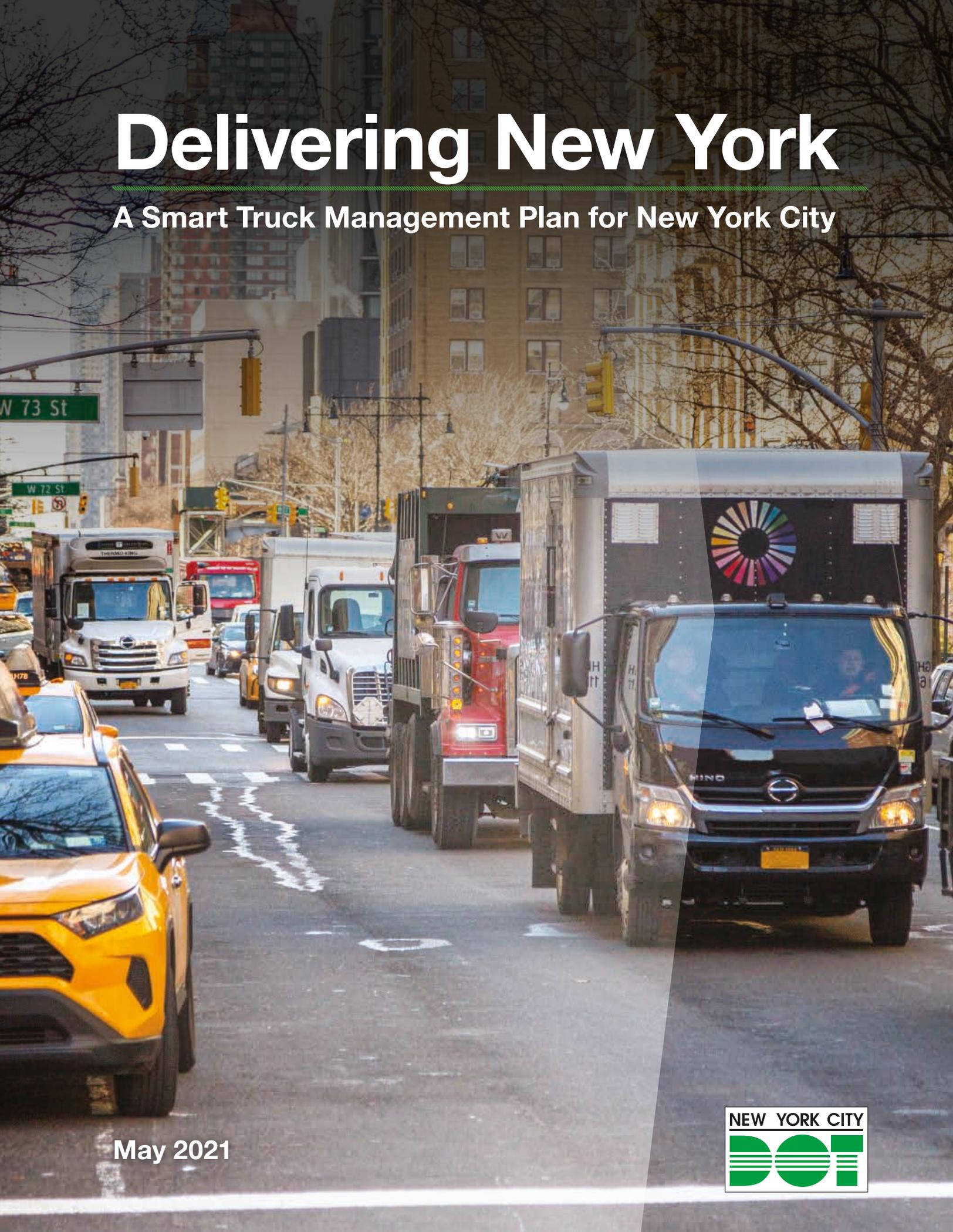


Delivering New York

A Smart Truck Management Plan for New York City



May 2021





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The DHL logo is prominently displayed on the rear door of the yellow van. It features the letters 'DHL' in a bold, italicized, red font, with three horizontal red bars extending from the left and right sides of the letters.

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Letter from the Commissioner



Fellow New Yorkers:

In recent decades, New York City has experienced record growth in population, jobs, and commerce. Our complex freight network—with trucks delivering nearly 90% of our goods—has played a critical role in this growth. The rise of e-commerce and the impact of the pandemic have dramatically increased freight volumes, not only between businesses but to our homes as well: 1.5 million packages are delivered daily in New York City, with 45% of New Yorkers receiving a home delivery at least once a week. Residential shipping now eclipses shipping to businesses, with timeliness of delivery often measured in hours rather than days. By 2045, our city is expected to move 68% more freight on an already-constrained transportation network.

However, more and larger trucks are emphatically not the answer. We need to bring about a transformative shift in the way freight moves through our city—to reduce our dependence upon large trucks to deliver goods on our neighborhood streets, particularly in what is referred to as the “last mile”—which in New York City may actually be the last five or ten miles. Private industry has already recognized this need to change, developing an expanding network of new urban warehouses and fulfillment centers to meet the growing demand for just-in-time deliveries. To remain competitive and to protect our quality of life, New York City must help shape this transformation.

Although a shift towards maritime and rail transportation can help absorb this freight demand, trucks and other commercial vehicles (including cars and cargo bikes) will still be needed to make these “last-mile” deliveries. These vehicles need to be context sensitive, safely sharing our neighborhood streets. As long as trucks remain part of our freight infrastructure and travel through our communities, we need to reduce their size and weight, shorten their trips, ensure that they obey the laws related to truck size and adhere to dedicated truck routes, convert them to clean-fuel vehicles, and make them safer.

We are pleased to issue *Delivering New York: A Smart Truck Management Plan*. With the ever-growing demands placed on New York City’s streets and the transformative shift in commercial and consumer freight deliveries, we will need new and creative approaches to accommodate growth while expanding intermodal delivery methods, particularly for “the last mile.” This Plan outlines some of those approaches. In particular, we address the need to improve management of freight during the most congested times of day, by encouraging off-hour deliveries, providing better access to the curb, testing innovative delivery methods, improving truck routing, and streamlining regulations for smarter, data-driven governance.

This Plan builds on the foundation of existing freight initiatives outlined in the de Blasio Administration’s OneNYC Plan and DOT’s own Strategic Plan, as well as the innovative efforts of our governmental partners. This new plan outlines how we will advance our vision of a safe, sustainable, equitable, and efficient last-mile freight delivery system. It also provides key strategies and actions to enhance existing freight demand management, truck safety and compliance programs and policies. Given that New York City does not control all elements of the region’s fragmented freight network, close cooperation with our State and Federal governmental partners will be critical to the success of this effort. As we build a Recovery for All of Us, in the wake of the pandemic, the adoption of innovative freight delivery methods will be one of the keys to our success.

Just as our agency is reimagining how people move through our city—by expanding bike, bus, and e-mobility options—to reduce our dependence on private cars, we must reimagine how goods move too. It is imperative that we create safe, attractive and environmentally-friendly alternatives to the large trucks that pollute our air, stress our aging roads and bridges, and harm the quality of life in our residential neighborhoods. In partnership with local businesses, city and state agencies, New York City’s diverse communities, and industry, we will implement a plan that can mitigate the negative effects of trucks while improving delivery efficiency and boosting our City’s economic recovery and competitiveness. Our New York City Department of “Transformation” is determined to do its part.

Henry B. Gutman

A handwritten signature in black ink, appearing to read "HBG", with a long horizontal line extending to the right.

DOT Commissioner





Freight activity is an integral part of the lives of all New Yorkers—providing the goods needed to support over 8.4 million residents, 4.5 million jobs, and 62 million tourists each year. New York City relies upon the timely and dependable delivery of these goods to function day-to-day.

services to the doorsteps of city residents and businesses, better known as "the last mile"—although we are seeing and encouraging the use of smaller, environmentally friendly modes such as e-cargo bikes. Providing safe and accessible space for truck drivers to deliver these goods is a near-term imperative even as we move away from our reliance on diesel trucks.

With the backdrop of increasing freight volumes, multi-modal solutions are a necessity. The City must invest in cargo bike, maritime and rail infrastructure to reduce our long-term reliance on trucking. Emerging delivery methods are on pace to transform the last-mile delivery network into a cleaner, safer, and more efficient freight system. The goals outlined in this plan will help manage truck movement to ease congestion, and create innovative opportunities for safe deliveries, all while taking into account City priorities such as bus lanes, cycling infrastructure, pedestrian spaces, and active curb utilization. The plan also recognizes the need to incentivize and support upgrading trucks with safety features such as sideguards, as well as cleaner technologies, and thereby ensure that communities adjacent to major truck generating infrastructure do not continue to be disproportionately adversely impacted.

As the nation's largest and most densely developed urban environment, New York City faces unique challenges when it comes to moving freight safely and efficiently. Close to 200 million tons of freight move into, out of, or within the five boroughs every year. And this demand continues to grow and change as new methods of delivery, such as e-commerce and rush deliveries, become the norm for New Yorkers.

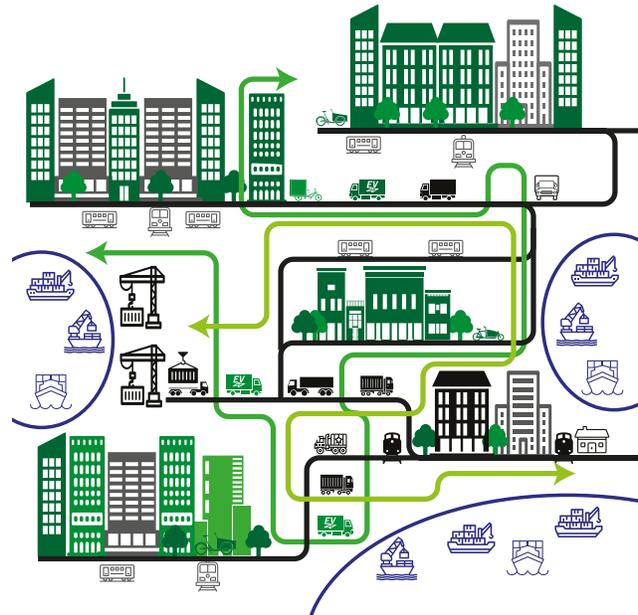
New York City's street network is the backbone of this substantial freight movement—almost 90% of goods transported in the city everyday are on trucks. With a changing delivery landscape, trucks and truck drivers will continue to play a role in delivering goods and

Vision

The New York City Department of Transportation (DOT) worked with city and state agencies, the trucking industry, and community stakeholders to develop the following vision for the Smart Truck Management Plan:

Enhance the economic vitality and quality of life for all New Yorkers by providing for the safe, equitable, efficient, and responsible movement of goods.

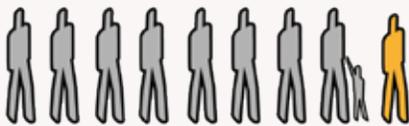
- **Safety:** Improve the safety of truck travel through and within the city.
- **Efficiency:** Improve the efficiency of freight movement to, from, and within the city.
- **Sustainability:** Foster the sustainable and responsible movement of goods.
- **Partnerships and Knowledge:** Expand partnerships within the public and private sectors to increase awareness and understanding of freight activity.



Freight movement in New York City

The Challenge for Goods Movement in NYC

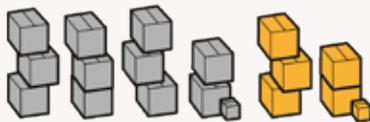
Today, there are over 8.4 million people in New York...



An additional
+ 0.6 million
people by 2045

6.4%
More People

... who rely on the 186 million freight tons that are moved throughout NYC...



An additional
+ 126 million
freight tons by 2045

68%
More freight tons

... on the approximately 6,000 miles of NYC streets.



No significant change
in new roads by 2045

0
More streets

Conclusion: We need to use our streets more efficiently than we do today to accommodate growing demand for deliveries and the movement of goods while pivoting to more multi-modal solutions.

Source: New York Metropolitan Transportation Council, Regional Transportation Plan 2045

Plan Initiatives

The Plan's 32 strategies, programs, and policies will transform the City's last-mile delivery system—improving safety, efficiency, livability and the environment, supported by public-private partnerships. Here are some highlights:



Safety

Pedestrians and bicyclists involved in a crash with a truck are more likely to be killed and seriously injured than if they were hit by a smaller vehicle. Initiatives in this Plan will improve truck safety in the city through engineering, education, awareness, partnerships, and legislative policy.

- Implement new design standards based on best practices to enhance truck safety along 70 corridors by 2025.
- Educate all road users about safe truck operations on city streets through various safety education and outreach initiatives.
- Support policy and legislation targeted at truck driver and vehicle safety technology procurement requirements.



Efficiency

These initiatives align rules, regulations, and industry practices to enhance the efficiency of truck movement in the city.

- Triple the number of Off-Hour Deliveries from 500 to 1500 locations by the end of 2021.
- Increase the number of loading zones citywide to reduce conflicts between vulnerable road users and double-parked trucks, and pursue placard reform in commercial and truck loading spaces.
- Promote urban freight consolidation concepts for last mile goods delivery to limit person-to-person contact.
- Harmonize truck rules and regulations governing vehicle size and weight.
- Explore shared use locker storage for improved last mile goods delivery and reduced person-to-person contact in wake of the COVID-19 pandemic.



Sustainability

This Plan will improve the environmental sustainability of truck movement within the city and foster a culture of compliance with truck-related regulations through signage, targeted enforcement, and technology advancement.

- Expand the NYC Clean Truck Program to additional industrial business zones citywide and explore accelerating innovative financing options.
- Encourage uptake of zero-emission trucks and pedal-assist cargo cycles for last mile freight deliveries.
- Develop data-driven citywide truck enforcement strategies and training programs and explore new and emerging technologies for automated enforcement.
- Pilot green loading zones in several neighborhoods by end of 2021.
- Expand and enhance the bridge strike reduction initiatives.



Partnerships & Knowledge

DOT will foster multi-party dialogue, behavior change, and identify creative solutions by working with the freight industry, city agencies, and the public.

- Continue engaging the trucking industry through DOT's Freight Advisory Committee.
- Develop a continuous freight data collection program.
- Increase public engagement, awareness and education of freight transportation.
- Establish a Smart Urban Freight Lab to study, test, and evaluate innovative last-mile freight strategies.
- Work with partners to explore additional opportunities for long-term truck parking facilities.

Key Findings and Trends

Evolving Consumer & Retail Trends

- E-commerce has grown rapidly in recent years, generating more than \$146 billion nationwide in the first retail quarter of 2019, or 10.5% of all estimated retail sales in the United States.
- In 2018, 45% of New Yorkers received a delivery of some kind at their home at least once a week.
- According to a study of over 3.5 million orders, the top five categories of goods New Yorkers ordered in 2018 were groceries and gourmet food, home and kitchen, health and beauty, electronics and accessories, and apparel and accessories.
- Market researchers estimate that more than 500 million packages were delivered to New York City in 2018, up 13% from 2017. More than 1 billion e-commerce packages will be delivered by 2024 if this growth continues (Rakuten Intelligence).
- The city is a net importer of goods: in 2012, 62% of the goods movement (by volume) was inbound; 26% was outbound and 12% moved internally (NYMTC).
- Five states create 87% of out-of-state truck trips in the city: New Jersey, Connecticut, Pennsylvania, Massachusetts, and Ohio. This creates increased reliance on emerging distribution hubs in the Lehigh Valley to service the New York City market (ATRI).
- The George Washington Bridge is used by nearly 55% of all trucks crossing the Hudson, approximately 30,000 per day.
- The highest number of truck volumes during morning and evening peak periods are the Goethals Bridge (connecting Staten Island to New Jersey), the Major Deegan Expressway (connecting the Bronx to Yonkers), the Cross-Bronx Expressway, and the Throgs Neck Bridge.
- The total number of trucks crossing major bridges and tunnels between New York and New Jersey increased at a faster rate than automobile volumes between 2015 and 2018.
- An average of 120,429 trucks crossed into or out of New York City every day in 2016. At the borough level, the most trucks cross the Queens boundary (130,300), followed by Manhattan (125,600), the Bronx (103,600), Brooklyn (73,500), and Staten Island (26,400).
- Overall, traffic volumes have grown by 12% between 2015-2018, but truck traffic volumes have grown by 21%. In this period, small, single unit 2-axle trucks accounted for more than 50% of the growth in truck volumes. Recent Two-Way tolling on the Verrazzano-Narrows Bridge may impact overall commercial travel patterns in the future.

Freight Generators, Flows and Volumes

- The top five Industrial Business Zones (IBZs) truck destinations, based on goods movement, are JFK Airport, Hunts Point, North Brooklyn, Maspeth, and Southwest Brooklyn.
- Seven industry sectors account for 84% of all freight trips in New York City - retail, wholesale, accommodation and food services, modal transportation, construction, and health care. (Source: Rensselaer Polytechnic Institute (RPI)).
- The top three zip codes for daily freight deliveries and shipments are located in Midtown Manhattan, next to the Lincoln Tunnel (based on RPI's truck trip model).
- Construction-related trucks make up 10% of Staten Island's truck trips, the highest share among the five boroughs for that sector (RPI).
- Retail-related truck trips are highest in the Bronx (38%), while 25% of truck trips in Manhattan are related to wholesale trade (Source: RPI).

Safety

- Trucks were involved in 6% (55,134) of all crashes between 2003-2016, and accounted for 5% (2,407) of all crashes that resulted in individuals being killed or severely injured (KSI).
- During this time, the most truck-involved pedestrian and cyclist KSI occurred in Manhattan (42%), followed by Brooklyn (29%) and Queens (18%).
- Sixty-seven percent of truck-involved pedestrian and cyclist KSI crashes occurred on designated truck routes.
- Close to 80% of truck-involved KSI crashes occur between 7 a.m. and 7pm, with just over a quarter happening during midday.
- The top five truck types involved in truck KSI crashes are tractor trailers, delivery trucks, dump trucks, utility trucks, and tow trucks.

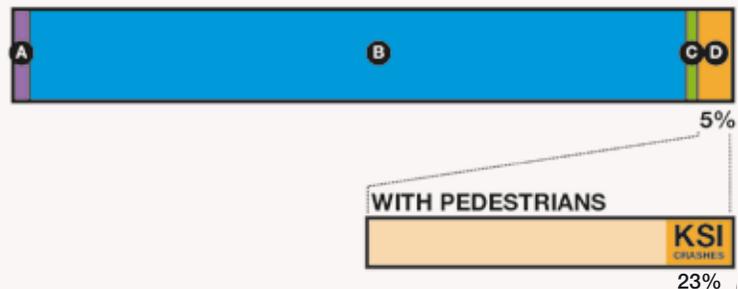
Equity & Environment

- Private medium- and heavy-duty vehicles contribute 11% of transportation-related greenhouse gas emissions in the city, about 3% of the city's total greenhouse gas emissions.
- The particulate matter from truck engine exhaust is a public health concern, especially for communities bordering expressways.

Trucks Crashes and Safety

“Only 5% of truck crashes involve pedestrians, but those crashes are responsible for 23% of all truck-related KSI.”

TRUCK-INVOLVED CRASHES



A

Truck vs. Other Vehicles



B

Truck vs. Automobiles



C

Truck vs. Cyclists



D

Truck vs. Pedestrians

Compliance

- Non-compliance with parking regulations is the most common violation of local laws by commercial vehicles.
- The most common truck violations across the boroughs include parking beyond allowed time in Manhattan, double-parking or otherwise blocking traffic in the Bronx, Brooklyn, and Queens, and illegal parking in residential zones in Staten Island.
- Off-route and overweight violations continue to be a challenge. Targeted enforcement and industry cooperation are key to fostering a culture of compliance.

Congestion

- Truck movement contributes to and is affected by congestion; congestion slows truck travel, increases freight transportation costs, reduces fuel efficiency, increases emissions, and diminishes economic productivity.
- In 2015, the trucking industry lost over 60.7 million hours of productivity along interstate and other roads designated as part of the National Highway System in the city due to congestion, at a cost totaling nearly \$3.9 billion (ATRI).
- Congestion is particularly acute along the Cross-Bronx Expressway, the Robert F. Kennedy

(Triboro) Bridge, Bruckner Expressway, and roads in Midtown Manhattan close to the Queens-Midtown Tunnel.

- Differences in reliability between peak and non-peak speeds make it difficult for drivers to plan a route and increases the time it takes to complete trips, which increases operational costs. The least reliable routes are the Cross-Bronx Expressway, Van Wyck Expressway, and Long Island Expressway.

Freight Infrastructure

Roadways

- New York City's street network is the backbone of freight movement; nearly 90% of goods (by volume) are transported on trucks every day, compared to 8% by water and 3% by rail (NYMTC Regional Freight Plan 2045).
- Streets that are heavily used by trucks tend to have lower pavement quality ratings than those with light truck travel.
- In 2018, a total of 43,253 daily over dimensional and overweight permits were issued. Nearly 700 of these were single unit vehicles.



Freight movement in Chinatown, a neighborhood with multiple freight routes



Non-compliance with parking regulations is disruptive to the normal operations of traffic

- About 90% of Class 7 vehicles (4 or more axles) are overweight, according to truck weight data collected by road sensors from two sites in New York City.
- Industrial, commercial, and mixed-use land parcels account for approximately 32% of the parcels along truck routes.

Bridges

- Vertical clearances along certain corridors in the city are as low as 6'11". The national standard clearance is upwards of 14 feet.
- Bridge strikes are a major safety hazard, lead to increased congestion, and require costly repairs.
- There were 429 bridge strikes between 2013-2018. Fifty-one percent of these occurred on just 10 corridors citywide.

Parking and Curb Access

- Dedicated commercial loading zones preserve valuable curb space for commercial vehicles. New York City has an estimated 28,600 commercial spaces, 11,300 of which are metered.
- Curbside commercial parking and loading zones are more common on commercial corridors in Manhattan than in the outer boroughs. These spaces are often occupied by placarded and for-hire vehicles, according to DOT observations.
- A current lack of off-street long-term truck parking facilities in the city leads to both illegal on-street overnight parking and increased Vehicle Miles Traveled (VMT), emissions. However, enforcement is critical in keeping neighborhoods clear of illegal parking.



Changing consumer and retail trends has changed the way freight moves in the city



Freight movement in the city is part of the complex challenge of congestion in the city

A Smart Truck Management Plan for NYC

The city's continuing residential and economic growth, and corresponding rise in shipping and goods movement, directly impacts our streets. NYMTC's commodity flow forecasts predict, that under current trends, truck traffic will increase by 2045, but a number of City and State policies could affect the outcome.

New York City's freight system must continue to evolve and dynamically respond to market needs and behaviors in order to maintain our status as a resilient, functioning, bicycle-friendly, and economically competitive world-class city.

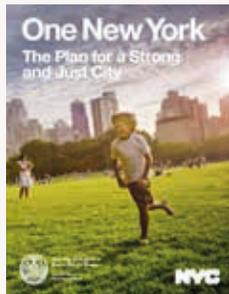
The strategies and initiatives in this Plan will ensure that trucks are able to deliver the goods the city

needs while the transportation network continues to evolve and serve more and different users, all while balancing competing needs for road space and curb access. Simultaneously, the plan lays the groundwork for policies that will accelerate the adoption of zero-emissions urban freight technologies and innovations that improve the sustainability and resilience of the last-mile delivery network.

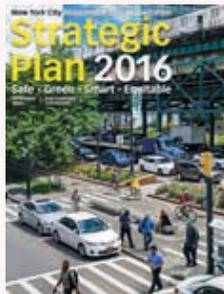
DOT will work with partners to adopt the actions in this plan and put the city on a path towards a safer, more responsible, sustainable, and efficient freight system that grows the economy, supports freight-related jobs, and delivers the goods that residents and businesses need.

Supporting Other Planning Efforts

The Smart Truck Management Plan builds on the efforts outlined in the following reports, among others:



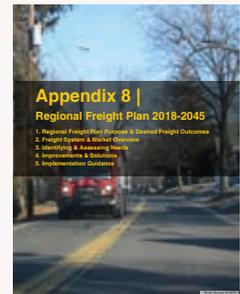
One New York



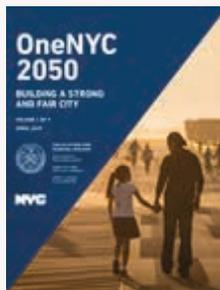
NYC DOT Strategic Plan 2016



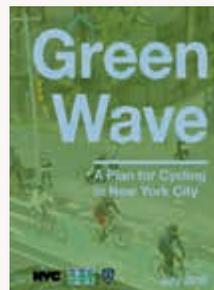
NYCEDC Freight NYC Plan



NYMTC Regional Freight Plan 2018-2045



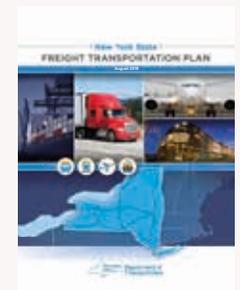
One New York 2050



Green Wave



PANYNJ Goods Movement Action Program



NYSDOT Freight Transportation Plan

Prioritizing Freight in New York City

Mayor de Blasio's *OneNYC* plan and DOT's *Strategic Plan 2016* identified freight management as a priority issue for the city. The Strategic Plan outlined three major goals to safely and sustainably accommodate freight which this plan helps to advance:

- Improve the safety, environmental performance, and economic efficiency of truck deliveries across the five boroughs in partnership with the freight industry.
- Foster a culture of regulatory compliance in the trucking industry.
- Expand partnerships with the freight and trucking industry to encourage data sharing to better manage truck movements.



Truck driver delivers goods overnight.

