power needed to sustain full electric fleets and to implement a strategic resiliency plan for all New Yorkers.