Related Plans

New York City's Economic Development Corporation's (NYCEDC) FreightNYC is a plan to modernize the city's freight distribution system through strategic investments in maritime and rail infrastructure, as well as the creation of new distribution facilities. The investments will optimize how freight enters NYC before it is distributed to stores, businesses and consumers, working towards a more sustainable and resilient supply chain network. Once implemented, the initiatives outlined in FreightNYC are projected to reduce truck modal share by approximately 5%, down to 85%. This modal share reduction would eliminate up to 40 million truck miles, 71,500 metric tons of GHG emissions, and 30,000 pounds of particulate matter annually. Some of the Plan's major initiatives include:

- Shifting freight to NYC's local waterways by investing \$25M to jumpstart the development of a new "hub and spoke" marine-based freight system, linking key New York City sites with North Jersey freight distribution centers and seaports.
- Improving NYC's Freight Rail Connections by investing approximately \$15M to construct a rail transfer center to provide industrial and food-related businesses with direct access to the national rail network, introducing new points to transfer shipments from one mode of transportation to another.
- Developing Freight Hubs Connections to NYC's Multimodal Freight Network by investing in freight hubs that meet current freight demand while accommodating growth in e-commerce, ensuring economic growth, and making New York City more resilient against supply chain disruption.
- Supporting the development of clean fuel infrastructure in freight hubs

New York State DOT's Freight Transportation Plan provides a framework to address current and near term state of good repair improvements for freight infrastructure, as well as a plan for mid-term needs and efficient long-term growth in the freight system.

At a regional level, NYMTC's Regional Freight Plan and the Port Authority of New York and New Jersey (PANYNJ) Goods Movement Action program supports and enhances the New York metropolitan region's position as a global center—a hub of commerce, culture, finance, and trade—through strategic multimodal goods movement initiatives.

Together, these plans, as well as the Emerging Mobility initiatives outlined in OneNYC 2050: Building a Strong a Fair City, complement DOT's freight plan by providing a strong multimodal and sustainable backbone to a new freight supply chain for the City and strengthening our connections to the region and the world.



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SALAD TIP 25
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Salad

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SCIENCE AT



The Importance of Freight for NYC

Freight keeps New York City's economy moving. Every day, the products we consume and produce – the food we eat, the goods we buy, and the materials used to construct our houses, offices and roads – must be transported into the city.

New York City's dense urban makeup and high land values, coupled with the historic fabric of many neighborhoods and business districts, limits how infrastructure capacity can grow or change to better accommodate freight activity. These constraints underscore the importance of multimodal freight solutions.

Who relies on freight?



**8.4 Million
Residents**



**4.5 Million
Workers**



**62 Million
Tourists**

Data Source: American Census Survey, NYC&Company

Report Structure

This Plan is organized in six sections, including this introductory chapter. It provides an overview of the importance of freight to all New Yorkers, the need for a freight plan, and key steps in this planning process. It then presents the state of freight mobility in the city by highlighting key trends, driving forces shaping freight demand, key challenges and opportunities, and a summary of borough level freight trends. Finally, this Plan provides a roadmap to advance the vision, goals, strategies, and initiatives over the next five years and beyond.

Why a Smart Truck Management Plan?



A Growing City

The population of the New York City grew by half a million people between 2000 and 2016, and reached a record 8.4 million residents in 2017. This growth in population is expected to increase freight movement significantly over the coming decades, most of which will be carried into, out of, or through the region by trucks. With limited capacity to grow the road network, managing and accommodating this growth requires a comprehensive approach to utilizing existing infrastructure and introducing alternative delivery methods while still meeting the service, cost, and reliability expectations of the freight industry and the City.



A Strong Economy

In 2014, the freight transportation industry employed 4.6 million people nationwide, comprising 9.5 percent of the US Gross Domestic Product (GDP). Locally, freight activities contribute to the economy and provide a wide range of jobs for the City's residents; 1 in 15 New Yorkers are employed in freight-dependent industries.

New York City's economic strength, vibrancy, and livability as a world-class city relies on the complex logistics and supply chains that support residents and businesses. Without a freight system, hospitals would run out of critical supplies in 24 hours and gas stations would no longer be able to dispense fuel after 48 hours¹. The city depends on a reliable freight network to ship products made locally, deliver goods sold online, and transport important financial documents.

1. Regional Planning Association. Why Goods Movement Matters. June 2016. <https://rpa.org/work/reports/why-goods-movement-matters>



Livable Streets

The freight industry relies heavily on the city's roads network that move millions of residents and visitors. Vision Zero aims to eliminate traffic fatalities and serious injuries on NYC's streets through initiatives like traffic calming, increasing pedestrian space, and expanding the bicycle network as well as recent Open Streets programs that embrace new public space and support small businesses. The growing demand for the movement of goods must be viewed in this context. The City must continuously make choices on how to best manage limited curb, road, and sidewalk space, while accommodating all road users.



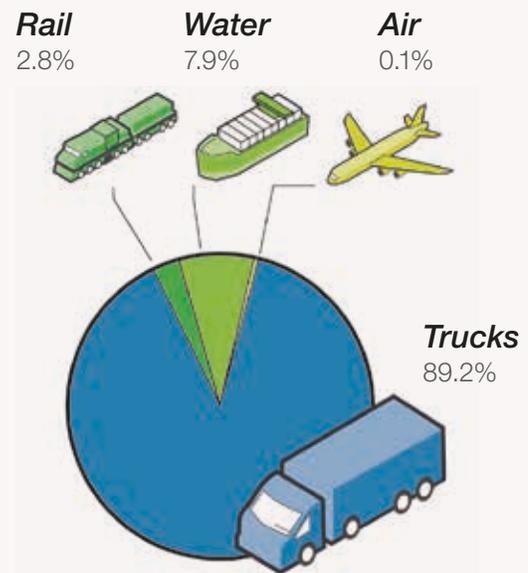
Evolving Consumer and Retail Trends

E-commerce has grown rapidly in recent years, generating over \$146 billion in the first retail quarter of 2019. This growth in e-commerce has led to residential buildings becoming a leading destination for deliveries as consumers demand faster, affordable and convenient deliveries. In 2018, 45% of New Yorkers received a delivery of some kind at their home at least once a week. Compounding the effects of e-commerce on the road network, most retailers have now adopted "just-in-time" inventory models, minimizing the total inventory kept on-site and instead rely on frequent and reliable deliveries to keep up with demand in real-time.



Mitigating Negative Externalities

This city's reliance on trucks to deliver goods creates some negative effects, including: truck safety and risks to vulnerable road users; diminished air quality; and increased noise and congestion. The City has implemented some mitigation strategies with industry-friendly partners, but this plan proposes more environmentally freight delivery methods while outlining steps to reduce our reliance on trucks over time.



Data Source: NYMTC Regional Freight Plan

Nearly 90% of goods in NYC move by truck today.

Planning Process

DOT began working with partners to develop this Plan in 2016, first creating a vision statement that established the framework and various planning efforts. This was followed by a comprehensive assessment of existing conditions analyzing the state of freight mobility in NYC and future growth needs and opportunities.

Engaging Stakeholders

DOT met regularly with public and private sector stakeholders to develop a comprehensive plan that meets the needs of all stakeholders. A Freight Advisory Committee (FAC) composed of industry stakeholders and government agencies, was convened to provide feedback on this plan development, and smaller working groups were created to advise on specific topics such as curbside management, environmental sustainability, planning and land use, and compliance. Safety was an overarching goal of all of the working groups.

DOT also conducted public outreach sessions throughout the city in the summer of 2017 and late spring 2018. These sessions introduced the public to the importance of freight, provided an overview of how goods moved through the city, demonstrated the need for a Smart Truck Management Plan, and sought feedback. As part of this outreach, the project team hosted community events, presented to community boards, conducted stakeholder interviews, solicited feedback through an online platform, and facilitated

FAC and working group meetings. The project team heard from over 1,000 New Yorkers through this feedback, and heard these common themes:

- **Compliance and Enforcement:** Concerns about trucks making illegal detours on local streets to avoid congestion; need for increased enforcement of off-route, oversize, and overweight truck regulations citywide.
- **Safety:** Concerns over the severity of crashes involving trucks; need for safer intersections on truck routes and safer truck designs; concerns about speeding and overweight trucks; blocking of bike lanes by double-parked trucks.
- **Freight Mode Shift:** Support for alternative modes for last-mile goods transport (ex: rail, barge, cargo bike, lockers, and drones); additional loading zones.
- **Environment:** Need for improved air quality; reduced noise and vibrations; concern over damaged roadways.
- **Land Use Conflicts:** Desire to address conflicts with changing land uses.
- **Truck Wayfinding Signage:** Need for improved signage; clarity of message and relocation to more visible locations along truck routes citywide.

STMP Engagement Efforts

DOT engaged with over 1,000 New Yorkers at community events and through the online platform, along with:

- 21** Community Events and Presentations to Community Boards
- 20** Stakeholder Interviews
- 6** Freight Advisory Meeting
- 12** Working group meetings



Smart Truck Management Plan outreach event, held in Brooklyn, May 2017





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FRANKS TRUCK CENTER
LYNDHURST, NJ

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State of Freight Mobility in NYC



Freight activity responds directly to the supply and demand for goods, which is influenced by many factors.

Despite the region's multimodal freight network, trucks still deliver almost all of the goods within the city. This section of the report provides an overview of how trucks move through the city today, and the associated trends that influence freight demand.

How do New Yorkers get their stuff?

Following the supply chain for three common products to a home in Brooklyn

The Role of Trucks in Today's Complex Supply Chains

The city receives goods and shipments from all over the world via a complex international supply chain. Trucks play a critical role in this delivery. Even goods that arrive in the city by ship, rail, or planes rely on trucks for the final miles of delivery.

The map below shows the route three different products take as they arrive into the city and are delivered to a consumer, in this case a home in Brooklyn. Despite coming from multiple places and arriving by different modes, each product still relies on trucks to complete the journey.



Cargo Ship



Cargo Plane



Truck



Bananas

Bananas come from plantations in Central and South America. Green bananas are harvested, packaged in boxes, and loaded into shipping containers. Banana containers are shipped on refrigerated ships and will stay at sea for 3-8 days.

- 1 Bananas for NYC typically arrive in Port Newark (NJ) or Port Wilmington (Delaware). The containers will be refrigerated at a warehouse nearby while they wait to be picked up.
- 2 A truck will pick up one container at a time to deliver the bananas to a ripening room at a produce distribution center, such as Hunt's Point Market in the Bronx.
- 3 Once arriving at Hunts Point Market, the bananas are inspected and placed in a controlled environment to help them ripen.
- 4 Wholesale buyers travel in early AM hours to Hunts Point Market to pick out their bananas. They pack the bananas in small box trucks and bring them to stores to be purchased.



E-Commerce: Toy

E-commerce has grown rapidly over recent years as more and more products are able to be bought online and conveniently delivered to homes and offices. Over the holidays, truckloads of toys were purchased through online retailers such as Amazon.

- 1 Once the buyer has submitted payment and confirmed the purchase, Amazon sends a message to their Fulfillment Centers (warehouses) to get the item ready for delivery.
- 2 Once the item has been packaged, it is shipped out to a local carrier facility. Amazon teams up with USPS, FedEx, and UPS to deliver their packages to the final destination.
- 3 After being sorted at the local carrier facility, the package is loaded onto smaller delivery trucks and brought to the customer's front door.



High Value Commodities: Laptop

While many goods are sent all over the world through marine freight vessels, high value commodities such as electronics and phones are flown overseas on airplanes. While many ocean freight shipments can take up to a month, air shipments can arrive within 1-2 days.

- 1 Once a laptop has been purchased, the laptop is flown to the United States via air straight from its factory in China.
- 2 When the cargo plane has arrived at the airport, the cargo is immediately sorted based on its final destination. The packages are brought to on-site warehouses and are inspected.
- 3 The commodities are loaded on trucks, which typically deliver straight to the home or office in order to decrease delivery times.

3.1 New York City Commodities

New York City's freight network is truly multimodal. Pipelines supply jet fuel to La Guardia and JFK airports; rail brings aggregates from Connecticut, delivers flour from the Midwest, and transfers waste out of the city; global air cargo comes through JFK Airport; international shipping is offloaded at the Howland Hook and Red Hook container terminals; and home heating oil is transported by barge to fuel terminals across the city.

New York City is a consumer center: 62% of the city's total freight tonnage is into the city, while only 26% is outbound and 12% moved internally (NYMTC Regional Freight Plan 2045). The most recent Commodity Flow Survey, which provides information about the type, value, and weight of goods, their origin and destination, and how they are transported, showed that the city requires a significant amount of goods and services to support its growing population and sustain continued economic development.

Notably, the survey shows the top commodity transported citywide is "secondary traffic," which includes a wide range of goods moving from warehouses and distribution centers and shipments

being hauled from rail, air, or marine terminals. The remaining top four commodity groups in 2012 include nonmetallic minerals, petroleum/coal products, food products, and waste or scrap materials. Nonmetallic minerals include sand, gravel, and stone that are used in construction projects throughout the city.

Generally, goods in the "secondary traffic" and "food and non-food products" categories are transported between wholesale and retail establishments, or directly to consumers. All other commodity categories are generally transported between various industrial sites.

87% of out-of-state trucks delivering goods to New City originate from 5 states: Pennsylvania, New Jersey, Connecticut, Massachusetts, and Ohio.



Truck parked while waiting to unload at a nearby industrial facility



A familiar scene in many larger residential buildings: lobby areas being used for storing packages, due to the rapid rise of e-commerce

3.2 How Goods Get into New York City

More than 120,000 trucks enter and exit New York City each day. As a city of mostly islands, the way trucks enter the city is constrained by geography. The city's western boundary with New Jersey has only four bridges and two tunnels, all of which are controlled

by the Port Authority. Trucks at these crossings are tolled on a per-axle basis. Land crossings into the city via the Bronx and Queens are both tolled and non-tolled surface streets and highways. Most

trucks in the Bronx and Queens enter at locations where Nassau and Westchester counties intersect with city truck routes.

More trucks enter the city through Manhattan than any other borough. The George Washington Bridge is the highest capacity crossing into the city and is used by nearly 55% of all trucks crossing the Hudson River to and from the city. More than 30,000 trucks per day utilize the George Washington Bridge to access the region's core central business district and to reach parts of New England and Long Island via I-95 and connecting highways.

While the George Washington Bridge remains a key link in the region's truck travel network, the growth in commercial vehicle volumes has stabilized over the last 5 years. Conversely, the Mario Cuomo Bridge between Tarrytown and Nyack has seen a 9.7% increase in total volume and a 71.4% increase in truck volume between 2011 and 2018.

Major Crossings and Vehicle Sizes

This section gives a detailed overview of truck volumes, truck characteristics and trends at major crossings in the city.

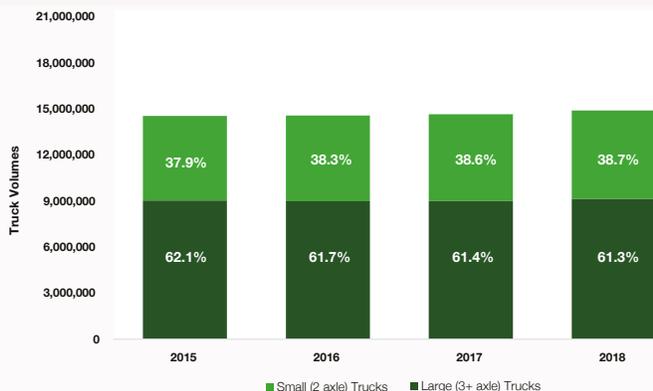
Port Authority Crossings

The total number of trucks crossing Port Authority Bridges and Tunnels between New York City and New Jersey has grown faster than automobile volumes. Annual truck crossings between 2015-2018 increased by 2.5%, and now represent 6% of all vehicle crossings. The number of small trucks (two axle box trucks) has steadily increased during this time, while the number of large trucks (three or more axles) has stabilized.

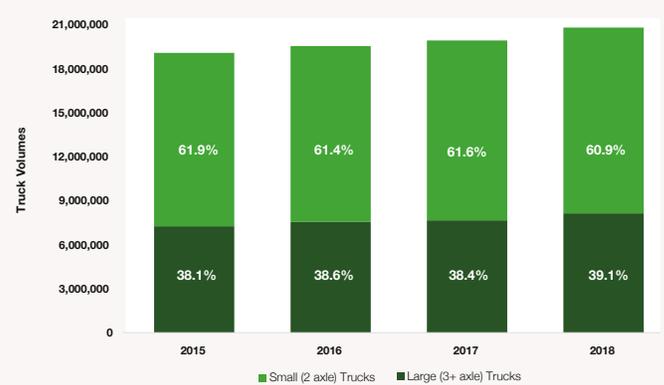


NYC's freight infrastructure includes highways, bridges, tunnels, truck parking, and loading areas.

Annual Truck Crossings Between New York City and New Jersey



Annual MTA Bridges and Tunnels Truck Crossings within New York City



Metropolitan Transportation Authority (MTA) Crossings

Trucks accounted for more than 6% of all crossings on MTA bridges and tunnels between 2015-2018. Total truck volumes increased 9.1% over the same period. Large truck volumes have been increasing faster than small truck volumes on these crossings. This implies that trucks circulating in the five boroughs exhibit different trends than trucks coming from New Jersey and may reflect a shift to warehousing operations relocating to the five boroughs from the outer reaches of Pennsylvania and northern New Jersey.

The Verrazano-Narrows Bridge, which is the second highest volume MTA crossing, has seen a 12% growth in overall volumes and a 21% growth in truck volumes since 2015. More than 50% of this growth in truck volumes was from smaller, single unit 2-axle trucks. 58% of the total daily truck traffic on the bridge (>12,000 trucks) is Brooklyn-bound, an imbalance that will likely be corrected by the introduction of split tolling.

DOT Crossings

Bridges owned and operated by DOT are not tolled, so data is collected less frequently at these crossings than those overseen by the Port Authority or MTA. However, for major East River bridges, classification counts reveal similar trends – overall, truck volumes are increasing while truck sizes are getting smaller.

Understanding the Trends

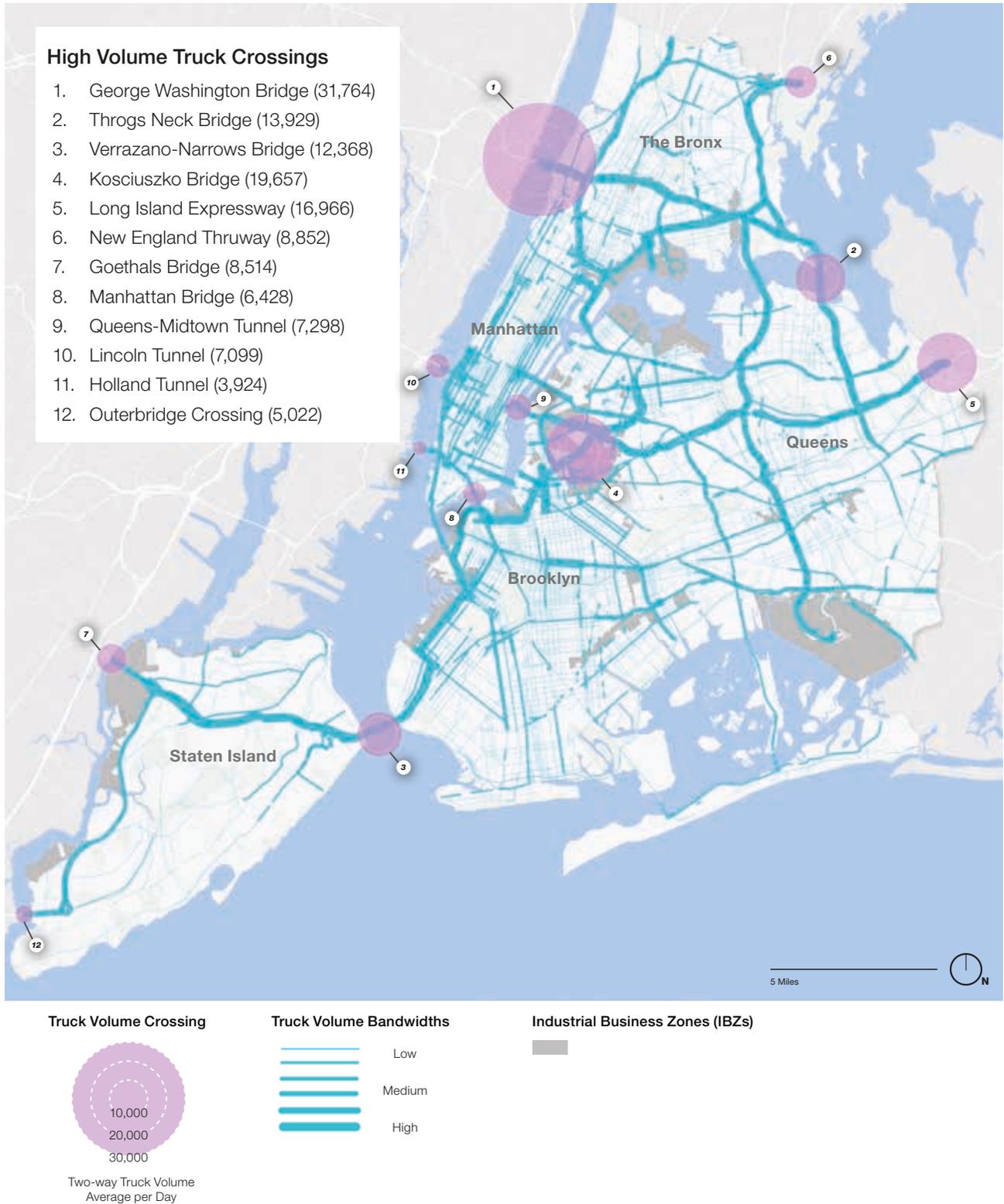
Collectively, the change in the profile of trucks crossing major bridges and tunnels into the city represents a shift in the way regional companies are doing business in the city, adapting to disruptions in the supply chain. The growth in small intercity trucks can be the result of a variety of industry and economic shifts over the last decade, including:

- Increase in e-commerce and home deliveries made by smaller parcel delivery trucks to residential addresses.
- Increase and restructuring of tolls on some regional crossings.
- Companies selecting single unit trucks or downsizing fleets to avoid regulations requiring that drivers must have Commercial Driver's Licenses (CDL); there is a national shortage of CDL holders.
- Increase in construction activity in the city, which predominately utilizes single unit trucks to remove waste and deliver building materials to construction sites.

Additionally, changes to roadway pricing such as the forthcoming Two One-Way tolling on the Verrazano-Narrows Bridge and the Central Business District Tolling will impact overall commercial travel patterns.

More investigation is necessary to determine the effect of this shift in vehicle size on emissions, freight costs, congestion, and wear and tear on the city's road network and traffic safety. DOT will continue to monitor these developments.

Figure 1: Average Daily Citywide Truck Volume and Crossings



3.3 How Goods Move Through New York City

The New York City Truck Network serves a vital role in the multimodal freight network. The Truck Route Network is designed to connect major freight origins and destinations, maximizing access to industrial and commercial zones while minimizing conflicts with residential land uses and vulnerable road users. Truck routes date from the 1970s, when the New York City Traffic Rules were first revised to include these roadway designations in Section 4-13 and established the routing requirements for all truck trips made on city roadways.

All vehicles defined as a truck (two axles and six tires, or three or more axles) are required to follow the Truck Route Network. Commercial vehicles that do not meet the definition of a truck are not required to follow this network but must follow all posted signage regarding the operation of commercial vehicles.

How the Truck Route Network Works

The truck route network is primarily comprised of two distinct route classes: Local Truck Routes and



A sample of signs from the truck signage toolbox

Through Truck Routes. Local Truck Routes are designated for trucks with an origin or destination within the same borough. This includes trucks that are traveling to make a delivery, or for loading or servicing. Where origins or destinations are not directly on truck routes, trucks may go off-route for the minimum distance required to get to their destinations.

Through Truck Routes consist of major urban arterials and highways and must be used by trucks that have neither an origin nor destination within the borough. Within Staten Island, certain roadways are also designated as Limited Local Truck Routes. These serve as local routes but are limited to trucks with two axles and six tires.

New York City truck routes have a complex mixture of abutting land uses. On average, 32% of the parcels along truck routes are industrial, commercial, and mixed-use. DOT uses these land use types as a guide when selecting new truck routes. DOT seeks, where possible, to provide straight line routes with short travel times on wide streets with generous turn geometry and where there is existing truck usage. DOT also tries to avoid low clearance structures, residential land uses, narrow streets with tight turn geometry, and congestion. However, 53% of all parcels along truck routes are strictly residential, so avoiding residential areas is not always achievable.

The official marker of truck routes on city streets are black and white regulatory signs, which are installed at intersecting truck routes. These regulatory signs help to keep truck drivers on-route and indicate legal options for different directions of travel. In some major industrial areas like Hunts Point and Maspeth, these signs are supplemented by green wayfinding signs providing additional directional guidance to truck drivers. Alternatively, prohibitive signs are used sparingly in residential areas that are having unusual issues with off-route trucks.

State of Good Repair

The volume and weight of trucks on streets can adversely influence pavement and infrastructure conditions. However, the high volume of trucks on certain truck routes makes the condition and management of the Truck Route Network infrastructure critical to ensuring that residents and businesses receive the goods they need. Truck routes in a poor state of repair can increase the vibrations and sounds made by each passing truck, exacerbating the effects of truck traffic on nearby communities. DOT manages the truck route network as an infrastructural asset and directs repairs to the areas that need it most.



Freight relies on a complex network of roads, bridges, and tunnels all of which must be properly maintained and upgraded in order for the city to keep moving

Local vs. Through Truck Routes



Local Truck Route Network

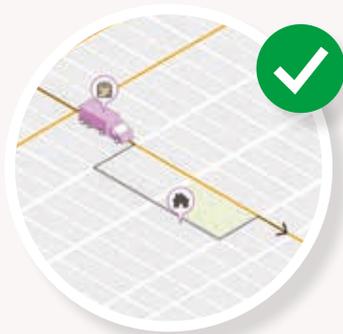
Designated for trucks with an origin and destination within a borough. This includes trucks that are traveling to make a delivery, or for loading or servicing.



Through Truck Route Network

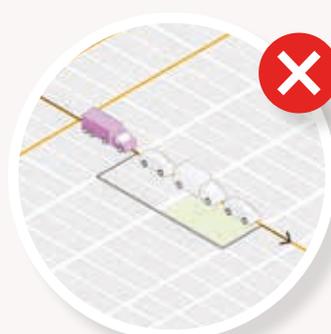
Primarily composed of major urban arterials and highways and must be used by trucks that have neither an origin or destination within the borough.

When can trucks go off route?



Allowed

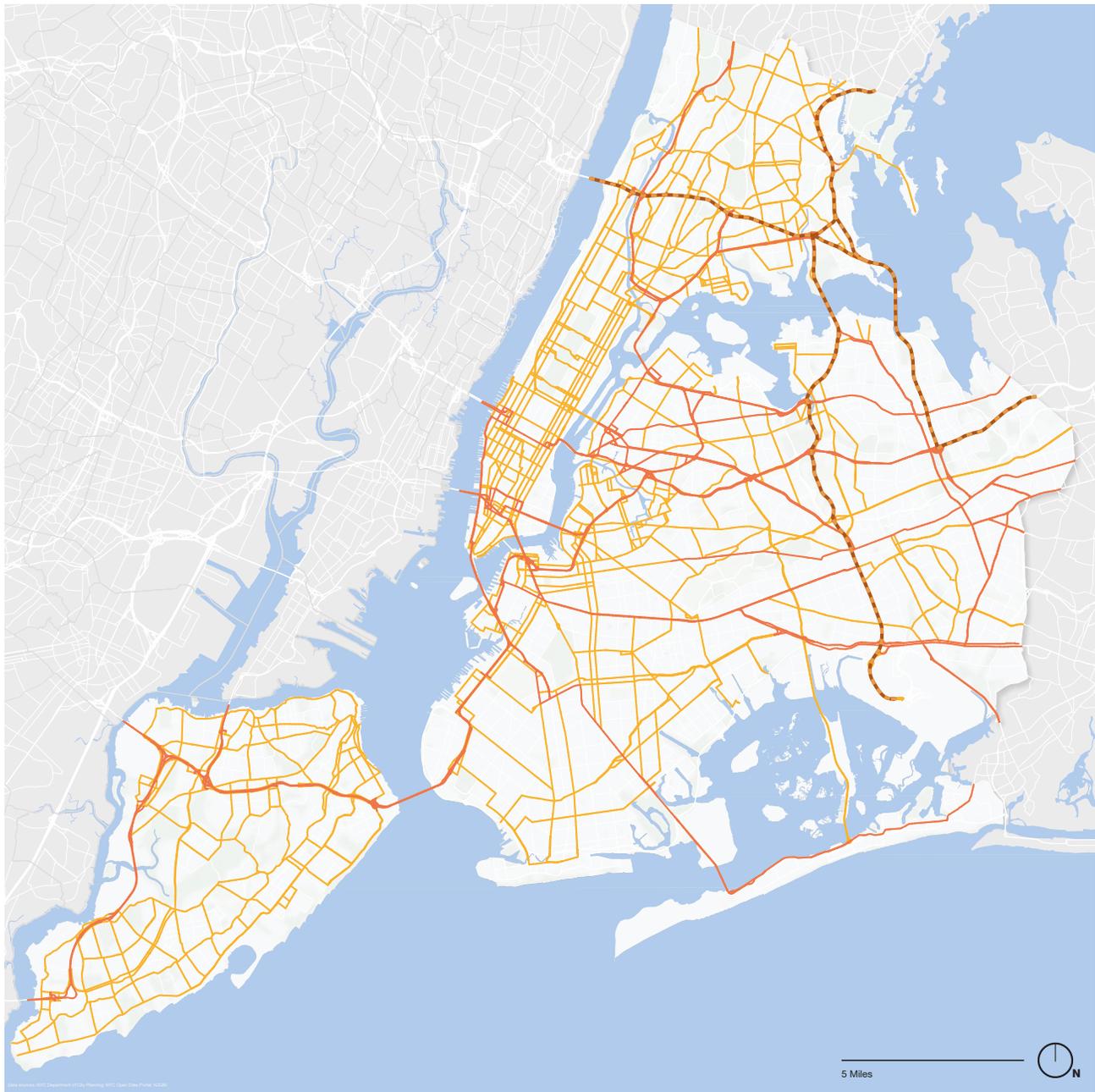
To make a delivery off of a designated route



Not Allowed

To take a shortcut or avoid traffic

Figure 2: New York City Truck Route Network



-  Local Truck Route
-  Through Truck Route
-  Exception 53' Trailers Allowed

3.4 Where Goods Are Going: Freight Demand and Activity

Freight generators are organizations, businesses, and activities that create inbound and outbound truck trips. These vary across business activities, typologies, and land uses, and can increase due to the construction of a new development, renovation of a business, or even with a scheduled festival or special event.

New York City hosts many suppliers, distributors, and service industries that generate freight activity by sending or receiving goods, equipment, and supplies. Freight terminals, such as marine terminals and rail

yards, also generate significant freight activity as trucks transfer goods from these locations to facilities where goods are processed and stored before they reach the end user.



Airports and industrial centers are some of NYC's major freight generators.

Many of these freight generators are clustered together to take advantage of shared infrastructure and workforces. The air cargo industry is concentrated around JFK Airport (JFK), and the food industry has a large presence in Hunts Point in the Bronx. JFK is the number one airport in North America in terms of cargo value, and trucks transport air cargo from there to both local and national destinations. Out-of-season fresh produce is flown into JFK from Central and South America and Africa, and then trucked to customers throughout the region. Hunts Point Cooperative Market, home to 8,500 jobs, distributes 12% of all food to New York City, and generates 15,000 average daily truck trips.

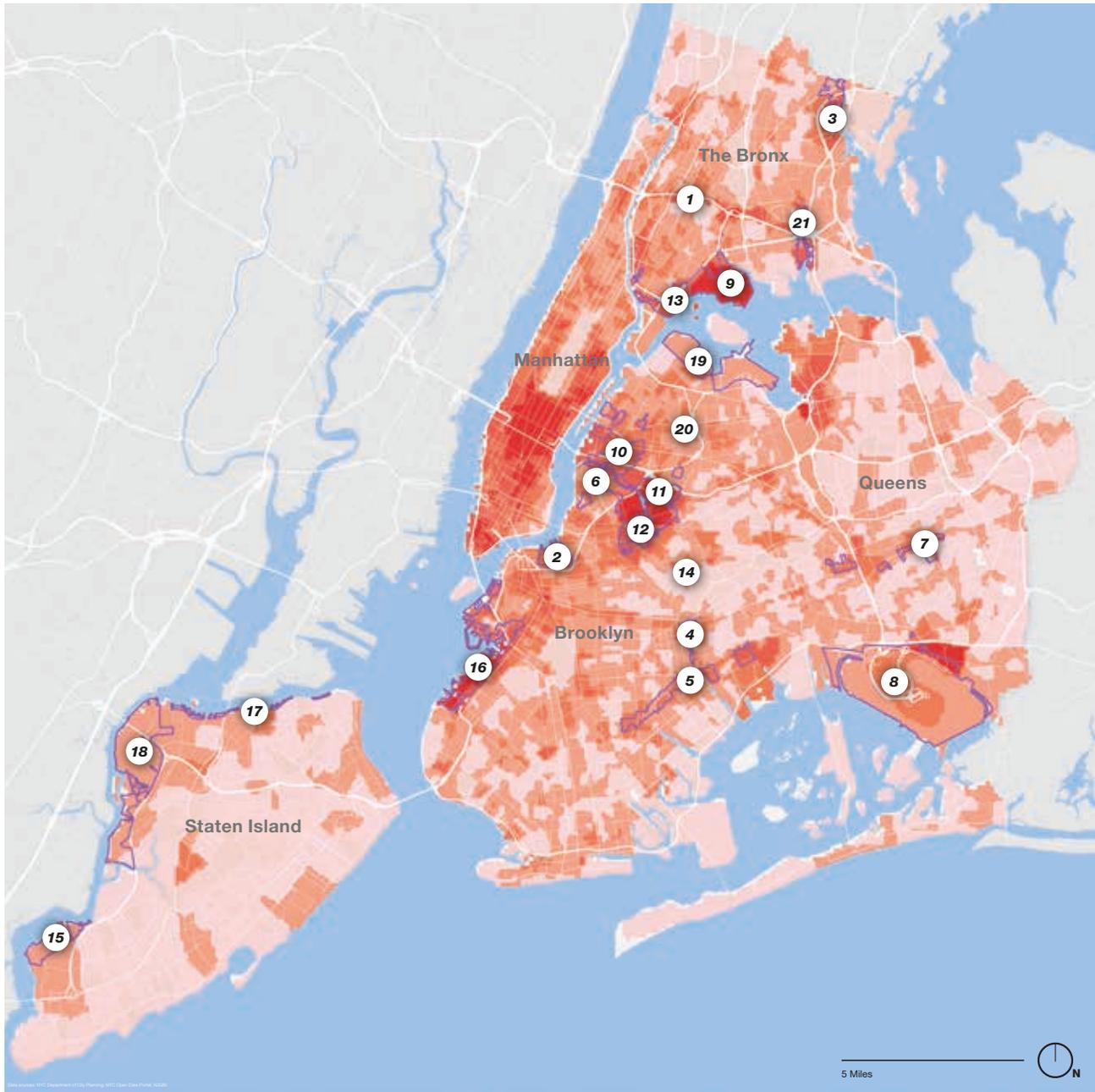
The city's 21 Industrial Business Zones (IBZs) generate a significant proportion of the freight activity. These zones were established to protect existing manufacturing districts and encourage industrial growth. The IBZ designations help promote real estate certainty for developers through protection from rezoning and supportive policies and programs like tax credits, zone-specific planning efforts, and direct business assistance. A wide range of suppliers, warehouses, and distributors are based in these



Marine terminals, such as the Red Hook Container Terminal (top photo) and NYC's Industrial Business Zones (IBZs) are both major drivers of freight activity. The Hunts Point Terminal Produce Market (lower photo) is located in the Hunts Point IBZ.

areas, including companies such as Amazon, Coca-Cola, FedEx, Fresh Direct, PepsiCo, and UPS. The city's industrial and manufacturing sectors employ over half a million people, about 16% of the City's private sector workforce. Over 300,000 of these jobs are located outside of Manhattan (NYCEDC).

Figure 3: Monthly Citywide Freight Trip Generation



Industrial Business Zones (IBZs)

- | | | |
|----------------------------|----------------------|-------------------------------|
| 1. Bathgate | 8. JFK | 16. Southwest Brooklyn |
| 2. Brooklyn Navy Yard | 9. Hunts Point | 17. Staten Island North Shore |
| 3. Eastchester | 10. Long Island City | 18. Staten Island West Shore |
| 4. East New York | 11. Maspeth | 19. Steinway |
| 5. Flatlands/Fairfield | 12. North Brooklyn | 20. Woodside |
| 6. Greenpoint/Williamsburg | 13. Port Morris | 21. Zerega |
| 7. Jamaica | 14. Ridgewood / SoMA | |
| | 15. Rossville | |

Freight Trips Generated

Trips / Square Mile



**Freight trip generation was calculated using a sample of monthly freight trips generated in each traffic analysis zone normalized by the area of the zone*

Major retail and commercial areas are also significant freight generators. While these businesses may not generate as many tractor-trailer trips as a distribution center, they attract many smaller, package-type deliveries, often from multiple vendors. In areas like Midtown Manhattan, where there is a dense concentration of businesses, the number of delivery trucks and limited available curb space creates challenges for accommodating all the delivery activity.

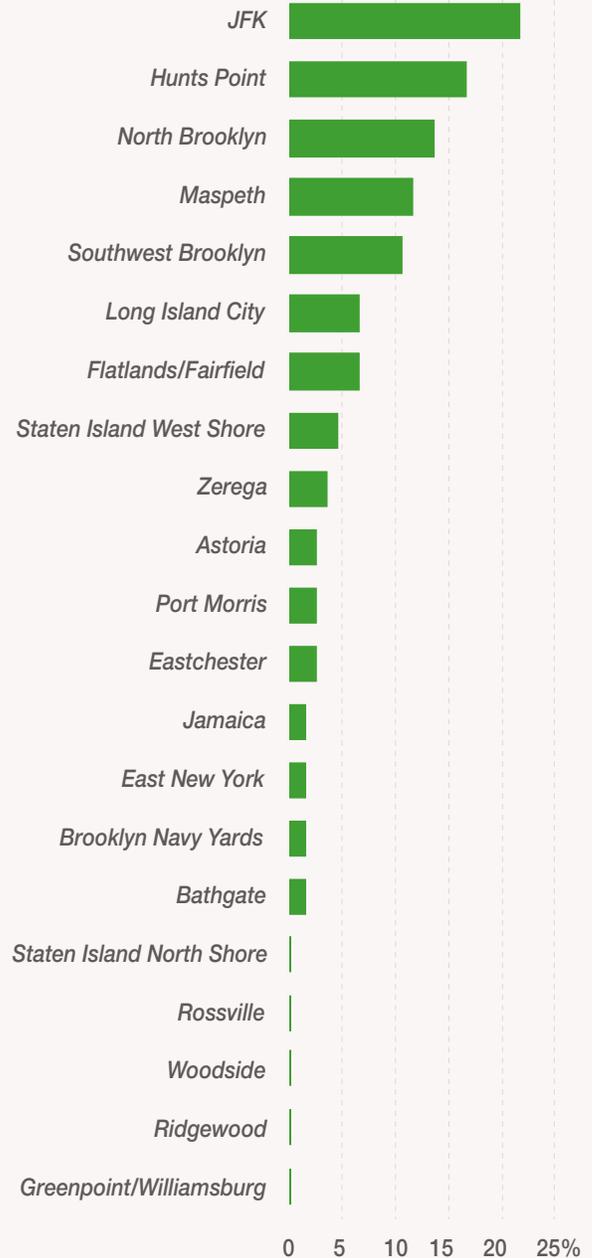


Freight rail at the Hunts Point Terminal Produce Market



Waterborne freight in the New York Harbor

Truck Activity by IBZ



NYC's Industrial Business Zones, ranked from the most to least volume of goods moved, shown as a percentage of total goods moved.

Land Use and Truck Activity

Seven industry sectors - retail, wholesale, accommodation and food services, modal transportation, construction, and health care - account for 84% of all freight trips in New York City (RPI). Retail and wholesale trade are the largest truck trip-generating industries citywide. Construction-related trucks make up 10% of Staten Island's truck trips, the highest share among the five boroughs. The highest share of retail-related truck trips are in the Bronx (38%), and 25% of truck trips in Manhattan are related to wholesale trade. These estimates were generated using 2017 employment data from the list of businesses registered in Dun & Bradstreet (D&B) and incorporated in the models developed as a part of the second phase of the National Cooperative Freight Research Program (NCFRP) Project 25 and available in NCFRP Report 37.

Estimates from the model also show that the largest quantity of freight activities in Manhattan were in the Midtown and Lower Manhattan ZIP codes. More specifically, estimates for daily freight deliveries and shipments show that the top three ZIP codes are 10018 (parts of Hell's Kitchen and the Garment District), 10001 (Hudson Yards/Chelsea) and 10036

(Times Square/Hell's Kitchen), all of which are located in one of the most congested areas in Midtown. Placarded vehicles often displace many commercial vehicles and trucks from the curb resulting in double parking.



Construction workers assembling scaffolding

Truck Trip Generation by Industry Sector and Borough

Industry Sector <small>Based on North American Industry Classification System (NAICS)</small>	Citywide	Manhattan	Brooklyn	Bronx	Queens	Staten Island
Retail trade - Motor Vehicle, Furniture, Electronics, Clothing	25%	23%	28%	38%	22%	27%
Wholesale Trade	19%	25%	17%	11%	17%	12%
Accommodation and Food Services	11%	16%	9%	10%	9%	10%
Modal Transportation and Support Activities	11%	4%	13%	11%	19%	16%
Retail trade- Sporting goods, hobby, book, and music stores	7%	7%	8%	7%	6%	6%
Construction	5%	2%	6%	6%	8%	10%
Health Care and Social Assistance	4%	4%	4%	5%	4%	6%
Total	84%	82%	85%	87%	86%	87%

Rensselaer Polytechnic Institute (RPI)

Land Uses and Freight Generation

Every parcel in New York City is categorized by a type of land use. The amount, frequency, and type of delivery activity varies between each land use type, resulting in different levels of truck demand.



Commercial / Office

Office supplies and other goods must be readily available for businesses to keep running. Daily deliveries in high density vertical markets are required to keep up with the tenant demands, and many trucks may take hours to unload for a single building. In addition to traversing local routes, these trucks may need to be accommodated at the curb for extended periods of time.



Manufacturing, Industrial, and Utilities

In addition to receiving supplies and raw materials, manufacturing centers also need to send out finished products. While large-scale manufacturers have moved out of the city to pursue cheaper spaces and lower costs, light manufacturing within the city depends on trucks to support their operations. In addition, major transportation hubs, ports, and heavy industry related to transportation or utilities can be major generators of truck trips.



Institutional

Whether it be a school or government office, these buildings also require deliveries to support internal operations. Food deliveries and waste pick up are the highest truck generators at schools, though general supplies are also required on a regular basis.



Residential

The increase in e-commerce and availability for at-home deliveries continues to increase trucks headed to residential neighborhoods and buildings. Supermarket orders, toys for children, last minute gifts, household wares, books, and clothes are all traversing our local streets on trucks to be delivered to our front door.

3.5 COVID-19 Impacts

In response to growing concerns about the spread of the novel coronavirus (COVID-19), New York Governor Andrew Cuomo, New Jersey Governor Phil Murphy, and Connecticut Governor Ned Lamont announced the start of business closures on Monday, March 16th, 2020. Restaurants, bars, movie theaters, gyms, and casinos were all required to close effective at 8 PM. With fewer destinations to supply in NYC, truck traffic coming into the city began to drop. All other non-essential business in New York state were later ordered to close at 8 PM on March 22nd, forcing all non-grocery retail and offices to shut down, further reducing commercial business truck trips. **The COVID-19 pandemic caused the NYC supply chain to bend but not break, and adapt in interesting ways to the needs of millions of residents.**

Essential Workers - The driving force behind the freight sector

The COVID-19 pandemic has amplified both strengths and challenges to the freight industry at the local, regional and national levels. From frontline workers to executive

management, the freight supply chain that serves New York City showed its resilience.

In the beginning of the pandemic there were initial challenges such as the availability of appropriate

Personal Protection Equipment (PPE) for personnel, unstable rates of employee absenteeism, supply chain disruptions and conflicting messaging about compliance measures from varying levels of government oversight. Through continued collaborative, public-private partnerships and municipal transparency, City and State governments were able to intervene to ensure sector flexibility and sustainability. However, none of this would be possible without the dedication of the truck drivers and supply chain employees who have worked tirelessly to keep the freight supply chain running. **Prioritizing the needs of essential workers to ensure their health and safety remains a critical lesson for policy makers at all levels.**

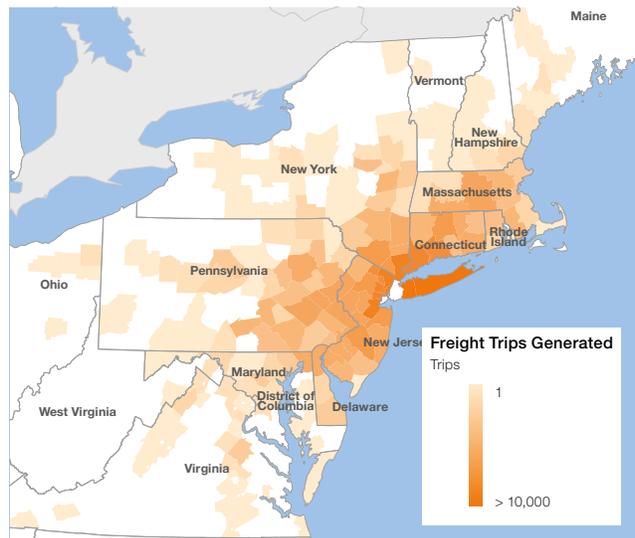


During the height of the pandemic, the definition of 'essential worker' expanded and highlighted the need for government intervention to protect and prioritize their needs.

General COVID-19 Truck Trends

An April 2020 INRIX report titled COVID-19's Impact on Freight showed a 9% decrease in regional truck volumes compared to a 13% decrease nationally, speaking to the essential nature of many of the truck trips in our region. Under normal circumstances, trucks, which supply nearly 90% of NYC's goods, represent only 7-11% of traffic in New York City, and have to contend with heavy commuter and tourist traffic to get from regional origins to destinations in the five boroughs. According to the report, COVID-19 resulted in a 60% decrease in personal travel and a 9% decrease in freight movement in the region, shifting the composition of the traffic stream more towards freight and greatly improving travel times for trucks.

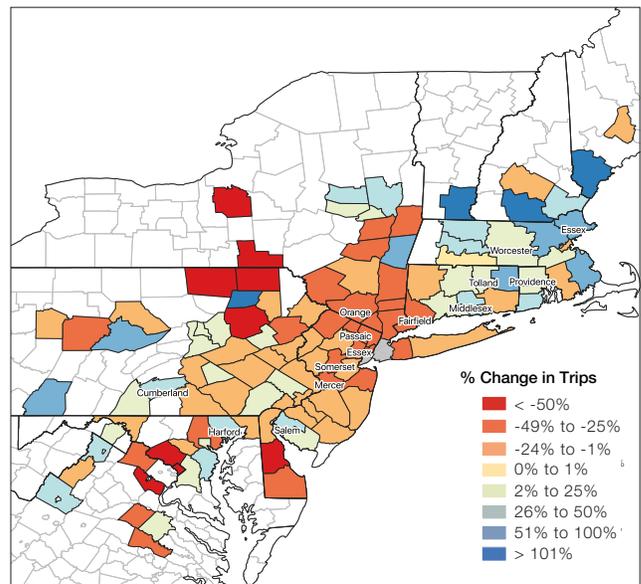
Pre-COVID (Feb 2020) NYC Supply Catchment Area



(Source INRIX)

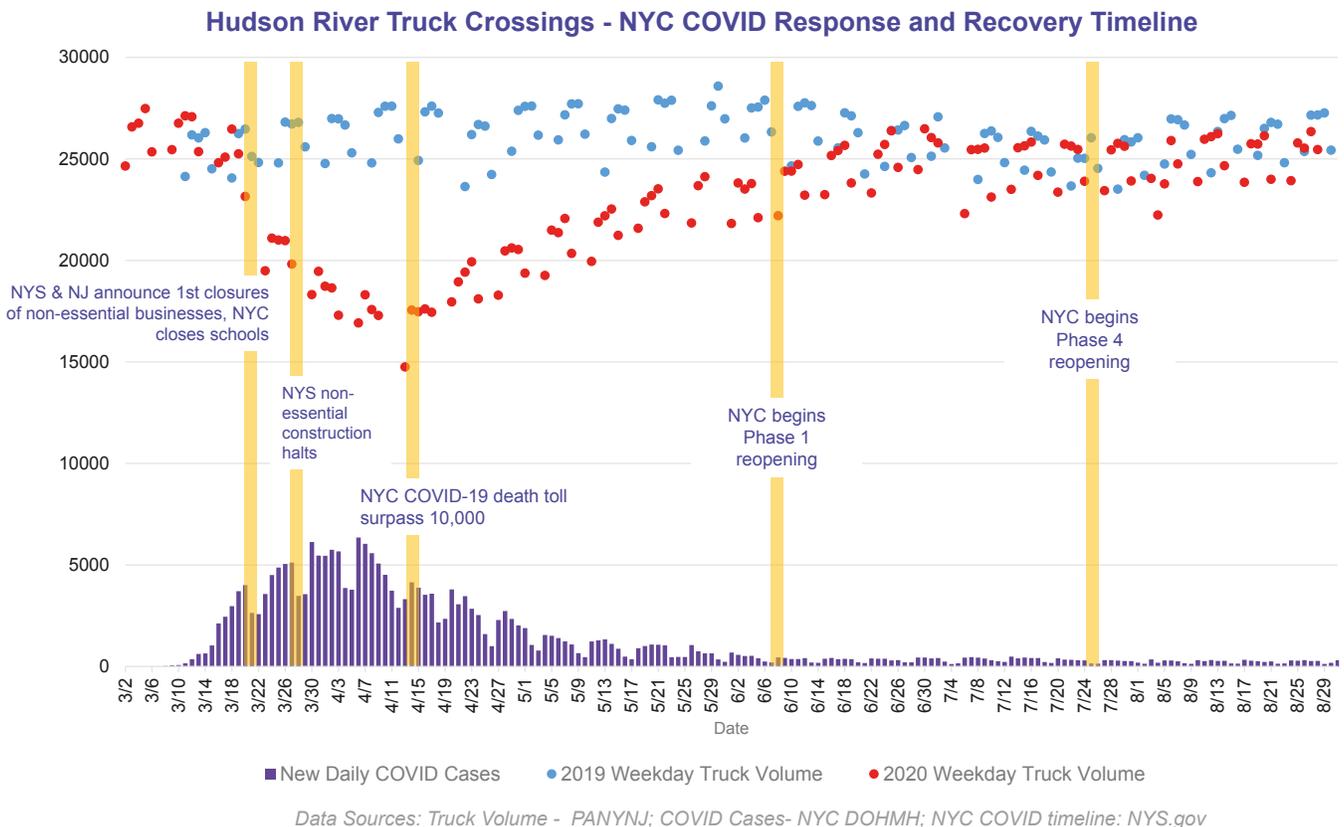
While the freight supply chain has an international reach, much of the city's freight is sourced from neighboring counties and states. The map to the right shows the pre-COVID supply catchment area with the majority of goods coming from upstate New York, New Jersey, Connecticut, and Pennsylvania, and fewer coming from further out states like Ohio, Maryland and Maine. This catchment area servicing New York City remained intact throughout COVID-19 response period, though truck trips shifted within it, adjusting to the relative availability of goods and labor.

Between February and March 2020, DOT observed a 26% decrease in NYC-bound truck trips coming from upstate NY, a 28% decrease in truck trips coming from NJ, and an increase in trips coming from counties in CT, MA, and RI. The map above shows a shifting of truck trip origins northeast, away from commercial and industrial hubs and ports in New Jersey to less-affected counties in Connecticut, Massachusetts, and New Hampshire. This apparent substitution effect or sourcing of goods demonstrates in part, the supply chain's flexibility. This shifting of origins away from



Truck Trip Origins by County (% change post-COVID February to March 2020, Source INRIX)

New Jersey and other west-of-Hudson destinations is also apparent when examining inbound truck activity at Hudson River crossings.



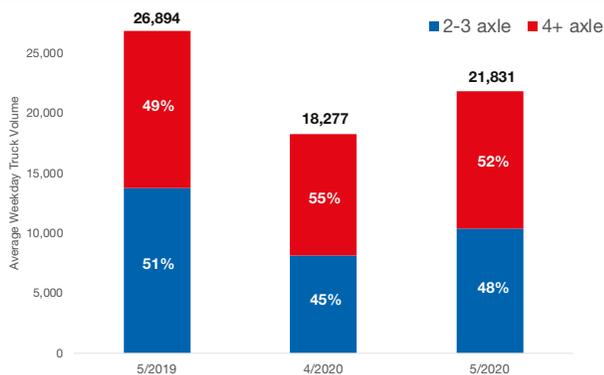
Data Sources: Truck Volume - PANYNJ; COVID Cases- NYC DOHMH; NYC COVID timeline: NYS.gov

Figure 3: The Progression of COVID and Inbound Truck Volumes on PANYNJ Crossings

Compared to regional truck volumes, which were down only 9%, inbound (into NYC) volumes on Port Authority bridges and tunnels were down 35-40% in mid-April when compared with 2019 levels. As the chart above shows, truck volumes on PANYNJ crossings dropped almost as soon as the first business closures were announced on March 16th. Truck volumes on these crossings bottomed-out in mid-April as the New York City death toll from COVID climbed past 10,000, but climbed back in late May to 80% of 2019 and pre-COVID 2020 volumes.

As truck volumes dropped in March and April, trucks shifted away from the peak periods, and truck volumes on major crossings actually increased in the midday period (10 am to 2 pm) as some businesses may have adjusted their store hours or cancelled deliveries during this time. The increase in truck volumes in May can be attributed to increased access to personal protective equipment and the reopening of essential businesses affected by staff health issues. The recovery in truck volume did not coincide with any official government announcement about reopening.

Truck Size Changes on PANYNJ Crossings before, during and immediately after COVID-19



In addition to the major decrease in truck volume from 2019 to 2020, there were noticeable shifts from small to large trucks on Port Authority crossings during the COVID-19 response and recovery period. This change could be attributable to shifts to e-commerce, which are supplied by larger trucks into the city to distribution and fulfillment centers, or to shifts to longer haul truck trips caused by regional shutdowns. As PANYNJ inbound truck volume began to rebound in May 2020, the ratio of small trucks to large trucks began to return to 2019 levels.

Neighborhood Destinations & Truck Delivery Activity Changes

At the beginning of the COVID-19 period, the decrease in truck volumes in New York City was not the only change; data insights reveal that there were changes in truck activity levels across NYC neighborhoods. The table below shows the neighborhoods with the biggest losses and biggest gains in truck deliveries, and the percentage of residential parcels in that neighborhood (single or multifamily homes). Truck deliveries to highly commercial neighborhoods in Manhattan and the outer boroughs saw a significant while deliveries destined for highly residential outer borough neighborhoods increased, driving an overall citywide increase in truck deliveries. This reflects a decrease in business-to-business shipping and an increase in business-to-consumer shipping caused by e-commerce and grocery deliveries replacing trips to stores.

Truck Deliveries by Neighborhood

Neighborhood	% Change in Truck Deliveries	% Residential Land Use
Turtle Bay-East Midtown	-96%	35%
Midtown-Midtown South	-86%	5%
Queensbridge-Ravenswood-Long Island City	-66%	38%
Lincoln Square	-52%	61%
Hell's Kitchen (Clinton)	-47%	39%
Citywide	+21%	82%
East New York	+60%	78%
Whitestone	+61%	91%
Schuylerville-Throgs Neck-Edgewater Park	+70%	90%
Lindenwood-Howard Beach	+70%	86%
Breezy Point-Belle Harbor-Rockaway Park-Broad Channel	+84%	86%

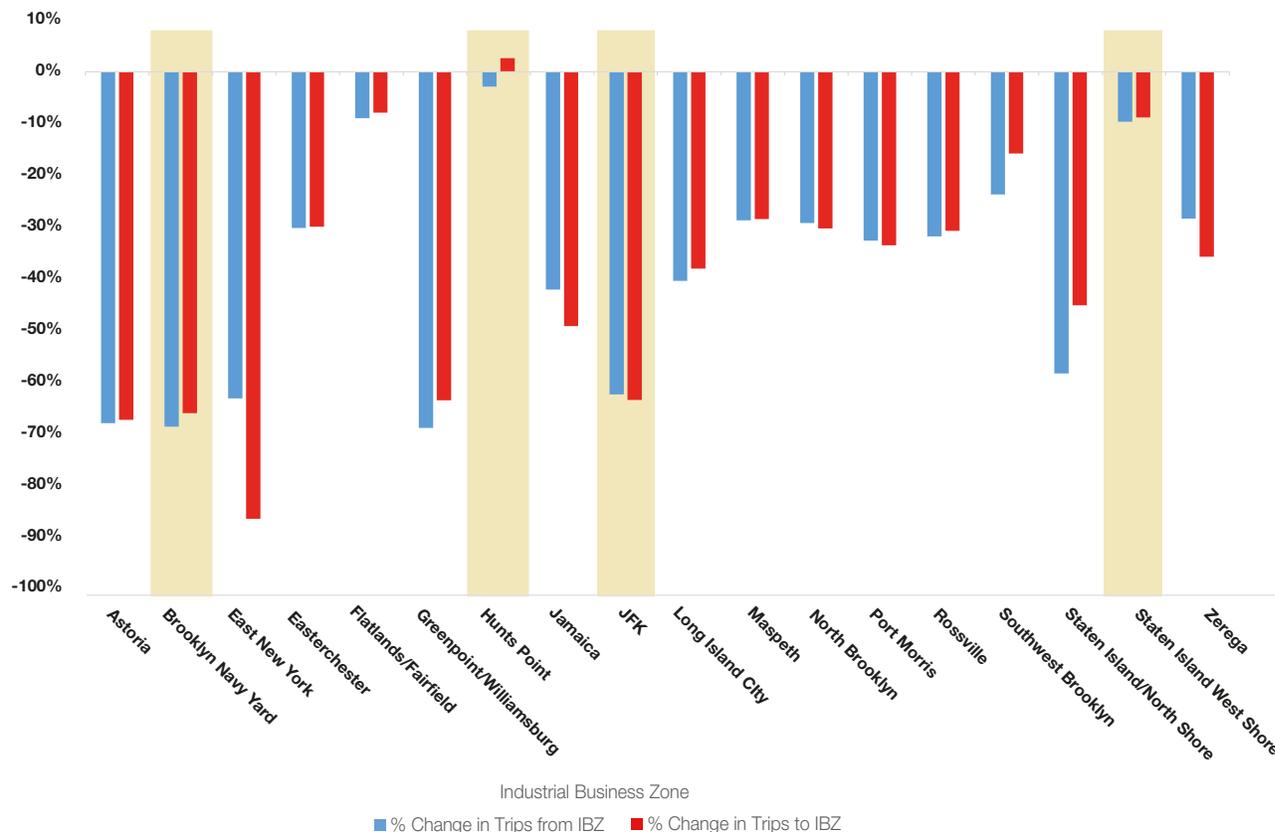
5 month average (June to October 2020) compared with February 2020 (Source: INRIX & Department of City Planning MapPLUTO dataset)

Existing online grocery companies like Instacart saw 300% sales increase, while other companies like Baldor launched new home delivery options with make this business line permanent. As a consequence of more business to consumer shipping, more, albeit smaller trucks, are spending more time off of truck routes and within residential neighborhoods, heightening the need for safe and efficient curb access.

Prior to COVID-19, 60% of the deliveries in the city were made to commercial customers, and 40% to residential customers. However, during the pandemic, roughly 80% of deliveries have been to residential customers as New Yorkers quarantined at home.



Change in Truck Trips to IBZs Before and During COVID-19



Truck trips to and from Industrial Business Zones with IBZs of interest highlighted (% change, January – February 2020 to March – April 2020), Source: INRIX

With many industrial businesses being forced to close, and truck traffic shifting to residential addresses, truck trips into and out of IBZs decreased across the city. IBZs comprised of non-essential businesses (Brooklyn Navy Yard) or that are more sensitive to changes in global supply chains (JFK) saw large decreases in truck trips, while those involved in supplying food (Hunts Point) were stable. The relatively minor

decrease in truck trips to the Staten Island West Shore IBZ is partly attributable to the presence of the Amazon JFK8 Fulfillment Center there, which supports business-to-consumer deliveries. Since April 2020, truck trips to most IBZs have rebounded, but are not yet back to pre-pandemic levels.



A Changing Landscape

COVID-19 has had a dramatic impact on the way New York City's streets are used, how people get around, and how deliveries are made and the needs of residents and businesses have evolved. The City must introduce additional flexibility in the management of our curb space and last-mile freight delivery network to accommodate these changing needs and ensure the safe, equitable, efficient, and environmentally responsible movement of goods. These strategies highlight some of the ways programs in this freight plan manage freight activity in this evolving transportation landscape:

- **Neighborhood Loading Zone (NLZ) Program:** Consumer retail trends changed drastically as a result of the COVID-19 pandemic. NYC DOT will expand the popular NLZ Program to accommodate the growing market share of residential e-commerce deliveries.
- **Commercial Cargo Bike Pilot Program:** The number of cargo bikes participants have doubled to 350 bikes since the pilot launched in December 2019, with continued growth through the early months of the COVID-19 pandemic. Between March and May, cargo bikes have and continue to serve the growing demand for grocery delivery in a space-efficient and contactless manner. DOT will expand the pilot program and incentivize adoption of this sustainable and efficient freight delivery through creation of designated loading and unloading spaces.
- **Off-Hour Deliveries (OHD) program:** OHD has emerged as another tool to limit person-to-person contact. NYC DOT will continue to expand the OHD program as the city continues to rebound from the economic damage of the pandemic
- **Off-Street Consolidation:** Access to the curb can be challenging, especially as more sectors and businesses come online and streets are opened up for social distancing, dining, and pedestrian queuing. Finding off-street opportunities to load and unload goods will continue to play a role in the City's recovery in the most congested parts of the City. DOT will partner with private garage operators to pilot test freight distribution hubs and actively pursue alternative options.



4

Challenges and Opportunities



Accommodating freight in the city today and the future means finding creative ways to tackle these challenges.

This section describes the multi-jurisdictional regulatory framework and operating environment guiding truck movement in the city and highlights future opportunities that will change the landscape of freight and truck movement citywide.

4.1 Challenges Facing Freight Mobility in New York City

The historic fabric characterizing many neighborhoods and business districts make it challenging to accommodate today's freight activity. Additionally, the complex regulatory challenges in accessing the curb, conflicts with vulnerable road users, and environmental effects of truck activity in communities are key challenges that must be addressed.

Regulatory Compliance

Freight movement is governed by federal, state and local law agencies. The federal government has the authority to regulate interstate and international freight



Trucks in NYC must comply with sometimes conflicting federal, state and local regulations.

movement as outlined in the Commerce Clause of the United States Constitution. Federal regulations set nationwide standards for length and weight limitations, effectively setting a floor for

maximum weight and length limitations for vehicles using national network highways. The Federal Motor Carrier Safety Administration (FMCSA) sets operational requirements such as hours of service rules.

State and local jurisdictions may introduce some additional restrictions to respond to their unique urban transportation environment. On the state level, the New York State Vehicle and Traffic Law (VTL),

Highway Law, and Transportation Law define rules of the road for vehicles operating in the state.

Locally, the NYC Traffic Rules regulate the types of commercial vehicles operating in the city, the routes on which they operate, where they can park, and measures to facilitate loading and unloading of goods. These regulations are in place to ensure the safe and efficient operation of trucks in the city, reduce truck intrusion into neighborhoods, and protect unique and aging infrastructure. It is important that drivers observe these rules and regulations for the transportation system to function efficiently and safely.

While DOT promulgates the rules, the New York City Police Department (NYPD) is responsible for enforcing these rules, ensuring that trucks operate safely and responsibly in compliance with all applicable laws and regulations. Additionally, New York State Police Commercial Vehicle Unit and the Motor Vehicle and Motor Carrier inspectors of the New York State Department of Transportation conduct roadside safety and compliance inspections across the state. Aside from a limited number of violations that can be enforced by cameras, the enforcement of trucking regulations often requires a physical presence by enforcement officials, including a safe place to stop a truck. DOT analyzes levels of compliance to help inform whether rules, enforcement activities, or procedures need to be changed to better meet current demands or industry standard practices.

Federal Vehicle Size and Weight Standards on the National Highway Network

- Overall Vehicle Length: No state may impose a maximum length of combination trucks exceeding 65 or 75 feet, depending the tractor-trailer configuration.
- Trailer Length: No state can impose a trailer length limit of less than 48 feet on a semitrailer or less than 28 feet for combination trailers.
- Width: No state may impose a vehicle width limit of more or less than 102 inches.
- Weight: Gross vehicle weight (GVW) cannot exceed 80,000 pounds; single axle weight cannot exceed 20,000 pounds, and tandem axle weight cannot exceed 34,000 pounds.

Note: There are no federal vehicle height limits, state standards range from 13.6 feet to 14.6 feet.

Truck Route Compliance

The following chart shows the total number of Truck Route violations issued by each NYPD Patrol Bureau and the NYPD Transportation Bureau between 2014-2020. Although Transportation Bureau-issued truck route violations increased dramatically between 2014-2016, and again between 2018-2019, the downward trend of overall number of violations issued makes it unclear whether this is the result of better compliance by the industry or changing police enforcement priorities. Leveraging enforcement and supporting technologies are essential to fostering a culture of compliance with NYC truck route rules and regulations.

Truck Size and Dimensions

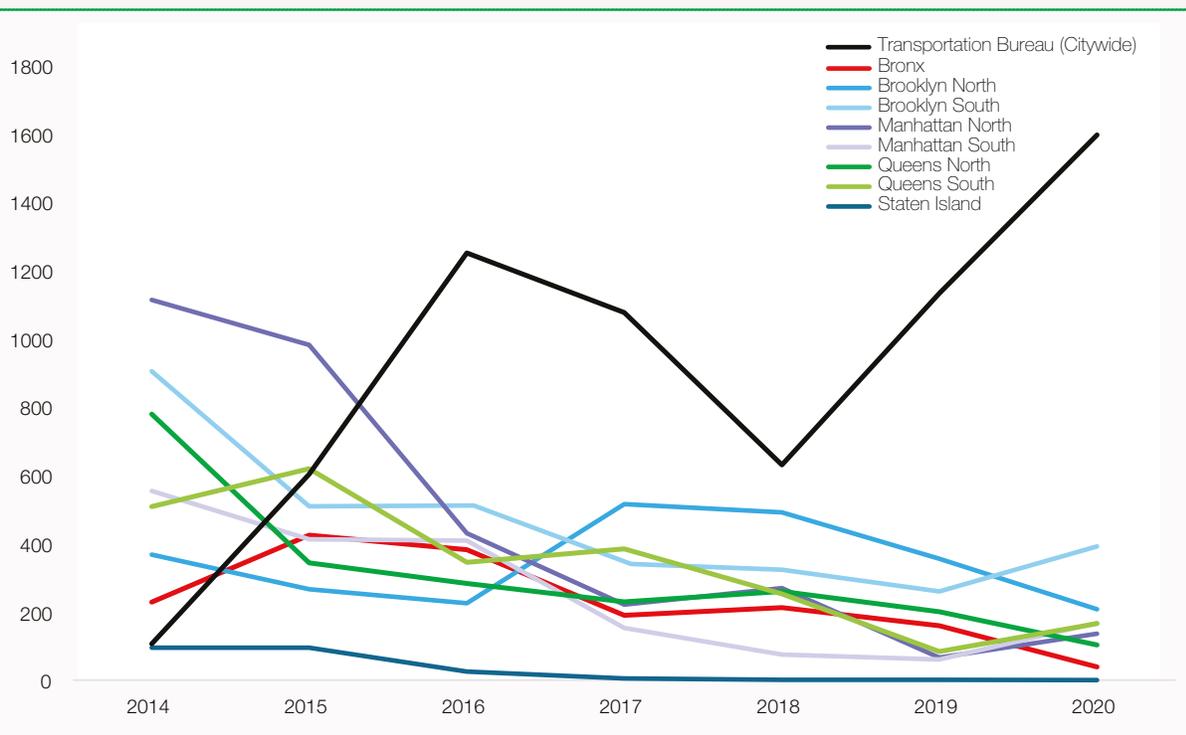
Differences among federal, state and local law sometimes cause confusion or result in practical difficulties for compliance, and some of the city's existing truck regulations are not aligned with national

standards or industry practice. For instance, city laws permit trucks to be no more than 55 feet in overall length, but, the national industry standard is now 73 ½ feet in length. Despite city regulations, larger trucks are still regularly observed on city streets.

Another notable example is the city's truck width regulation of 8 feet, while the national and international standard is 8 ½ feet. Truck manufacturers typically construct vehicles to the wider national standard. As a point of comparison, another wide vehicle type—buses that carry more than seven passengers (other than school buses)—are currently permitted to be 8 ½ feet wide within the city.

Because the overall length and width rules are often not aligned with national standards, carrier companies operating in the city either ignore the regulations or need to purchase customized vehicles or equipment to fit this market. This further underscores the complexity of operating in NYC.

Truck Route Violations Issued by Each NYPD Bureau



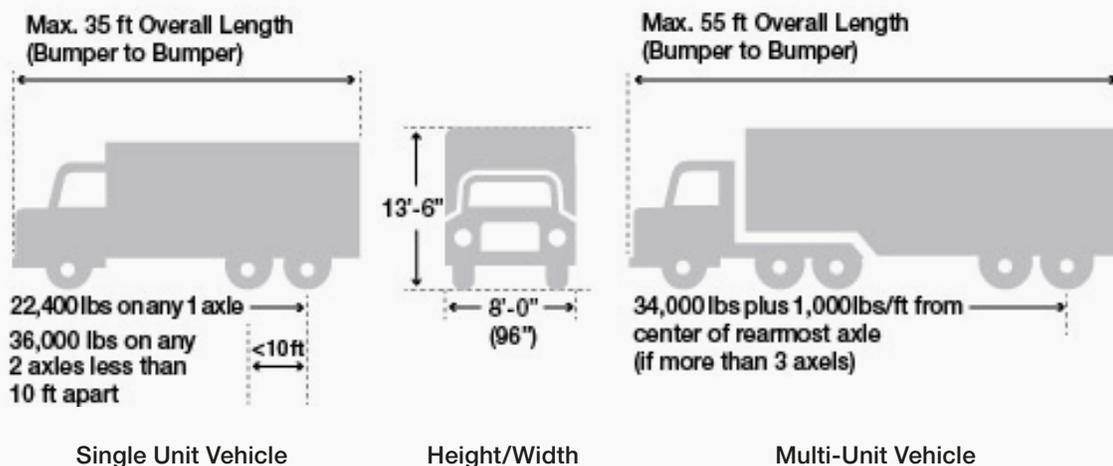
Exceptions have been made in recent years to alleviate these restrictions on routes where larger trucks serving industrial areas can be safely accommodated. For example, after robust investigations, the City allowed larger trucks to serve JFK Airport in 2015, and trucks transporting heavier sealed ocean containers to Howland Hook Marine Terminal in 2018. Moving goods via these larger trucks helps reduce both the number of vehicles traveling to freight-intensive areas on the outskirts of the city and overall transportation costs, allowing local industrial businesses to remain competitive with companies located outside of the five boroughs.

Truck Weight

Overweight trucks are unsafe and damage roadways and bridges, increasing highway maintenance costs. Weight limits serve to minimize the impact of trucks on infrastructure and ensure trucks are not dangerously overloaded. Studies have found the useful life of pavement can be reduced by up to 25% if just 1-3% of trucks are overweight. In addition, heavier trucks have longer braking distances and reduced stability, which makes compliance with weight restrictions an important safety measure.

Both the City and State issue oversize and overweight permits for the routing of over-dimensional and overweight loads on roadways under their jurisdiction. The City, through DOT, issued over 43,253 daily over dimensional vehicles permits in 2018, of which nearly 700 were single unit vehicles in 2018. NYS issues divisible loads permits, and the city has grandfathered divisible overweight permits since the 1980s, of which there are a limited number in use today. The lack of uniformity in regulations creates inconsistencies and challenges in moving freight in an efficient manner.

BQE weigh-in-motion sensors have determined that some trucks along the roadway weigh much as 170,000 pounds, more than double the federal legal guidelines and posted signage.



New York City size and weight restrictions for trucks

The city relies on compliance with commercial vehicle weight restrictions to help manage the impact that trucks have on the city's infrastructure. Seven percent of trucks on the Alexander Hamilton Bridge (AHB) are overweight, according to Weigh-in-Motion (WIM) data. WIM sites in Queens shows 17% of trucks are

overweight. The majority of overweight trucks are Class 7 trucks (four or more axles, single-unit trucks), typically used in the movement of bulk aggregates, construction and demolition material, whereas a moderate

amount of Class 6 vehicles (three-axle, single-unit trucks) are overweight (45% in Queens and 10% at AHB). Construction vehicles, which can be overloaded at construction sites, contributes to these high non-compliance rates. This level of non-compliance has significant implications for roadway safety and the state of good repair of NYC highways and bridges.

Bridge Strikes

There are 313 low bridges over roadways with vertical clearances of less than 14 feet in New York City (not including MTA and other rail structures). All commercial vehicles, trucks and tractor trailers are prohibited from using parkways due to their low bridge clearances and weight limits. Certain sites in the city have a clearance as low as 6'11", despite the national standard of 14 feet.

Bridge strikes are especially acute on parkways and roadways with elevated subway structures in the city and the surrounding metropolitan region with lower clearances. As mentioned before, DOT recorded 429 bridges strikes between 2013-2018, 51% of which occurred on just ten corridors.

Bridge strikes create safety hazards, severe and long-lasting congestion, and high capital repair costs and are often caused when truck drivers use non-commercial navigation systems, are uninformed about the height of



Bridge strikes by trucks are a major safety hazard, lead to increased congestion, and require costly repairs.

Top 10 Bridge Strike Locations

Top 10 locations of DOT recorded bridge strikes, 2013-2018

- Westchester Avenue at Hutchinson River Parkway (southbound)
- East 52-60 Street Tunnel at FDR Drive (northbound)
- Westchester Avenue at Hutchinson River Parkway (northbound)
- Gracie Mansion (90-80 Street) at FDR Drive (southbound)
- 17th Avenue Pedestrian Overpass at Belt Parkway (eastbound)
- 130th Street at Belt Parkway (eastbound)
- East Tremont Avenue at Hutchinson River Parkway (southbound)
- East 14 Street at Belt Parkway (eastbound)
- Shell Road at Belt Parkway (eastbound)
- West 252 Street at Henry Hudson Parkway (northbound)



Aftermath of a bridge strike

their vehicle, fail to pay attention to posted signage, or lack awareness of NYC's unique conditions.

DOT has partnered with other agencies on a multifaceted approach to reducing bridge strikes. In 2014, DOT installed a steel beam on the southbound FDR to prevent bridge strikes, and in 2016 DOT launched an Interagency Bridge Strike Task Force with NYSDOT, MTA, Port Authority, and NYPD. DOT and partners have also produced outreach material to educate truck drivers about the traffic rules and how to navigate truck routes in the city.

DOT is exploring new initiatives, including additional overhead signs and pavement markings, to help prevent bridge strikes, and will increase coordination with online mapping companies to improve availability of truck specific information.

Truck Parking and Loading

Delivery Access and Curb Regulation

Businesses and residents rely on trucks and smaller light- or medium-duty vehicles with commercial plates, known as Commercial Motor Vehicles (CMVs), to get the goods and services they need every day. However, the combination of conflicting needs of available space and curb access create a challenging environment for freight mobility. High residential density, competing land uses throughout the city's central business districts, limited availability of off-street loading docks, and overall limitations to sidewalk space create a constant challenge to delivery activity in the city. From a freight perspective, the curb must serve the needs



Curbside loading in Lower Manhattan

of goods deliveries, facility services, provide general building access, and accommodate construction and waste management. For the 'city that never sleeps', this means 24-hour access for space, providing access to a variety of modes, and balancing various demands.

More than six decades ago, the 1952 City Zoning Resolution acknowledged that loading and unloading operations should take place off-street to provide room for pedestrians and traffic. However, increasing the number of off-street truck loading facilities remains an ongoing challenge. The supply of commercial curb spaces is constrained by a lack of dedicated commercial parking outside of Manhattan. Placarded and for-hire vehicles often occupy commercial curb spaces.

The most common violation of local laws by commercial vehicles is non-compliance with parking regulations. Leading violations across the boroughs include: parking beyond allowed time in Manhattan; double-parking or otherwise blocking traffic in the Bronx, Brooklyn and Queens; and illegal parking in residential zones in Staten Island.

Commercial parking space is in high demand in many areas of the city. Trucks double-park or park illegally.



Curbside package sorting in Midtown Manhattan

Pick-up and delivery behavior contributes to short-term “dwelling” of trucks, and closely aligns with the top freight generator locations throughout the city. Companies engaged in high-density deliveries, such as those serving skyscrapers and tower blocks in Midtown and other vertical markets, may be parked for 6-8 hours delivering small packages to receivers along a single block. Companies engaged in maintenance and construction activity have similar dwell times.

The Last 50 Feet

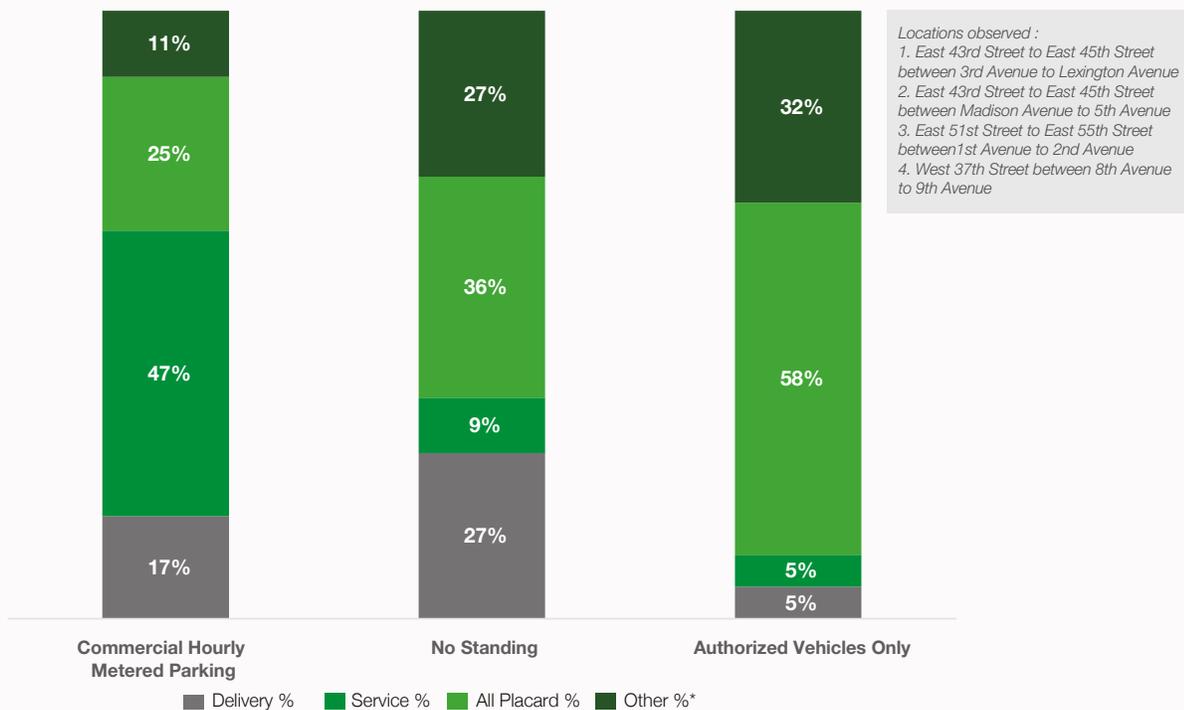
Finding curb space and completing the ‘last 50-feet’ (portion of the urban delivery from truck to the customer) of the delivery system is a continuing

challenge for many vehicles engaged in maintenance calls and construction, but particularly for shipping and delivery companies.

Lack of available space for commercial vehicles can cause trucks to circle the block in search of an appropriate parking space, and may ultimately lead to double-parking or illegally parking in a zone designated for other uses. In a curb utilization survey of Midtown streets, 25% of the vehicles observed parking in commercial metered zones were non-commercial placard vehicles.

Increasingly, as street redesigns incorporate more functions and seek to better accommodate street users' needs, DOT is adding new commercial

Midtown Curb Utilization



Data: January 2019

* Other Vehicle types mainly include for hire vehicles (Uber, Lyft, taxi, etc.) or passenger vehicles standing or occupying curb space

curbside access where land uses are generating an increasing number of freight trips and service vehicles. The City has initiated important steps to create a culture of compliance with curb regulations by initiating steps towards placard reform and clarifying curb regulations to make them easier to understand and enforce. For example, on March 8th, 2020, the Notice of Adoption of the Double Parking Rule will become effective, thereby updating the current rule regarding double parking restrictions.

In conjunction with these changes, the New York City Department of Finance implemented reforms to the Stipulated Fine and Commercial Abatement programs to align with the City's transportation and congestion mitigation priorities, providing stronger incentives for drivers and delivery trucks to abide by NYC traffic rules.

Overnight Truck Parking

Insight from the industry, observations of truck driver behavior, and federal requirements mandating breaks have cumulatively demonstrated a need for more long-term and overnight parking within the city. A report published by the American Transportation Research Institute on Critical Issues in the Trucking Industry identified the scarcity of available truck parking as the fifth highest overall issue facing the industry, but the second highest concern for truck drivers. Without convenient truck parking, drivers are often forced to drive beyond allowable hours of service (HoS) rules or are forced to illegally park in undesignated and, in many cases, unsafe locations. Keeping neighborhoods clear of illegal overnight truck parking requires targeted enforcement.

Commercial Metering Program

To provide access for commercial loading in locations of high demand, the City allocates commercial curbside space through unmetered Truck Loading Zones and Metered Commercial Parking. The City also uses "No Parking" zones as loading zones because they allow standing for loading/unloading. Outside of Midtown Manhattan, under certain circumstances, commercial vehicles are also legally allowed to double park.

In total, there are an estimated 28,600 commercial spaces allocated throughout the city. Of those, about 11,300 spaces are metered. Most of these spaces are designated commercial-only for only a certain portion of the day, often converting to passenger vehicle spaces after high-demand commercial time periods end. In 2018, the City added about 2,300 new truck loading spaces.

Until recently, metered commercial parking has been used mainly in Midtown Manhattan to manage the high demand of commercial vehicles in the predominately commercial core. Commercial-only meters expedite deliveries by encouraging shorter stays, reduce double-parking by dedicating curb lane space to trucks, and ease congestion by getting commercial vehicles out of the travel lane. Metered commercial parking has grown since it was first introduced, gradually expanding from the Midtown core to include other parts of Midtown and Lower Manhattan. To accommodate other locations that also experience high commercial parking demand, DOT has commercial meters in places like Jackson Heights, Queens and 125th Street in Manhattan.



Hours of Service Regulations and Emergency Truck Parking

The Federal Motor Carrier Safety Administration (FMCSA) regulates the hours that can be driven by large trucks and buses to ensure the safety of the drivers and the public. There is an 11-hour driving limit within a 14-hour time window. After driving 8 hours, the driver must take a 30-minute break. Beginning in December 2017, Hours of Service are monitored using electronic logging devices which records driving time and rest hours. Truck drivers are required to take breaks or rest overnight once the maximum time has been logged. Failure to comply with Hours of Service regulations results in drivers being fined or placed out of service.

During the height of the COVID-19 pandemic in New York City (Spring2020), the FMCSA relaxed Hours of Service Regulations nationwide to accommodate truck drivers supporting emergency response activations.

BRONX

1400 Viele Avenue
Hunts Point Food
Distribution Center
(40.807380, -73.880100)

Entrance on Halleck Street
between the Produce
Market and Baldor Foods.

Capacity: 55 trucks
Open April 15 to July 7



STATEN ISLAND

N. Washington Avenue
Global Container Terminal
(40.632765, -74.189229)

On westbound I-278, take
Exit 3 (Western Avenue) and
continue west, following
signs to rest stop. From
eastbound I-278, take Exit 4
(Forest Avenue) and follow
signs to rest stop.

Capacity: 25 trucks
Open April 15 to June 26



While not immediately recognized as a critical issue, a lack of long-term truck parking in the city presents a serious challenge to truck safety and the mobility of freight throughout the city. Best practices to address the scarcity include identifying temporary spaces that can accommodate trucks, re-opening closed facilities, educating the public sector on safety consequences born out of limited truck parking availability, and investigating the role of real-time truck parking availability and truck reservation systems.

Rise of E-Commerce

E-commerce has fundamentally changed the way consumers interact with the retail market. E-commerce sales have been growing nine times faster than traditional in-store sales since 1998. Today, delivery times are measured in hours rather than days. To meet these expectations, e-commerce



On average, 45% of New Yorkers receive a delivery at their home at least once a week, and the Manhattan core receives the most deliveries. (Source: DOT Citywide Mobility Survey 2018)

companies are locating their distribution and fulfillment facilities closer to their customer base in the city. Many retailers have adopted an omni-channel approach to sales, providing more opportunities to interact with their customers through cellphones, mobile devices, desktops, or traditional brick-and-mortar stores. Some merchants ship

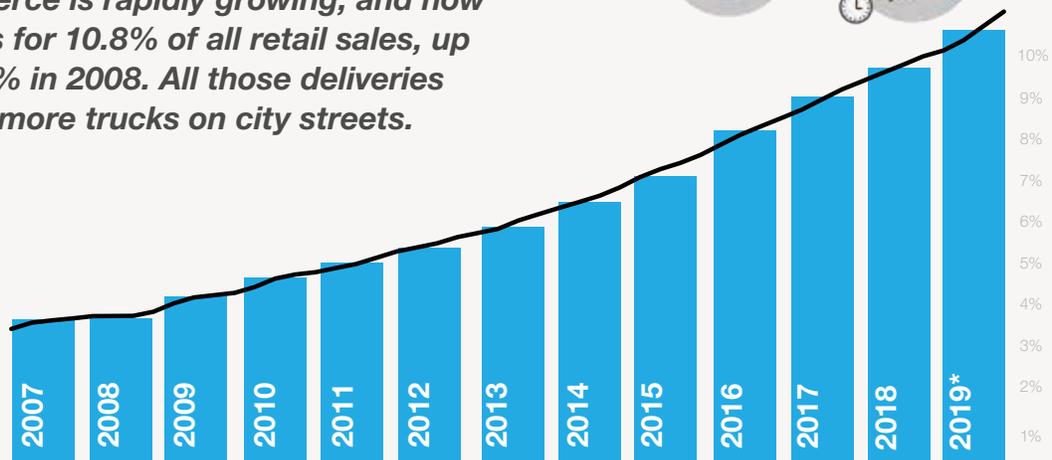
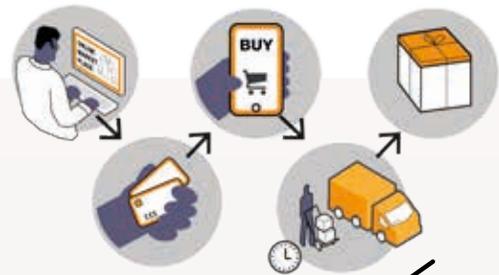
their goods to the consumer, while some allow customers to pick up their orders in store (click and

carry), and others provide both options. In 2018, click and carry orders accounted for 52% of online orders at Best Buy and 95% of online orders at Walgreens (Rakuten Intelligence).

The rise of e-commerce has led to unprecedented freight activity in residential locations. In 2018, market researchers from Rakuten Intelligence estimated that more than 500 million packages were delivered to New York in 2018, up 13% from 2017. If the growth is extrapolated, New York will see 1 billion packages from e-commerce orders by 2024 (Rakuten Intelligence). This continued growth is increasing the challenges of delivery and curbside access in residential areas. While it is unclear how future freight demand management strategies will impact the finite bounds of the regional distribution network, it is important that DOT continue to mitigate the current challenges presented by the continued increase in package deliveries.

Growing Demands for E-Commerce

E-commerce is rapidly growing, and now accounts for 10.8% of all retail sales, up from 3.6% in 2008. All those deliveries result in more trucks on city streets.



* Q1 - Q3 2019 estimates

Data Source: Retail Indicators Branch, U.S. Census Bureau

Internet Retailers in New York City

Two internet retailers, Jet.com and Amazon, have recently constructed warehouses in the city (the Bronx and Staten Island, respectively). Plans to construct modern multi-level warehouses in the Bronx and Brooklyn are underway and provide more warehouse space than a traditional single-level warehouse.



Amazon's fulfillment center in Staten Island. (Julie Jacobson/AP via Google Images)



Jet.com distribution center in the Bronx (Google Images)

Effects of Congestion

The quality of life for New Yorkers, and the overall health and resilience of the city's economy, relies on the timely and dependable transportation of goods and services. The freight industry operates in a competitive market sector to deliver the right goods to the right place at the right time and cost. Delays and congestion reduce the efficiency of truck movement and increase the costs of delivering freight to, from and within the city. In 2014, the region faced the highest total congestion and truck congestion costs of any region in the US.

In 2015, the trucking industry lost over 60.7 million hours of productivity in the city due to congestion, at a cost of nearly \$3.9 billion (ATRI). The costs of congestion were particularly acute along the Cross Bronx Expressway, the Robert F. Kennedy (Triboro) Bridge, Bruckner Expressway, and roads in Midtown Manhattan close to the Queens Midtown Tunnel. While this likely overstates the value – no one would expect a complete lack of congestion in a thriving metropolitan area – it provides a sense of scale to the costs of congestion in the city.

As with general traffic trends in the city, truck speeds drop during three periods over a weekday: morning, mid-day, and afternoon. During mid-day and afternoon peak periods, the speeds of some busy corridors in Manhattan, Brooklyn, and Queens can drop below 5 MPH. While trucks move slowly during all peak periods (morning, mid-day, and afternoon), mid-day has the most widespread congestion of all time periods.

The trucking industry lost over 60 million hours of productivity in NYC due to congestion in 2015.



In addition to time of day, speeds on truck routes vary across the five boroughs, with the slowest truck traffic in Manhattan. In the other four boroughs, truck routes tend to have slower speeds when they are:

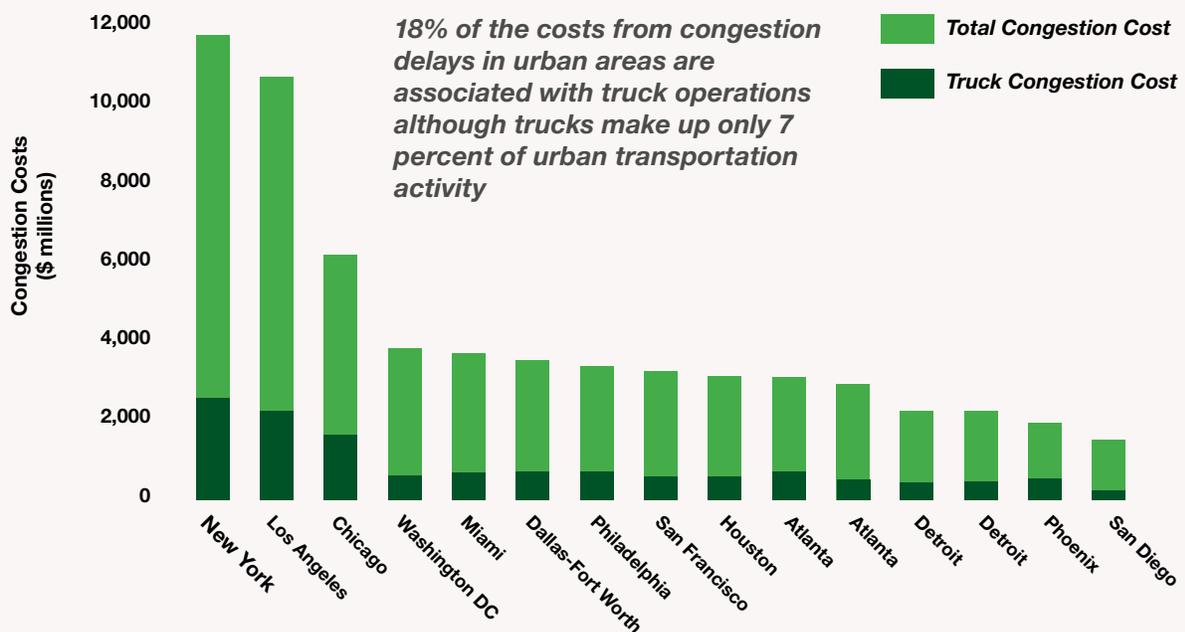
- Feeding or being fed by Manhattan traffic.
- Close to an industrial business zone.
- The major north-south or east-west corridors in the area.
- Constrained by physical condition (e.g., curves and underpasses).
- Approaching signals or tollbooths.

Overall, more than 7 of the top 10 congested corridors are in Manhattan, and their speeds are all below 5 MPH at the morning and afternoon peak periods. These bottlenecks occur at the entrance to or exits from the Holland Tunnel, Lincoln Tunnel, Queens-Midtown Tunnel, and the Manhattan Bridge.



Truck speeds vary based the physical condition of roads, levels of traffic, and proximity to industrial business zones

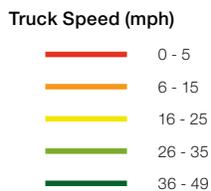
Trucks and Congestion



Total Annual Congestion Costs by Region (2012) Source: Texas A&M Transportation Institute

Figure 4: Truck Speed

Average Truck Speed During Morning Peak Period (6–9 AM) on Citywide Through Truck Routes



Construction Activity

Construction activity generates significant truck traffic. As buildings are demolished or refurbished, trucks remove debris and bring new materials like steel, glass, and concrete to the site. At later stages of construction, all furniture and fittings, including heating, lighting, water, and electrical systems, need to be delivered and installed. If construction-related delivery and service trucks cannot be accommodated on-site, adjacent curb space will typically be used to supplement available loading space.

New Building and Demolition permits have increased by 44% since 2013, despite a slight decrease in 2018. In 2018, the greatest total number of permits issued was in Manhattan (72,004 total, 43% citywide). This recent increase has contributed to a large number of service vehicles associated with plumbing, electrical, heating, ventilation, and air conditioning installation and maintenance, as well as dumpsters for debris removal, all of which compete for limited curb space.

A DOT-commissioned study of East Midtown conducted in 2016 found that construction and maintenance vehicles are the largest users of the curb

space in the area between Second and Fifth Avenues, and East 41st and East 45th Streets. Maintenance vehicles especially tend to park for extended periods and compete with delivery trucks for curb space.



Construction Truck Activity in Manhattan

Building Permits in New York City



Truck Safety

Despite the importance of their functions, the size and weight of trucks pose safety challenges in dense urban environments, particularly when they conflict with pedestrians and cyclists. Blind spots in the front, back and sides of their vehicles make it difficult for truck drivers to see vulnerable road users. Broader adoption of safety technologies like increased field of vision truck cabs, truck back-up cameras, mirrors, and side guards can make a difference in preventing or reducing the severity of crashes.

The City will work to improve truck safety citywide through improved street designs, providing education to

all road users, fostering public private partnerships with city agencies and the trucking industry, and increased enforcement of dangerous truck driver behaviors.



Truck with a 53' trailer making a turn on a NYC street

Truck Crash Analysis

DOT performed a comprehensive analysis of truck-involved crashes between 2003 and 2019 and found the following trends and key factors at play:

Year over Year

From 2008 to 2016, truck crashes decreased by 22%, and truck crashes resulting in someone being killed or severely injured (KSI) decreased by 34%. Truck-involved cyclist and pedestrian fatalities reached a 15-year low of 12 in 2018 and a 15-year high of 30 in 2019. Injury data is not yet available for 2018 or 2019.

Severity

Although less frequent, crashes between trucks and pedestrians or cyclists are more likely to be severe. Between 2003 and 2016, 40% (243) of truck-involved pedestrian KSI and about 30% (61) of truck-involved cyclist KSI were fatalities. Broken down by borough, the most truck-involved pedestrian and cyclist KSI occurred in Manhattan (42%), followed by Brooklyn (29%) and Queens (18%).

Time of Day

About 80% of truck-involved KSI crashes occur during the day between 7AM and 7PM, with just over a quarter of those happening during midday hours.

Route Type

When analyzed by type of street, 69% of truck involved KSI crashes occurred on a designated truck route, which covers almost 18% of all NYC streets. Sixty-seven percent of truck-involved pedestrian and cyclist KSI crashes occurred on designated truck routes, where the majority of trucks travel.

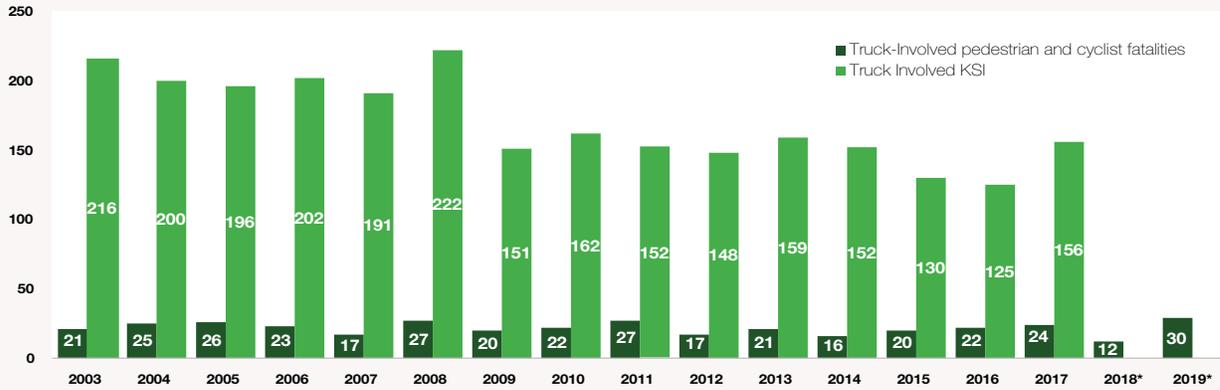
Truck Body Type

Of the 1,649 severe crashes where truck type is known, 84% (1,383) involve five common truck types: tractor trailers, delivery trucks, dump trucks, utility trucks and tow trucks.

Contributing Factors

Trucks turning at intersections pose significant risk to vulnerable road users; severe crashes with vulnerable road users while turning, 56.5% were turning right while 43.5% were turning left. Right side blind spots are larger for trucks than passenger vehicles; this increases the danger posed by trucks attempting to make right turns.

Truck-Involved KSI and Fatalities



*Official New York State crash data on injuries is not yet available for 2018 and 2019

To address the unique safety challenges, DOT developed a process for selecting priority corridors where pedestrian and cyclist deaths and severe injuries from trucks are most concentrated. This was accomplished using truck-involved pedestrian and

priority safety corridors fall within Vision Zero priority geographies, 17% of them fall outside of the priority geographies. DOT will prioritize these corridors for targeted safety interventions including engineering, enforcement and education.



Truck-involved cyclist and pedestrian fatalities reached a 15-year low of 12 in 2018 and a 15-year high of 30 in 2019.

cyclist KSI data from the last five available years (2012-2016). The 70 truck priority safety corridors account for 50% of total pedestrian and cyclist truck-involved KSI cumulatively. While some of these truck



Cyclists and pedestrians are particularly vulnerable during truck-involved crashes

Truck Safety Technologies



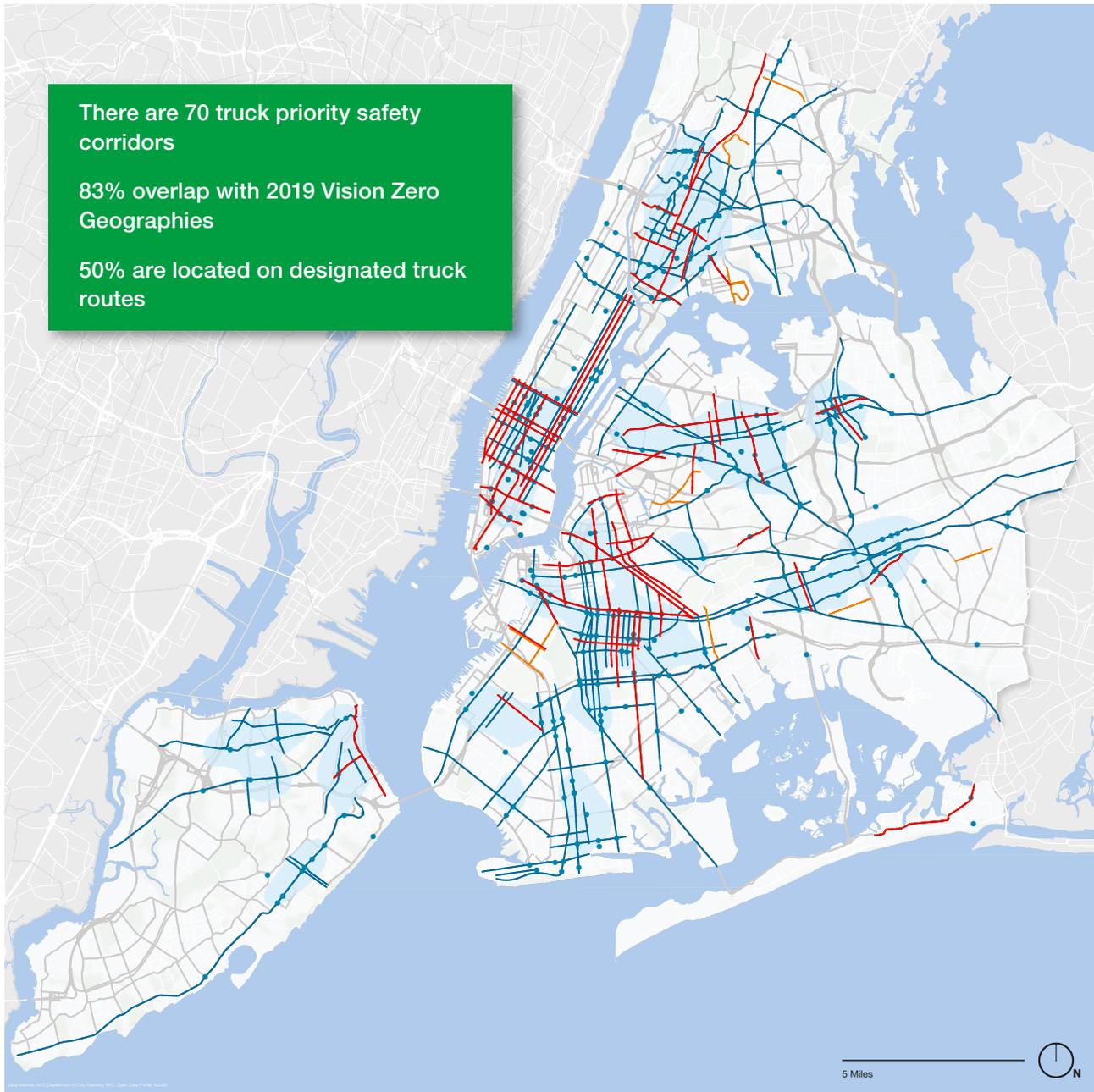
Crossover mirrors are a simple way of eliminating a truck driver's front blind spot. They are required by NYS law for trucks, tractors, and tractor-trailer or semitrailer combinations, operating with a maximum gross vehicle weight of 26,000 lbs or more, and a conventional cab configuration.



Truck side guards are protective panels on the sides of trucks that prevent cyclists and pedestrians from falling or rolling underneath the vehicle. By 2024, all eligible City fleet over 10,000lbs must be equipped with truck side guards. The city has installed over 3,065 truck side guards on its city fleet to date. In addition, the City has installed 1,617 safety lights, 1,734 automatic braking systems and hundreds more safety-enhancing accessories to continue its leadership in demonstrating municipal fleet safety.

Truck with Crossover Mirror (top) and DSNY collector truck with Vision Zero branded sideguard (bottom)

Figure 5: Truck Priority Safety Corridors and Vision Zero Geographies



- Truck Priority Safety Corridor in Vision Zero Geographies
- Truck Priority Safety Corridor
- Vision Zero Priority Intersection
- Vision Zero Priority Corridor
- Vision Zero Priority Area
- Truck Route

Environmental Effects

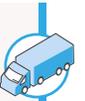
Trucks can have a considerable effect on communities and the environment. Understanding these effects can help the City plan for more equitable and sustainable freight movement in the future, including environmental justice air quality and emissions issues. As defined by the United States Environmental Protection Agency (EPA), “Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

Diesel is currently the predominant fuel used to power trucks operating in the city and produces many harmful emissions when burned. Trucks contribute significantly to the production of both greenhouse gas emissions and fine particulate matter (PM). Fine particulate matter can cause or exacerbate health issues and degrade environmental conditions. The EPA estimates that about 6% of total greenhouse gas emissions in the nation annually comes from medium- and heavy-duty trucks. About 3% of total PM10 (10 micron particles) and about 6% of PM2.5 (2.5 micron particles) in the atmosphere are from truck exhaust.

In New York City, communities adjacent to industrial areas and expressways have historically been burdened with a disproportionate share of the unwanted byproducts of trucking activity. The private medium- and heavy-duty vehicles that use these routes create 11% of transportation-related greenhouse gas emissions in the city, or about 3% of total greenhouse gas emissions. A 2016 New York City Department of Health and Mental Hygiene (DOHMH) study estimated that PM2.5 pollution from traffic sources contributed to 320 premature deaths and 870 emergency department visits and hospitalizations each year. PM2.5 levels from trucks and buses have a disproportionate impact on high-poverty neighborhoods in the city, with high-poverty neighborhoods experiencing 70% higher PM2.5 levels than higher income neighborhoods. Despite the impact of truck emissions on air quality, annual emissions inspection requirements for heavy-duty trucks are less stringent than requirements for passenger vehicles registered in New York State.

Older trucks often remain on the road for a significant length of time, despite the prevalence of newer, cleaner and greener trucks available in the market. Reducing the age of the truck fleet is a key step toward improving air quality in the city. A 2013 study for the New York City Business Integrity Commission (BIC) found that the average age of a construction waste truck is more than 14 years old, and the average age of a commercial waste truck is almost 16 years old. About one quarter of all trucks were 20 years old or older, and the oldest trucks in each fleet were more than 30 years old. In 2016, 57% of New York State commercial vehicle registrations had a vehicle make and model year of 2006 or older. The U.S Environmental Protection Agency (EPA) adopted more stringent emissions standards in 2006. Heavy Duty engine emissions for NOx were reduced from 4.0g /bhp-hr to 0.20 g/bhp-hr for any engines manufactured post 2006. PM emissions were reduced from 0.10 g/bhp-hr to 0.01 g/bhp-hr. (Source: EPA)

Historically, the unwanted byproducts of trucking activity have disproportionately impacted low-income communities.

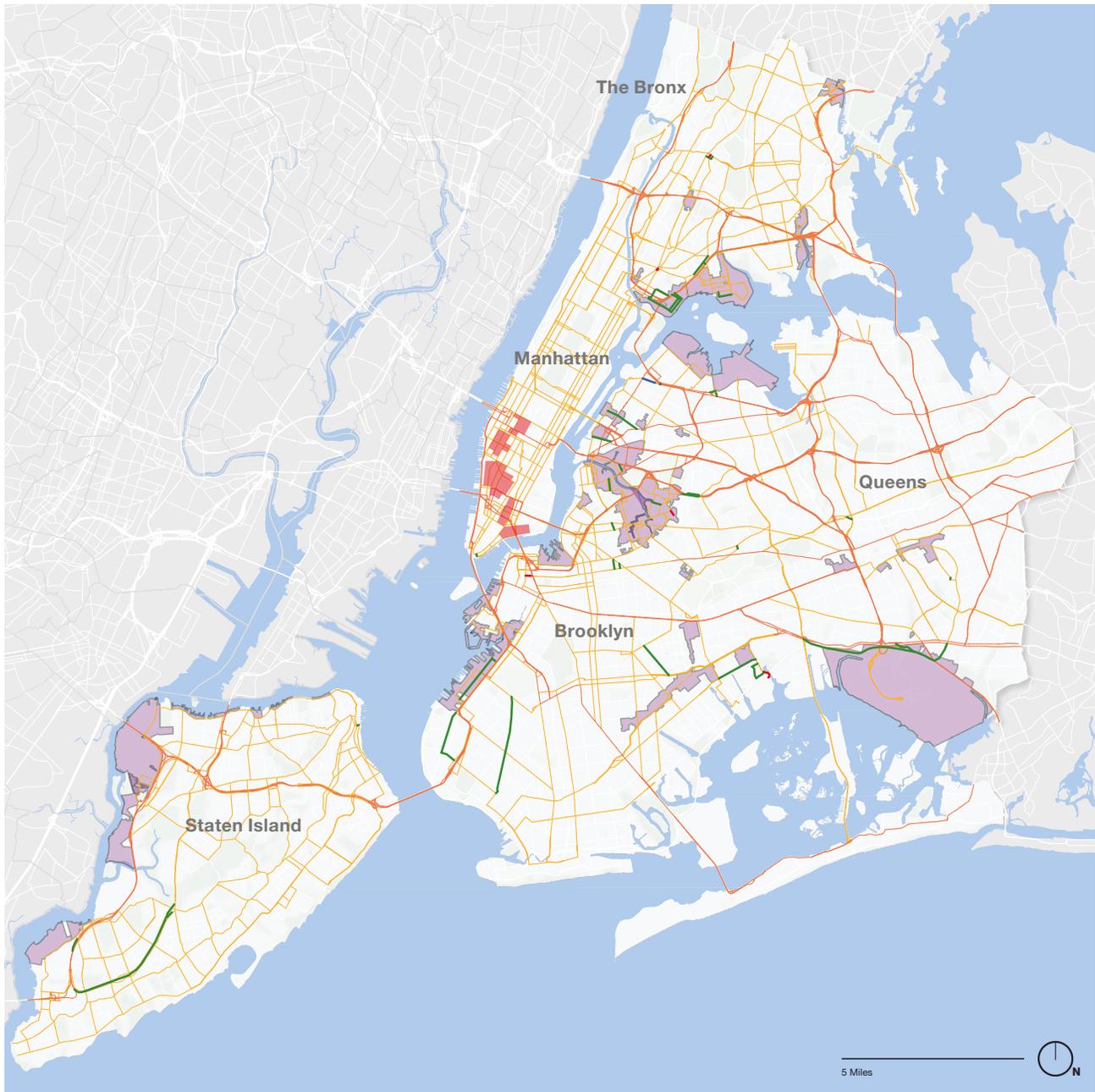


Hunts Point Clean Trucks Program

DOT’s Hunts Point Clean Trucks Program promotes sustainable transportation and a cleaner environment in the Hunts Point and Port Morris communities by offering rebate incentives to trucks owners. The incentives support the purchase of advanced transportation technologies and alternative fuels trucks, as well as exhaust retrofit technologies. To date, the program has successfully replaced, retrofitted, or scrapped 600 older heavy polluting diesel trucks, helping to improve air quality in the South Bronx, reducing particulate matter emissions by 96%. The effort also supports Vision Zero by installing truck side guards.



Figure 6: Truck Routes, Industrial Business Zones, and Environmental Justice Areas



-  Local Truck Route
-  Through Truck Route
-  Industrial Business Zones
-  Environmental Justice areas, as defined by NYC Local Law 60 and 64.

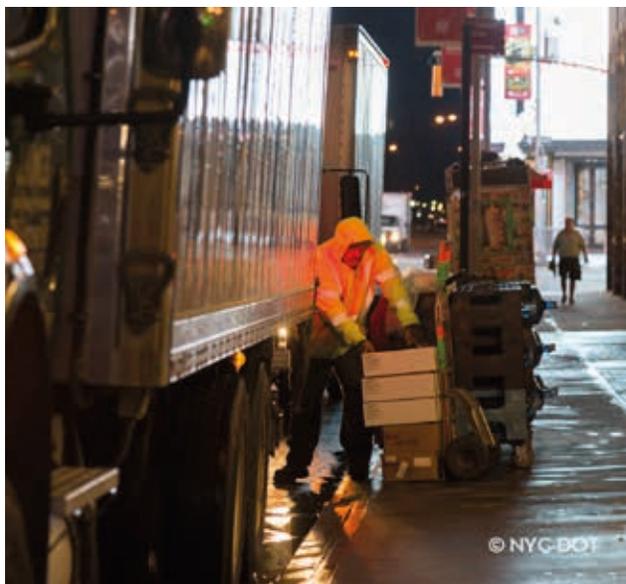
4.2 Opportunities: Getting Ready for the Future

New York City's population is expected to reach 9 million people by 2040 (NYCDCP), and this growth will bring increasing residential and commercial freight needs. Absent the development of alternative freight modes, the weight of freight carried by trucks is expected to grow by almost 70% over the next 25 years to almost 312 million tons. This may result in an additional 75,000 trucks crossing into the city every day. This additional truck traffic and associated wear on our infrastructure would need to be accommodated on an already constrained street network. The City must find more efficiencies in existing systems, or promote industry innovation in modal shift to marine, rail freight, and cargo cycles. The policy changes highlighted below will have enormous impacts on freight mobility in New York City over the next five years to ten years.

Managing Freight Demand

Central Business District Tolling Program

The growing traffic congestion in New York City threatens truck transportation productivity and ultimately the ability of sellers to deliver products to



Off-Hour deliveries can decrease congestion and emissions

market. Unreliable deliveries and failed delivery attempts result in higher costs of doing business in the city and relatedly, higher cost of goods. As part of the New York State 2019 Budget Bill, the New York State Legislature approved the MTA Reform and Traffic Mobility Act, paving the way for the nation's first congestion pricing program, referred to as the Central Business District Tolling Program (CBDTP). Vehicles will have to pay to enter Manhattan south of 60th Street. A six-member board, called the Traffic Mobility Review Board, will recommend toll rates and policies to the MTA, including those for trucks, with the MTA making the final decision. The specific details of the program, including the toll rates for trucks, have not yet been determined. The program requires the approval of the Federal Highway Administration (FHWA) and FHWA recently directed the MTA to conduct an Environmental Assessment. MTA's public engagement effort for the project is expected to start this spring.

Off-Hour Deliveries

The Off-Hour Deliveries (OHD) Program encourages goods delivery during the off-peak hours of 7 p.m. to 6 a.m. to decrease congestion and truck emissions, specifically in Midtown Manhattan, Lower Manhattan downtown Brooklyn, Flushing and Jamaica where there are high pedestrian volumes and limited curb space. Between 2016 and 2018, DOT developed a branding and media plan for the OHD program and conducted a survey of businesses, including freight transporters and receivers, to better understand how and when deliveries are made and the financial and logistical reasons behind these decisions. Mayor de Blasio launched the OHD initiative in April 2019 as part of a comprehensive program to reduce congestion, improve bus transit speeds and decrease the opportunity for conflicts with pedestrians and cyclists. With this initiative, DOT will triple the number of business locations participating in the OHD from 500 to 1500 by the end of 2021.

Off-Street Consolidation

The City must support creative ways of repurposing available space. Off-Street Consolidation presents an opportunity to rethink storage capacity and ways to simplify the transport of goods during the 'last mile'.

An Off-Street Consolidation program encourages property owners or lessees to temporarily house goods delivered by multiple vendors, destined for nearby goods receivers. The goods are stored (ideally overnight) in a secure space until they can be picked up by the intended recipient. By removing the 'last mile' truck delivery from the logistics chain, off-street consolidation helps to reduce roadway congestion and competition for curb access and deliveries during the most congested times of the day. DOT continues to work with private property owners throughout the city to develop off-street consolidation hubs.

Smart Curb Management

Emerging management technologies including pay-by-plate meter systems, license plate recognition, and virtual permit systems offer tools to keep pace with the changing landscape of transportation mobility. These tools enhance the efficiency of parking enforcement, help better manage and understand parking activity in dense areas, and control the needs of special use permitted vehicles. DOT will use this more detailed and continuous data on curb activity to better customize curb regulations according to demand, which could lead to more automated enforcement and even real-time curbside space information for truck drivers.



Smart curb management will be a key consideration to prepare New York City for the future

In 2019, DOT launched a Neighborhood Loading Zone program to reduce double parking on narrow streets with bus or bike lanes to help keep bus and bikes lanes clear of vehicles, reduce conflicts between cyclists and trucks, and improve bus travel times. The program provides curb space for active loading and unloading of personal vehicles, taxi or for-hire vehicles, and package deliveries from commercial vehicles. DOT will continue to evaluate the effectiveness of the program and explore its expansion to other neighborhoods across the city.

Truck Route Network Revisions

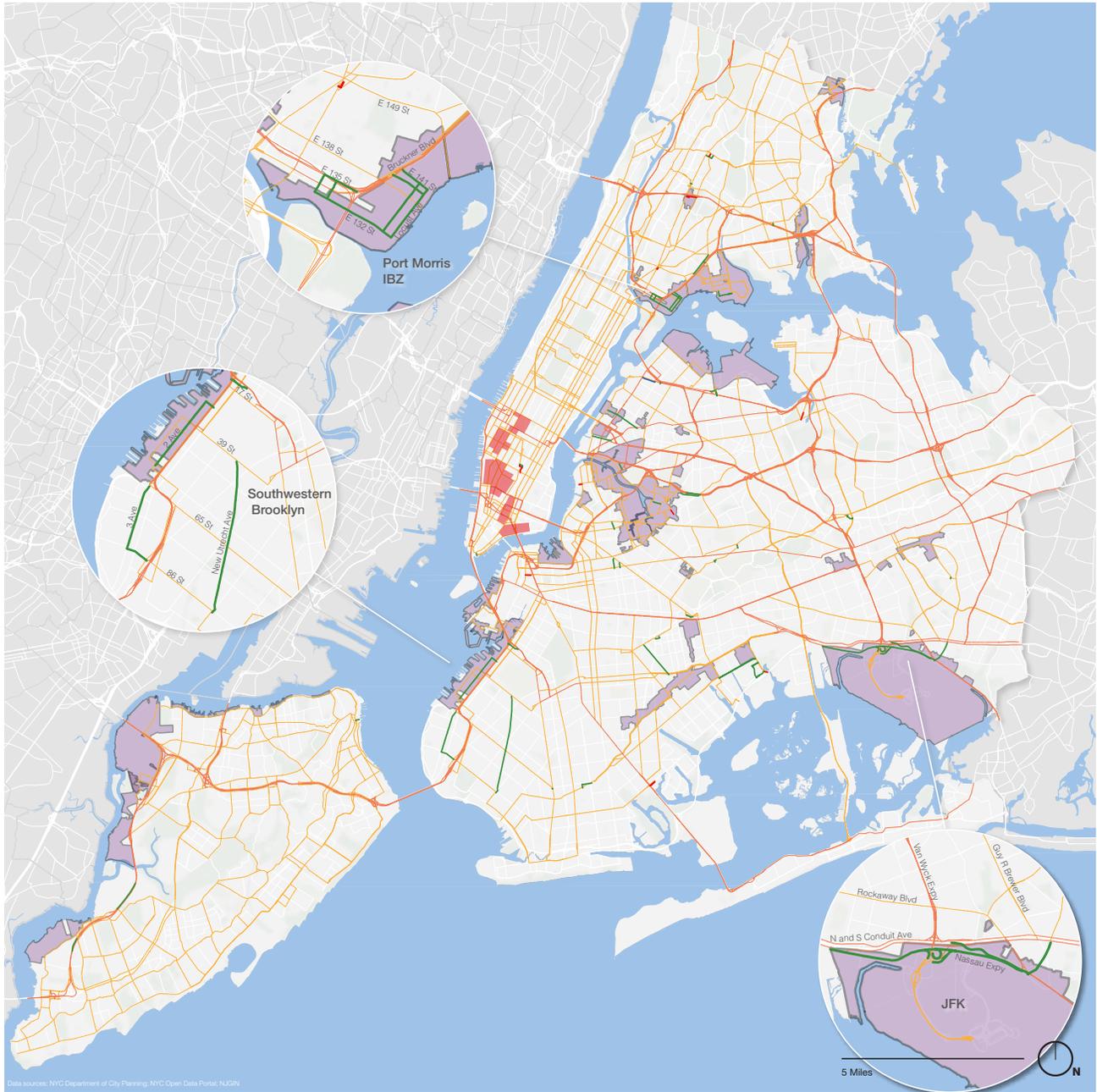
The Truck Route Network requires regular review and updating to keep up with changes in residential and commercial land use patterns, the transportation network, correct mismatches or inefficiencies, and adapt to changing delivery patterns from e-commerce and local distribution. This network was established in the 1970s and has largely remained the same. It was last updated with minor revisions in 2015 and 2018. The proposed truck route changes will add connectivity to, from, and within IBZs, and fill in gaps in the network along limited access highways and commercial corridors.

Summary of Proposed Truck Route Network Changes

- Adds 25.3 miles of new truck routes designation, a 3% expansion of the existing Truck Route Network, 48% of which are located in IBZs.
- Removes Manhattan Limited Truck Zones which are difficult to enforce because of their irregular boundaries, and present unnecessary restrictions on truck movement through commercial areas of Manhattan.
- Removes 1.63 miles of truck routes in Manhattan, Bronx, Brooklyn and Queens collectively.

DOT will advance the proposed changes through a formal NYC rulemaking process, including a public comment period. These changes will allow DOT to investigate the impact of truck route designation on truck volumes, industrial activity, and safety for vulnerable road users through before and after studies. Compliance and enforcement are key to these changes.

Figure 7: 2021 Proposed Truck Route Network Changes



Data sources: NYC Department of City Planning; NYC Open Data Portal; NCGI

- | | |
|--|---|
|  Route Additions |  Limited Truck Zone Removals |
|  Route Classification Changes |  Local Truck Route |
|  Route Removals |  Through Truck Route |
| |  Industrial Business Zones |

Greening NYC Freight Sector

Cargo Bikes –Reimagined Mode of Last-Mile Freight Delivery

Delivery companies in other countries, particularly in Europe, have introduced cargo bicycles for last mile delivery in dense urban areas. In December 2019, NYC announced a six-month cargo bicycle pilot concentrated in Manhattan's central business district. Commercial cargo bicycles and pedal-assist commercial bicycles are used by carrier and food delivery companies for use in the local market. The pedal assist feature makes them easy to pedal while carrying heavy loads. In the coming years, DOT expects more companies to use cargo bicycles for last-mile, low-weight and low-volume deliveries. The benefits of cargo bikes include noise and emissions reduction and increased delivery efficiency. It is estimated that two cargo bicycles can replace one delivery truck, leading to approximately 16 tons of CO₂ savings a year – the equivalent of 240 planted trees.

Alternative Fuel Vehicles

Alternative fuel and zero-emission vehicles are a vital component in achieving the City's goal of 80% emissions reduction by 2050. The City estimates that private medium- and heavy-duty vehicles contribute about 3% of total greenhouse gas emissions (NYC Office of Mayor). New technology in alternative fuel commercial vehicles, including electric vehicles, and natural gas powered buses and trucks, is increasing at a fast pace - although the high capital



Cargo Bike Pilot

cost is a major inhibitor to wider adoption. Though operations and maintenance costs for alternative fuel vehicles are lower than traditional vehicles, the upfront purchase costs are much higher. Coupled with limited infrastructure to supply alternative fuels, carriers face obstacles in purchasing and maintaining these vehicles. While longer trip lengths will likely increase the viability of these vehicles, current trends in the market indicate the “sweet spot” for alternative fuel vehicles is less than 150 miles, return to base or closed loop routes, and operations in urban or metropolitan areas. As the demand for these vehicles become more prevalent, production costs will go down and lower the purchase price. A multifaceted strategy to incentivize the wide adoption of these vehicles will help the City meet its climate and sustainability goals.

Emerging Intelligent Transportation Systems

The private sector will continue to innovate, especially on in-vehicle systems that include tracking and telematics, electronic logging devices, back-up cameras, intelligent braking systems, and vehicle-to-vehicle communication technologies, as well as providing infrastructure such as off-street parking and loading docks in buildings. DOT will monitor these innovations and when appropriate will encourage the adoption of the most effective systems either through incentive programs or rule changes.

Truck Route Navigation

Applications such as Google Maps and Waze are among the most commonly used navigation apps for all types of drivers and are often used by truck drivers. Truck drivers may use these apps in lieu of commercial GPS systems because they're cheaper or because they contain more real-time information. However, many smartphone applications do not include New York City truck routes or low clearance structure features and can cause issues for truck drivers who follow the routes they generate. As an alternative, new commercial navigation apps for smartphones are making it easier for truck drivers to access truck-specific directions at little or no cost. As part of our efforts to make truck navigation in the city easier,

DOT makes the truck route map available in various formats from print to electronic spatial datasets. The goal in making this data publicly available is to make it easier for truck drivers to plan routes, and for app developers to build routing systems for city that take the truck routes into account. Moving forward, DOT will work more closely with commercial GPS companies and app developers. DOT will also better incorporate data on low clearance structures into our public truck route map materials to reduce bridge strikes citywide.

Sensor Technology

Route Compliance (Over-Height Detection)

Over-height detection systems complement route planning, navigation tools, and static signage to protect the city's infrastructure and reduce bridge strikes. A truck driver approaching a low clearance structure may not know until they get close enough to see the posted height shown on a metal sign on the structure. Even so, the truck driver must compare the height of the truck to the posted height and determine in an instant if they must pull over to avoid hitting the bridge. Over-height detection systems attempt to solve that problem by using Light Detection and Ranging (LIDAR) laser technology to identify an over-height vehicle as it approaches the structure, and to alert the driver of the vehicle well in advance through dynamic messaging. The MTA Bridges and Tunnels



DOT crew installing a Weigh In Motion (WIM) device near the Alexander Hamilton Bridge. These devices collect information about truck weight as vehicles travel on the roadway.

and NYSDOT already manage these systems in the city, and the City is pursuing a pilot to install additional detection systems on the Belt Parkway in Brooklyn and near the RFK Bridge in Queens.

Weight Compliance (Overweight Detection)

Overweight inspections have traditionally been conducted by law enforcement personnel on portable scales at off-street or pull-over locations. However, the New York State Commercial Vehicle Enforcement Unit tasked with such inspections cannot catch all of the overweight trucks in the city. And New York City's highway network presents operational challenges to law enforcement personnel with limited available space to conduct truck stops. It is important to have technology systems in place that can provide additional weight data. This data will provide additional insight into how many or what percentage of trucks are overweight, which will help guide policy development and inform the deployment of enforcement teams.

More recently, DOT and NYSDOT have implemented weigh-in-motion systems with sophisticated sensors, magnetic loop detectors, and cameras. This technology weighs all trucks driving by the sensor and data can be collected continuously. The more widespread these weigh-in-motion sensors become, the more complete the picture they can provide on overweight truck activity in the city. On January 31, 2020, Mayor Bill de Blasio signed an Executive Order 51 to develop proposals to mitigate traffic and reduce overweight trucks on the BQE in addition to establishing a joint NYPD-DOT task force that will increase enforcement against illegal, overweight trucks. Increased enforcement and messaging have only had a short-term limited impact on the incidence of truck overloading on the BQE. It has been difficult to achieve a sustained shift in travel behavior. The task force is also charged with considering proposals that may require actions outside of the control of the City. This includes proposals that require action by the state legislature, including automating enforcement of weight restrictions on the BQE, and New York City supports passage of legislation to authorize such a program as soon as possible. Successful implementation on that corridor could be built upon to develop a comprehensive city-wide system on highways and bridges, as well as to prevent off-route and overweight trucks on our local street network.



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MAXON

Safe and efficient commercial waste management

Waste industry reform

In November 2019, Mayor de Blasio signed Local Law 199, creating the commercial waste zones program and laying the groundwork for comprehensive reform of the commercial waste industry. The Department of Sanitation (DSNY) has finalized rules establishing the 20 zones and will conduct a competitive procurement whereby up to three carters will be selected to service each zone. DSNY will begin a multi-year, phased implementation of commercial waste zones in 2022.

Five citywide contracts will also be awarded for the collection of containerized waste and compactors. This will reduce truck traffic associated with commercial waste collection by 50 percent, eliminating millions of heavy-duty truck miles from NYC streets every year, while strengthening service standards and allowing for customer choice. In addition, commercial waste zones will create a new regulatory framework that will improve customer service, protect public safety and worker rights, and achieve the City's zero waste goals.

DSNY is currently in the process of developing rules to require a safer fleet, which will be published this spring ahead of the RFP release. The CWZ law also establishes minimum training requirements for all awardees' drivers and helpers of at least 40 hours and requires the City to establish a safety taskforce

for the trade waste industry, resulting in reduced driver fatigue, and reduced incentives for drivers to speed and cut corners at the expense of public safety. Additionally, the RFP will require the submission of health and safety plans, where companies with bolder commitments to safe fleets and robust training programs will receive higher scores and will be more likely to win contracts. The RFP scoring process will also evaluate the past safety records of all proposing companies. Once awards are made, safety commitments will be written into contracts and enforced through liquidated damages or threat of contract termination.

Local Law 199 also introduces minimum standards for worker training, including driver training. Commercial waste haulers will be required to provide at least 40 hours of training to all drivers and helpers, with mandatory annual refresher trainings as well. Local Law 199 requires DSNY and BIC to work with City Council to create an 11-member Commercial Waste Zone Safety Task Force comprised of industry representatives from industry representatives, safety experts, worker representatives, labor unions and other stakeholders.



Image source: DCAS



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24 hr. Parking
16.99
Monthly parking available

Warning
Construction Area



5

Borough Overviews



Freight is an integral and inescapable part of the lives of all New Yorkers, moving everything from cookies to concrete, providing a valuable source of jobs, and supporting sustainable and livable communities. With 8.4 million residents, 4.5 million workers, and 62 million tourists each year, nearly all of the food in our refrigerators, the paper on their desks, and the souvenirs in the shops are moved through the five boroughs at some point as freight.

The following profiles were created to highlight the unique trends and changing landscape of freight mobility across the five boroughs. These borough profiles enable a more contextual narrative and looks at demographic data collected from the US Census Bureau combined with data on economic development, freight movement, and truck activity. They highlight key issues and challenges affecting freight mobility at the borough-wide level.

THE BRONX

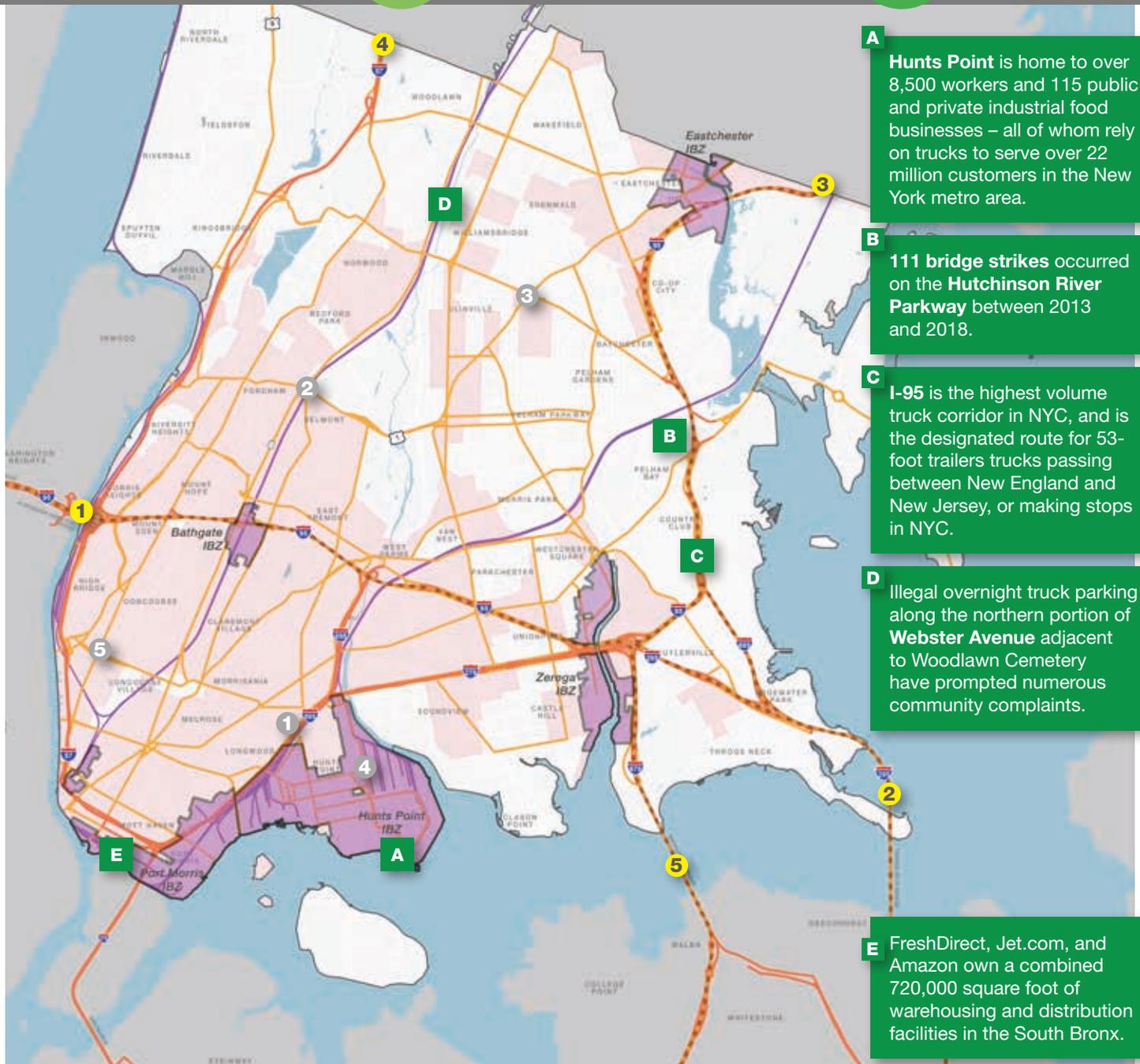
BOROUGH KEY FINDINGS



103,608 Trucks
Cross the Bronx border daily



172 Miles
of Truck Routes



A Hunts Point is home to over 8,500 workers and 115 public and private industrial food businesses – all of whom rely on trucks to serve over 22 million customers in the New York metro area.

B 111 bridge strikes occurred on the Hutchinson River Parkway between 2013 and 2018.

C I-95 is the highest volume truck corridor in NYC, and is the designated route for 53-foot trailers trucks passing between New England and New Jersey, or making stops in NYC.

D Illegal overnight truck parking along the northern portion of Webster Avenue adjacent to Woodlawn Cemetery have prompted numerous community complaints.

E FreshDirect, Jet.com, and Amazon own a combined 720,000 square foot of warehousing and distribution facilities in the South Bronx.

Home to 1.4 million residents, **the Bronx** plays an important role as a regional distribution hub, supplying food, materials, and goods to residents and businesses across the five boroughs and beyond. Its mainland connection to the rest of the northeast is key, and industrial businesses and delivery-oriented companies like FreshDirect, Jet.com,

and Amazon have recently invested in large warehouse facilities in the Bronx to take advantage of the borough's land use and transportation network. Looking ahead, the Bronx is well-positioned to attract new freight companies and warehousing to serve the city's population, particularly for the e-commerce market.

- Local Truck Route
- Through Truck Route
- Exception 53' Trailers Allowed
- Industrial Business Zones
- Environmental Justice Areas
- Freight Rail Network



Data Source: NYC DOT

TRUCK ACTIVITY



The Bronx's extensive network of highways means a lot of the trucks that pass through the Bronx do not end up on local streets.

An average of 103,608 trucks cross the Bronx boundary daily. The most heavily-trafficked highway for trucks in NYC is I-95, which connects to Manhattan via the Alexander Hamilton Bridge and Westchester via the New England Thruway. Truck volumes on commercial corridors and local truck routes are lower by comparison, but still attract truck activity that can affect adjacent neighborhoods.

DAILY TWO-WAY TRUCK VOLUMES AT MAJOR CROSSINGS

- 1 **37,078** I-95 Bridge
- 2 **13,929** Throgs Neck Bridge
- 3 **8,852** I-95 New England Thruway
- 4 **8,094** I-87 Major Deegan Expressway
- 5 **7,918** Bronx-Whitestone Bridge

DAILY TWO-WAY TRUCK VOLUMES ON MAJOR ARTERIAL TRUCK ROUTES

- 1 **3,843** Bruckner Blvd at Tiffany St
- 2 **1,713** Fordham Rd at Webster Ave
- 3 **1,384** Boston Rd at Gun Hill Rd
- 4 **1,236** Halleck St at Spofford Ave
- 5 **1,156** 161 St at Grand Concourse

Data Source: NYC DOT

COMPLIANCE



Parking violations in the Bronx account for 4.1% of all citywide commercial vehicle violations. In 2016, the top violations were issued for blocking traffic, overnight truck parking, and parking beyond allowed time limits. The Bronx has a number of parkways that trucks are not permitted to use, and the majority of Bronx bridge strikes happen on parkways, particularly the Hutchinson River Parkway.

Recent interventions, such as increased signage and pavement markings, have led to steady decreases in Bronx bridges strikes since 2014.

BRONX BRIDGE STRIKES PER YEAR (2013-2018)



Data Source: NYC DOT

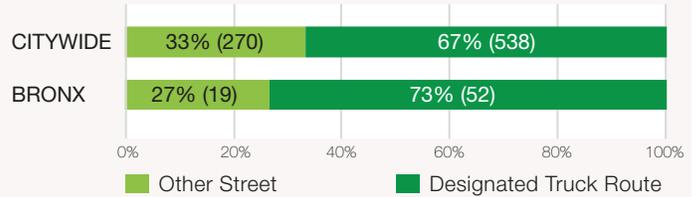
SAFETY



Between 2003 and 2016, trucks were involved in 7% of the 9,511 crashes in the Bronx, as compared to 6% of crashes citywide. Truck crashes accounted for only 2% of the total ped/bike KSI in the Bronx, though there's been an uptick in truck-involved cyclist fatalities citywide over the last 3 years.

9% of NYC ped/bike truck KSI occurred in the Bronx. Of these, 73% happened on designated truck routes in the Bronx, compared to 67% citywide.

TRUCK-INVOLVED VULNERABLE ROAD USER KSI (2003-2016)



Data Source: NYC DOT

COMMODITY FLOW



The Bronx is a focal point of commodity exchanges between southern New England, New Jersey, and the rest of New York City.

Most goods moved in the Bronx consisted of shipments from warehouses and distribution centers to stores, or shipments being drayed from rail, air, or marine terminals. Trucks carried about 92% of all freight in 2012 and will continue to remain the predominant mode past 2045. The total tonnage moved in the Bronx is expected to grow by 34% from 2012 to 2045.

EQUITY & ENVIRONMENT



Neighborhoods with combined concentrations of high poverty levels (U.S. Census Bureau) and minority populations qualify much of the Bronx as an environmental justice area under both federal and city thresholds.



Many of these households are located along I-95, or are near Hunts Point or Port Morris, and are exposed to local truck traffic serving industrial and distribution facilities. In these locations, the community is disproportionately exposed to truck noise, vibration, particulate matter, and NOx (Nitrogen Oxide). To address these issues, the Hunts Point Clean Truck Program has replaced over 600 older trucks with newer and more environmentally-friendly vehicles, reducing emissions, and leading to cleaner air for Bronx residents.

BROOKLYN

BOROUGH KEY FINDINGS



73,583 Trucks
Cross the Brooklyn border daily



198 Miles
of Truck Routes

A Of the 39,920 people employed in Sunset Park, more than 56% of them work in traditional truck-generating industries such as retail, warehousing, manufacturing, and construction.

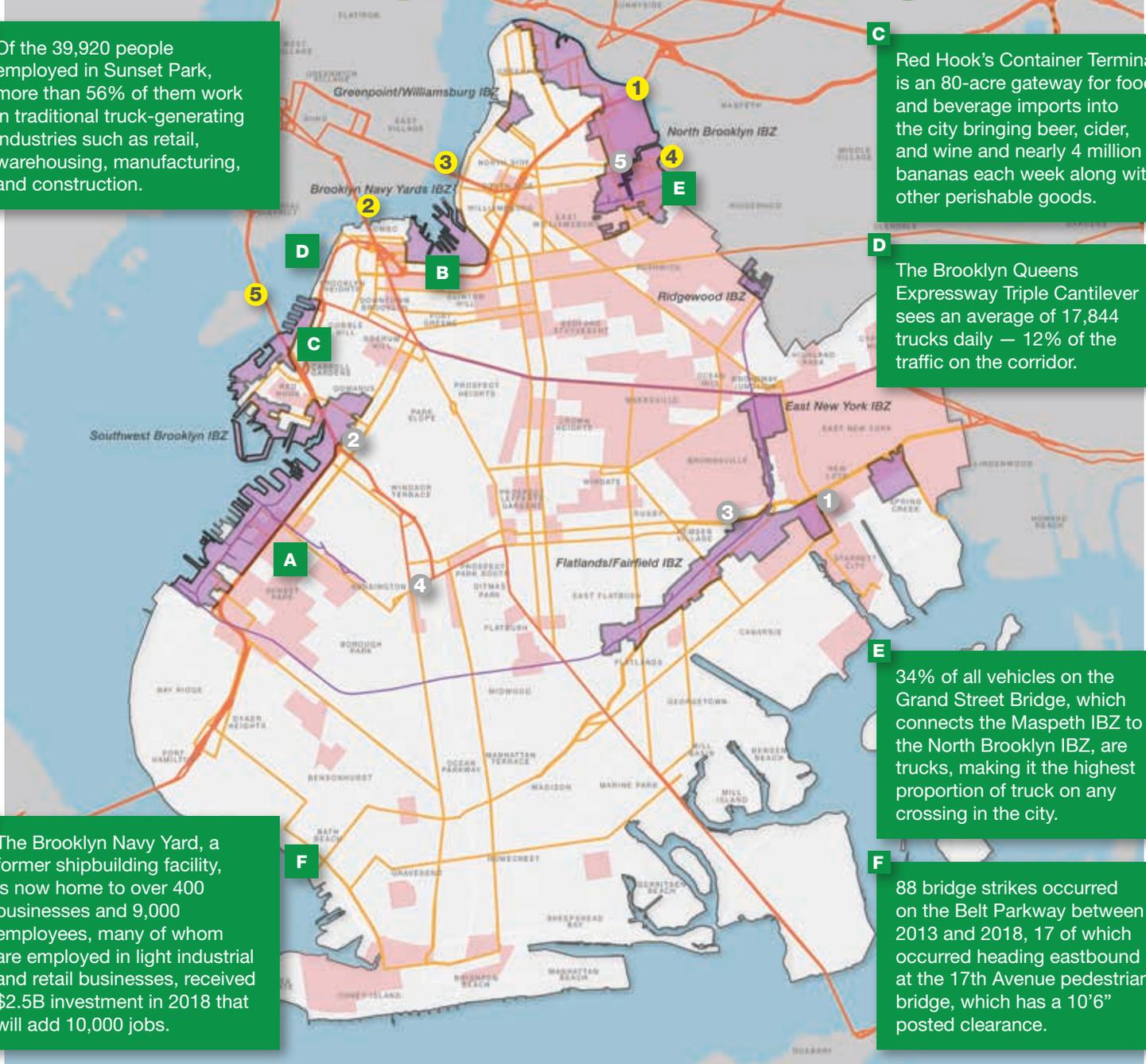
C Red Hook's Container Terminal is an 80-acre gateway for food and beverage imports into the city bringing beer, cider, and wine and nearly 4 million bananas each week along with other perishable goods.

D The Brooklyn Queens Expressway Triple Cantilever sees an average of 17,844 trucks daily — 12% of the traffic on the corridor.

E 34% of all vehicles on the Grand Street Bridge, which connects the Maspeth IBZ to the North Brooklyn IBZ, are trucks, making it the highest proportion of truck on any crossing in the city.

F 88 bridge strikes occurred on the Belt Parkway between 2013 and 2018, 17 of which occurred heading eastbound at the 17th Avenue pedestrian bridge, which has a 10'6" posted clearance.

B The Brooklyn Navy Yard, a former shipbuilding facility, is now home to over 400 businesses and 9,000 employees, many of whom are employed in light industrial and retail businesses, received \$2.5B investment in 2018 that will add 10,000 jobs.



Brooklyn is the city's most populous borough with 2.6 million residents, making up nearly a third of the city's population. Brooklyn is one of two boroughs that receives containerized goods by ship, namely at Red Hook and South Brooklyn Marine Terminals. Emerging collaborative spaces in Sunset Park, Brooklyn Navy Yard, and North Brooklyn feature a combination of light manufacturing, office,

retail, and event spaces in larger multi-use complexes and continue to attract a variety of truck activity. Looking ahead, the growing density of mixed-used residential and commercial developments continue to transform Brooklyn neighborhoods while industrial neighborhoods continue to attract new freight and logistics facilities to serve the growing e-commerce market.

-  Local Truck Route
-  Through Truck Route
-  Exception 53' Trailers Allowed
-  Industrial Business Zones
-  Environmental Justice Areas
-  Freight Rail Network



Data Source: NYC DOT

TRUCK ACTIVITY



An average of 73,583 trucks cross the Brooklyn boundary daily, the second lowest volume of any borough. Though some of these truck trips originate in Brooklyn, all trips coming into Brooklyn from outside of the city must pass through another borough first. The Brooklyn Queens Expressway (BQE) is the only interstate highway in the borough; it is a critical regional and inter-borough truck connector, carrying more than 25% of all trucks into and out of Brooklyn.

Truck routes like Atlantic and 3rd Avenues, carry truck volume comparable to highways, and have increased exposure to vulnerable road users.

DAILY TWO-WAY TRUCK VOLUMES AT MAJOR CROSSINGS

- 1 **19,657** Kosciuszko Bridge
- 2 **6,428** Manhattan Bridge
- 3 **5,299** Williamsburg Bridge
- 4 **4,480** Grand St Bridge
- 5 **3,652** Brooklyn Battery Tunnel

DAILY TWO-WAY TRUCK VOLUMES ON MAJOR ARTERIAL TRUCK ROUTES

- 1 **11,364** Atlantic Ave at Pennsylvania Ave
- 2 **9,656** 3 Ave at Prospect Ave
- 3 **6,079** Linden Blvd at Rockaway Ave
- 4 **6,015** Church Ave at McDonald Ave
- 5 **6,004** Metropolitan Ave at Vandervoort Ave

Data Source: NYC DOT

COMPLIANCE



In 2016, Commercial vehicles parking violations in Brooklyn account for 5.9% of all citywide commercial vehicle violations. The top violation was blocking traffic, followed by trucks parking overnight in residential areas, and parking beyond allowed time periods.

Between 2013 and 2018, the Belt Parkway, which doesn't allow commercial vehicles, is ranked the 2nd highest bridge strike corridor citywide, next to the Bronx's Hutchinson River Parkway.

TRUCK-INVOLVED VULNERABLE ROAD USER KSI (2003-2016)



Data Source: NYC DOT

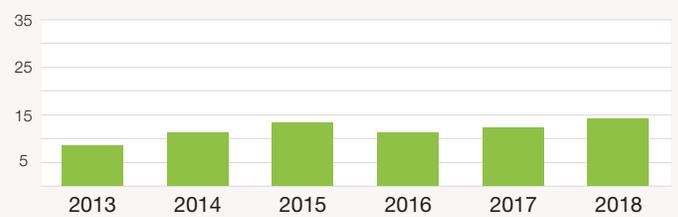
SAFETY



Between 2003 and 2016, trucks were involved in 6% of the 285,210 crashes in Brooklyn. Trucks accounted for 3% of ped-bike KSI crashes in Brooklyn.

29% of citywide ped-bike truck KSI crashes occurred in Brooklyn. Of these, 50% occurred on designated truck routes, compared to 67% citywide.

BROOKLYN BRIDGE STRIKES PER YEAR (2013-2018)



Data Source: NYC DOT

COMMODITY FLOW



Most goods moved in Brooklyn consists of shipments moving from warehouses and distribution centers, or shipments being drayed from rail, air, or marine terminals.

Trucks carried about 90% of all freight in 2012 and truck tonnage is projected to increase by 40% in 2045 to 82 million tons, faster than other freight mode in the coming decades.

EQUITY & ENVIRONMENT



Neighborhoods with combined concentrations of high poverty levels and minority populations qualify portions of Red Hook, Sunset Park, and large portions of the northeastern section of Brooklyn as environmental justice areas under both federal and city thresholds.



About 20.6% of people live below the poverty level, the second highest percentage among the five boroughs. Brooklyn's limited interstate highway network partly limits the exposure of these communities to large volumes of through trucks along the Brooklyn waterfront. However, communities in North and Eastern Brooklyn are disproportionately exposed to truck noise, vibrations, particulate matter, and Nitrogen Oxide (NOx) emissions from diesel engines near high volume arterials like, Atlantic Avenue, and Linden Boulevard. While serving as important access points for waterborne freight, a significant portion of Brooklyn's shorelines are subjected to flood risk.

A 2.5-foot sea level rise would inundate critical industrial business zones in North Brooklyn, Southwest Brooklyn, and Flatlands/Fairfield.

MANHATTAN

BOROUGH KEY FINDINGS



125,621 Trucks
Cross the Manhattan border daily

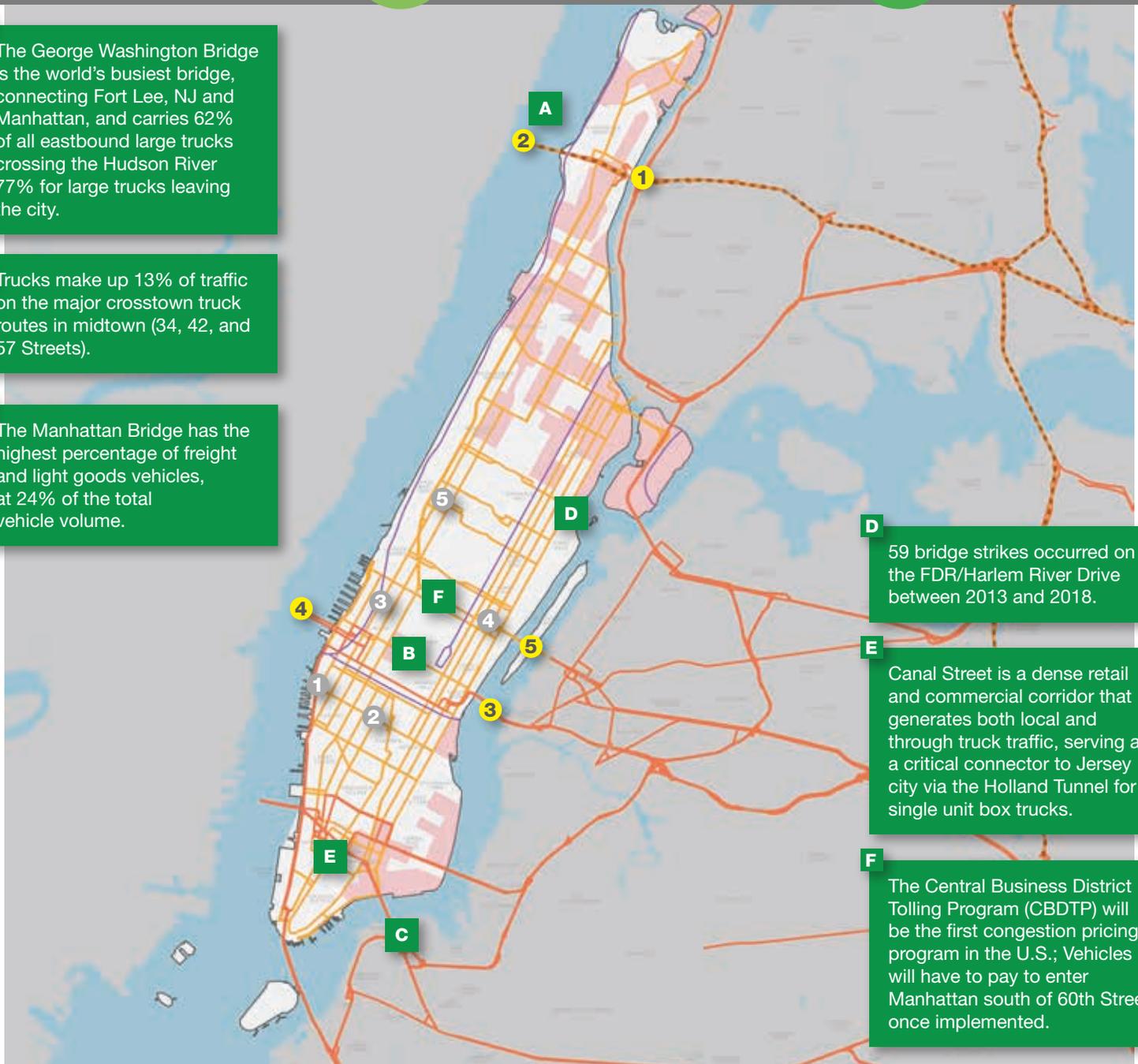


130 Miles
of Truck Routes

A The George Washington Bridge is the world's busiest bridge, connecting Fort Lee, NJ and Manhattan, and carries 62% of all eastbound large trucks crossing the Hudson River 77% for large trucks leaving the city.

B Trucks make up 13% of traffic on the major crosstown truck routes in midtown (34, 42, and 57 Streets).

C The Manhattan Bridge has the highest percentage of freight and light goods vehicles, at 24% of the total vehicle volume.



D 59 bridge strikes occurred on the FDR/Harlem River Drive between 2013 and 2018.

E Canal Street is a dense retail and commercial corridor that generates both local and through truck traffic, serving as a critical connector to Jersey city via the Holland Tunnel for single unit box trucks.

F The Central Business District Tolling Program (CBDTP) will be the first congestion pricing program in the U.S.; Vehicles will have to pay to enter Manhattan south of 60th Street once implemented.

Despite being the smallest borough by land area, **Manhattan** is home to 1.6 million people, making it one of the most populous counties in the United States. Manhattan is the largest employment center in the city, with concentrations in finance and other service industries. Its daytime population nearly doubles during a typical weekday and generates the most freight trips by borough. Manhattan has seen recent growth

in the number of residential towers – including several ‘supertall’ towers over 1,000’ tall – in Midtown, Lower Manhattan, and Hudson Yards, with more likely to come online in other neighborhoods such as Harlem, Sutton Place, and Flatiron. Demand for both high-density commercial and residential development in Manhattan will increase the number of truck trips into Manhattan.

-  Local Truck Route
-  Through Truck Route
-  Exception 53' Trailers Allowed
-  Industrial Business Zones
-  Environmental Justice Areas
-  Freight Rail Network



Data Source: NYC DOT

TRUCK ACTIVITY



Manhattan has the 2nd highest truck border crossings per day, with an average of 125,621 daily trucks. Truck traffic volume is concentrated in Midtown and Downtown Manhattan and major tunnels and bridges. Through truck traffic moves through Manhattan into the Bronx from the George Washington Bridge, into Queens through the Ed Koch Queensboro Bridge and Queens Midtown Tunnel, and into Brooklyn across the Williamsburg and Manhattan bridges.

80% of commercial vehicle activity in Midtown CBD is concentrated between 7am and 7 pm, when businesses are open to customers.

DAILY TWO-WAY TRUCK VOLUMES AT MAJOR CROSSINGS

1	37,078	I-95 Bridge
2	31,764	George Washington Bridge
3	7,298	Queens Midtown Tunnel
4	7,099	Lincoln Tunnel
5	6,924	Queensboro Bridge

DAILY TWO-WAY TRUCK VOLUMES ON MAJOR ARTERIAL TRUCK ROUTES

1	9,684	West Side Highway at 24 St
2	6,885	6 Ave at 23 St
3	6,384	10 Ave at West 52 St
4	6,210	2 Ave at East 60 St
5	5,745	Amsterdam Ave at West 86 St

Data Source: NYC DOT

COMPLIANCE



Manhattan has the most truck parking violations of any borough, accounting for 85% of citywide violations. Parking beyond the time limit accounted for 44% of Manhattan violations, an indicator of longer dwell times needed to service dense vertical markets. Other violations were blocking traffic, zone double parking, and loading in restricted areas.

Since 2013, bridge strikes were concentrated at three low bridges on the FDR Drive: East 52nd (25 crashes), Gracie Mansion (East 90th Street; 21 crashes), and East 62nd Street (13 crashes).

TRUCK-INVOLVED VULNERABLE ROAD USER KSI (2003-2016)



Data Source: NYC DOT

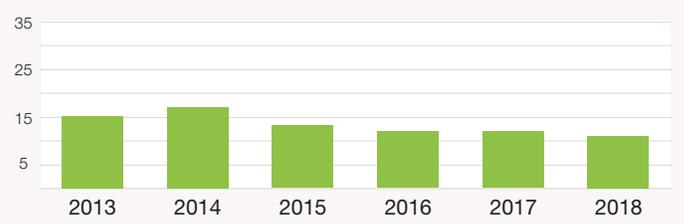
SAFETY



Between 2003 and 2016, trucks were involved in 7% of the 172,621 crashes in Manhattan. Trucks accounted for 5% of ped-bike KSI crashes in Manhattan.

42% of citywide ped-bike KSI truck KSI occurred in the Manhattan. Of these 75% occurred on designated truck routes, compared to 67% citywide.

MANHATTAN BRIDGE STRIKES PER YEAR (2013-2018)



Data Source: NYC DOT

COMMODITY FLOW



Trucks carried over 98% of freight in Manhattan in 2012 and will continue to remain the predominant mode past 2045.

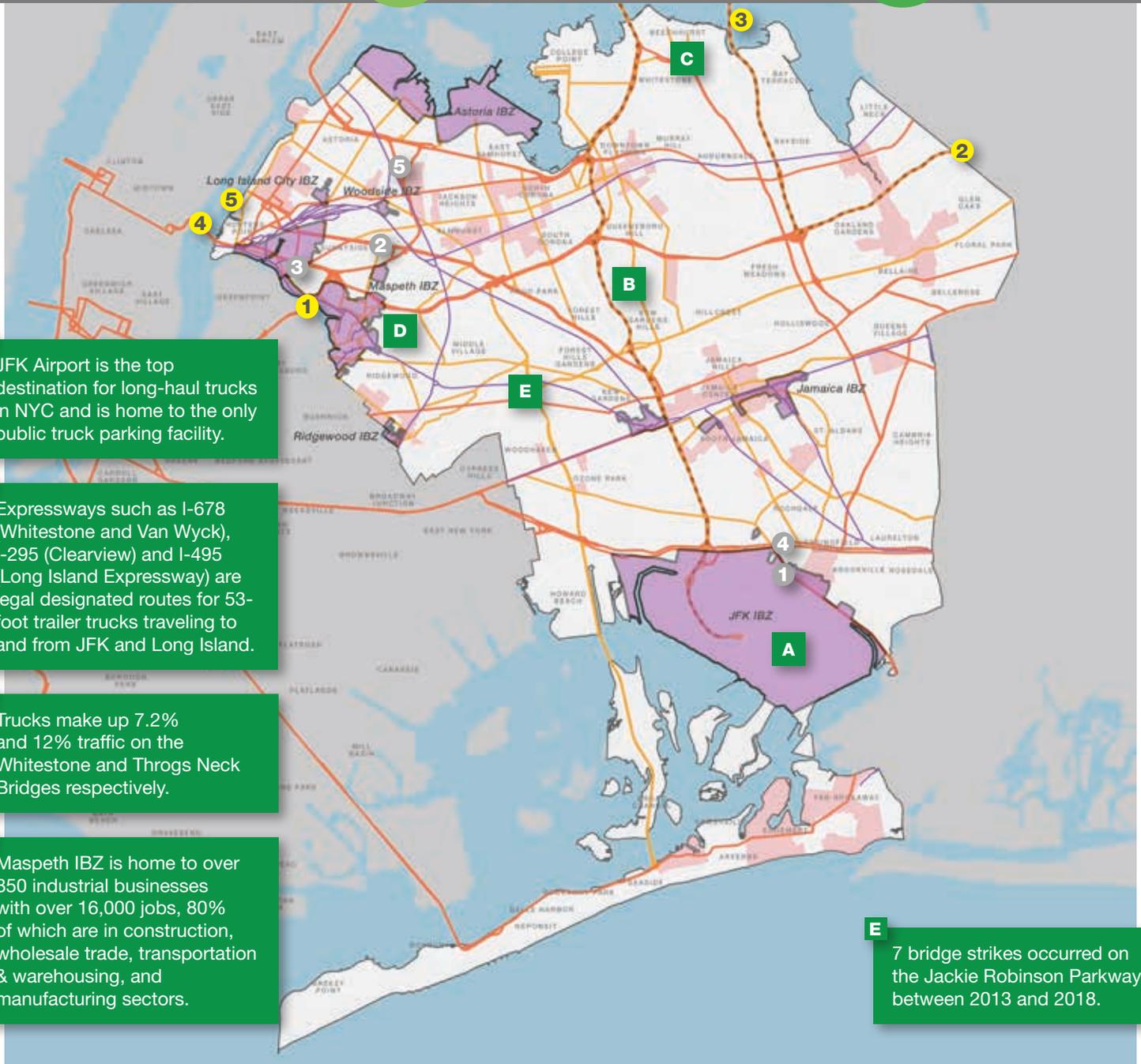
In 2012, approximately 53.5 million tons of freight moved into, out of, or within Manhattan. By 2045, freight flows are expected to grow 58% to 84.4 million tons.

EQUITY & ENVIRONMENT



Neighborhoods with combined concentrations of high poverty levels and minority populations qualify areas like Harlem, Washington Heights, Midtown, East Village and Lower East Side as environmental justice areas under both city and federal thresholds.

In Manhattan, 17.2% of households live below the poverty limit. The high number of vehicle and truck traffic in Manhattan attribute to pollution and poor air quality. A majority of these households are in neighborhoods adjacent to heavily used truck routes, including Harlem River Crossings, 125th Street, the RFK Bridge and approaches to the Manhattan and Williamsburg Bridges. These communities are disproportionately exposed to truck noise, vibration and emissions, especially particulate matter and Nitrogen Oxide (NOx.) from diesel engines.



With a population over 2.3 million, nearly half of **Queens** residents are born outside of the U.S., making it one of the world's most diverse urban areas. Queens has over a third of the city's land area and has the highest share of industrial business zones which are concentrated along the rail infrastructure in western Queens and areas surrounding airports. Despite the large industrial presence, half of the borough is zoned for residential. Development

and infrastructure changes in Long Island City and dense bustling retail districts like Flushing, Elmhurst and Jamaica will continue to attract truck trips. JFK Airport, the metro region's busiest cargo airport, moves 1.3 million tons of air freight per year. The City and PANYNJ have committed to increase air-freight capacity and market share at JFK; these investments will have a significant effect on future freight movement in Queens.

- Local Truck Route
- Through Truck Route
- Exception 53' Trailers Allowed
- Industrial Business Zones
- Environmental Justice Areas
- Freight Rail Network



Data Source: NYC DOT

TRUCK ACTIVITY



Queens sees 130,344 trucks cross its borders daily, the most citywide; it has as many through truck routes compared to all the other boroughs combined.

A large share of truck volumes in Queens are carried by limited access highways like I-278, I-495, and I-678, with goods entering from both Staten Island, the Bronx, Manhattan and Long Island. All the crossing points along the particular section of the Brooklyn/Queens boundary from Greenpoint Avenue to Flushing Avenue have high truck percentages.

DAILY TWO-WAY TRUCK VOLUMES AT MAJOR CROSSINGS

- 1 **19,657** Kosciuszko Bridge
- 2 **16,966** Long Island Expressway
- 3 **13,929** Throgs Neck Bridge
- 4 **7,298** Queens-Midtown Tunnel
- 5 **6,924** Queensboro Bridge

DAILY TWO-WAY TRUCK VOLUMES ON MAJOR ARTERIAL TRUCK ROUTES

- 1 **7,578** Rockaway Blvd at Farmers Blvd
- 2 **7,257** Queens Blvd at 58 St
- 3 **5,439** Review Ave at Greenpoint Ave
- 4 **4,062** Rockaway Blvd at South Conduit Ave
- 5 **2,299** Main St and Northern Blvd

Data Source: NYC DOT



COMPLIANCE

Queens contributes to 4.7% of citywide truck parking violations. The top violation in Queens was blocking traffic, followed closely by parking beyond allowed time periods and trucks parking overnight in a residential area.

Almost 70% of all commercial vehicle violations in the 113th Precinct in Queens, which includes JFK Airport and other areas, were residential zone parking violations, indicating overnight truck parking needs.

The two most frequent bridge strike locations in Queens, the Belt Parkway at 130th Street and the Jackie Robinson Parkway at Markwood Place, together account for 20 bridge strikes between 2013 and 2018.

TRUCK-INVOLVED VULNERABLE ROAD USER KSI (2003-2016)



Data Source: NYC DOT

SAFETY



Between 2003 and 2016, trucks were involved in 6% of the 285,022 crashes in Queens. Trucks accounted for 3% of ped-bike KSI crashes in Queens.

18% of citywide ped-bike truck KSI crashes occurred in the Queens; of these, 67% occurred on designated truck routes, the same as the citywide average.

QUEENS BRIDGE STRIKES PER YEAR (2013-2018)



Data Source: NYC DOT

COMMODITY FLOW



The top commodity moving in Queens is nonmetallic minerals, much of which is used as construction material.

Among the top commodities moving in Queens County, food products and waste/scrap materials are expected to grow by the greatest percentages, 85% and 96%, respectively. The volume of freight in Queens is expected to grow 41% to 68.1 million tons, by 2045. Air and rail-freight movement are projected to increase during this period.

EQUITY & ENVIRONMENT



Neighborhoods with combined concentrations of high poverty levels and minority populations qualify areas like Flushing, East Elmhurst and South Jamaica as Environmental Justice areas under both federal and city thresholds.

These areas in close proximity to heavily traveled highways with high numbers of trucks such as I-278, I-495 and I-678 and are disproportionately exposed to truck noise, vibration and emissions, especially particulate matter and Nitrogen Oxide (NOx) from diesel engines that predominately power trucks.



A The Verrazano-Narrows Bridge sees over 12,000 daily truck crossings as compared to 8,000 on the Goethals Bridge.

B The Global Container Terminal (GCT) is one of two container terminals in the City and transfers about 50% of the city's solid waste in addition to international freight. In 2018, DOT designated a safe and legal route for trucks carrying sealed shipping containers from the Goethals Bridge to GCT, increasing the regional and global competitiveness of this NYC port.

C Amazon and IKEA own a combined 1.83 million square foot of warehousing and distribution facilities at the Matrix Global Logistics Park on Staten Island's West Shore.

D Empire Outlets, the 350,000-square-foot retail complex in the St. George neighborhood of the North Shore, opened in 2019 and will continue to introduce additional freight demand to the North Shore.

E There were only 3 recorded bridge strikes in Staten Island between 2013 and 2018, one of which occurred on the West Shore Expressway.



Staten Island is the most suburban of all the boroughs, and though it is the smallest borough by population (approximately 475,000), it is the third largest by size and has the highest median income. In addition to residential growth and construction activity, Staten Island is expected to see the highest growth in freight

tonnage out of all five boroughs. As private sector companies and the City at large look to invest significantly in commercial industrial properties like Empire Outlets on the North Shore and Global Logistics Park on the West Shore, the borough is likely to see rising numbers of truck trips across its roadways.

- Local Truck Route
- Through Truck Route
- Exception 53' Trailers Allowed
- Industrial Business Zones
- Environmental Justice Areas
- Freight Rail Network



Data Source: NYC DOT

TRUCK ACTIVITY



An average of 26,407 trucks cross into Staten Island on a daily basis. Most of truck traffic in Staten Island is along I-278, followed by the traffic on West Shore Expressway.

32% of all large trucks crossing eastbound into the city over the four Hudson River crossings come through the Verrazano-Narrows Bridge, compared to 16% in the westbound direction.

DAILY TWO-WAY TRUCK VOLUMES AT MAJOR CROSSINGS

- 1 **12,368** Verrazano-Narrows Bridge
- 2 **8,514** Goethals Bridge
- 3 **5,022** Outerbridge Crossing
- 4 **503** Bayonne Bridge

DAILY TWO-WAY TRUCK VOLUMES ON MAJOR ARTERIAL TRUCK ROUTES

- 1 **3,297** Hylan Blvd at Seaview Ave
- 2 **1,976** Forest Ave at Union Ave
- 3 **1,024** Bay St at Hannah St
- 4 **851** Amboy Rd at Richmond Rd
- 5 **730** Victory Blvd at Arlene St

Data Source: NYC DOT

COMPLIANCE

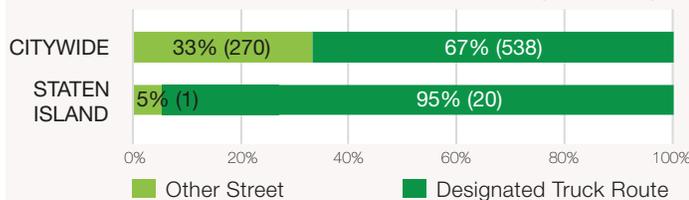


Staten Island contributes to less than 1% of citywide truck parking violations.

Residential parking was the number one violation in Staten Island, accounting for 89% of all truck parking violations.

This suggests a demand for overnight truck parking which is restricted in the city.

TRUCK-INVOLVED VULNERABLE ROAD USER KSI (2003-2016)



Data Source: NYC DOT

SAFETY

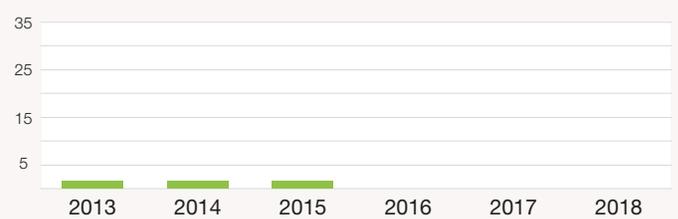


Between 2003 and 2016, trucks were involved in 4% of the 56,699 crashes in Staten Island.

Trucks accounted for 3% of ped-bike KSI crashes in Staten Island.

3% of citywide ped-bike truck KSI crashes occurred in Staten Island; of these, 95% occurred on designated truck routes, compared to 67% citywide.

STATEN ISLAND BRIDGE STRIKES PER YEAR (2013-2018)



Data Source: NYC DOT

COMMODITY FLOW



Trucks carried about 69% of freight in Staten Island in 2012, with a comparatively high percentage (29%) by marine transport, and 2.5% by rail.

The top three commodities moved in Staten Island were petroleum, coal products and waste or scrap materials, and other shipments moving from warehouses and distribution centers, or shipments being drayed from rail, air, or marine terminals. Trucks continue to be the predominant mode past 2045; the total tonnage moved in Staten Island is expected to grow by 70% to 43 million tons from 2012 to 2045, the largest increase for any borough. Waste or scrap materials and chemicals rank as the fastest-growing top commodity groups in Staten Island with well over 100% project growth during the same period.

EQUITY & ENVIRONMENT



The waterfront neighborhoods of Staten Island north of I-278 contain most of the island's Potential Environmental Justice Areas (PEJA), with other concentrations near parks and landfills like Fresh Kills and Great Kills Park.

Staten Island has the lowest number of households living under the poverty level of all boroughs, at 13.2%. However, some of these households are adjacent to the industrial areas on the north shore. In these locations, the community is disproportionately exposed to truck noise, vibration, particulate matter, and NOx (Nitrogen Oxide).



Y'S

FRIDAYS

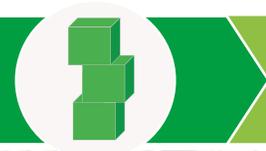
T.G.I. FRIDAYS

BROADWAY

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This Plan identifies strategies to address the numerous freight transportation needs and challenges in the city. DOT has identified a suite of freight strategies, and actions that are specific, measurable, achievable, realistic and time-based. Implementing this Plan will require strong partnerships and collaboration between city agencies, elected officials, the freight industry, local businesses, and all residents of NYC.

DOT will be creative, innovative, and collaborative as we implement this Plan. These strategies create a framework for effectively using our existing infrastructure, reducing externalities, and developing partnerships between government and industry to achieve results that work for all stakeholders.

Collectively, these strategies will reform and enhance existing programs and policies, develop new and innovative approaches to improving freight management, and support the agency's Strategic Plan and the City's OneNYC goals.

4.1 Safety

Reduce the severity and frequency of truck-involved crashes through innovative street design

S1: Implement new design standards based on best practices to enhance truck safety at intersections and along corridors.

DOT analyzed truck fatalities and severe injuries to identify 70 truck safety corridors with concentrations of severe truck-involved pedestrian and cyclist crashes citywide.

S1.1 Starting in 2021, DOT will implement safety improvements on 10 truck priority safety corridors each year.

Increase awareness of truck obstructed vision areas

S2: Promote, Expand and Enhance Truck Obstructed Vision Areas Awareness Initiatives.

DOT will work with city partners including BIC, DSNY, DCAS and the freight industry to expand truck safety outreach efforts.

- S2.1** Expand Truck's Eye View outreach efforts to ensure wider program reach and accessibility to all New Yorkers, especially near high-risk crash locations and streets reconfigured for the Open Streets network.
- S2.2** Engage City fleets and contractors and industry partners with updated safety manuals.
- S2.3** Expand reach of DOT's Truck Safety Task Force with City, federal, state agency partners, trucking industry representatives and community stakeholders.
- S2.4** Launch a Truck Obstructed Vision Area Awareness Campaign with city agency and industry partners to support Vision Zero goals.

DOT's Safety Toolbox

DOT's safety toolbox includes changes to street geometry, signals, and other street design measures to increase predictability of movements, improve visibility, and reduce conflicts.

Maspeth Bypass

DOT's Maspeth Bypass Plan diverted traffic from residential streets in the communities surrounding the Maspeth Industrial Business Zone (IBZ) in Queens by establishing a preferred bypass route that connects to the Long Island Expressway. This plan improved traffic flow for trucks and enhanced safety for Maspeth businesses and residents.



Truck's Eye View Program

DOT's Truck's Eye View (TEV) program teaches cyclists and pedestrians about truck blind spots at community events citywide. Between 2017 and 2018, TEV events have reached nearly 5,000 New Yorkers. While the TEV program has been successful, the program is designed to be interactive. DOT will redesign this important program into a more accessible format that allows for limited physical contact.



Improve safe movement of trucks and promote safer designs and technology

Safety equipment such as side guards, back-up alarms, and cameras on trucks help reduce the severity of crashes with pedestrians and cyclists, especially when the truck is turning at an intersection where most severe injuries happen.

S3: Enhance city partnerships for safer streets and truck movement and promote the use of safe equipment and truck designs citywide.

New York City operates one of the largest municipal fleets in the United States. Through the City's current Safe Fleet Transition Plan, as of January, 2020, (DCAS) has installed 3,065 side guards, 1,994 back-up alarms and 5,515 cameras. The City will continue to build on this success in advancing safer truck design and technology.

- S3.1** Work with the Department of Citywide Administrative Services (DCAS) to support an expedited timeline for installation of side guards on city-operated truck fleets and explore the use of other technology.
- S3.2** DSNY and DCAS will initiate a pilot to evaluate and integrate smaller equipment with increased visibility standards into their fleet.
- S3.3** Explore opportunities to leverage safety and compliance data in city contract selection involving significant truck activity.
- S3.4** Advocate for City Council legislation requiring all trucks belonging to companies doing significant business with the city to equip their fleets with truck side guards, rear wheel guards, and/or other safety technology through the power of procurement.
- S3.5** Assess effectiveness of truck driver vision aids technology, such as Fresnel lenses and dropdown mirrors, for drivers operating in

New York City to inform broader adoption of such devices citywide.

- S3.6** DOT will advocate with NHTSA for better safety ratings for large vehicles and partner with FMCSA on their Our Roads, Our Safety Initiatives.
- S3.7** Advocate publicly for changes to truck manufacturing to include high vision models, intelligence speed assist, and other critical safety technologies and to make these more easily available to fleet buyers.

S4: Advance safe operation of private waste hauler vehicles.

In order to regulate safety in the trade waste industry, BIC will promulgate a series of rules which will require additional safety inspections of trade waste trucks beyond the annual DMV-mandated inspections, limiting the number of hours a driver can operate a trade waste truck and requiring certain safety-related equipment on trucks, among others.

- S4.1** BIC will seek to improve trade waste truck design by pursuing local legislation that requires companies to adopt high visibility cab vehicles and phase out conventional cab vehicles.

FORS, London, UK

Truck drivers in London, are required to complete a Safe Urban Driving course that focuses on how truck drivers share city streets safely with the most vulnerable road users.



- S4.2** Local Law 56 of 2015 requires mandatory side guards for trucks over 10,000 pounds by January 1, 2024. As part of its legislative agenda, BIC is seeking to expedite the timeline for the installation of side guards for approximately 6,500 BIC-licensed and registered trade waste vehicles.
- S4.3** In order to effectuate BIC's new safety law (Local Law 198 of 2019), BIC will promulgate various rules to regulate safety in the trade waste industry, which will require additional safety inspections of trade waste trucks beyond the annual DMV-mandated inspections, increased driver training, and requiring certain safety-related equipment on trucks, among others.
- S4.4** BIC will conduct outreach to trade waste drivers and helpers in order to bring street safety awareness.
- S4.5** In 2019, BIC and NYPD conducted 24 joint enforcement operations targeting private carters –resulting in the removal of dangerous vehicles from New York City's streets and the issuance of summonses for unsafe driver behavior. NYPD will continue to conduct joint enforcement initiatives in partnership with BIC in 2020 and beyond.

S5: Launch urban driving awareness initiatives for truck drivers.

DOT will promote better compliance and improve safety by disseminating information about operations and regulations to industry partners.

- S5.1** DOT and DCAS will work to expand safety training offerings, such as the DCAS Defensive Driving program and the "I See You" video to other public and private fleets including Department of Education School Bus contracted fleets. DCAS and DSNY will also introduce virtual reality training for truck operators.
- S5.2** Launch an urban driving awareness initiative to promote best practices around truck safety, urban delivery, and efficiency techniques.
- S5.3** Partner with the Trucking Association of New York and affiliated state trucking associations, Owner-Operator Independent Driver Association (OOIDA) and other stakeholders to increase awareness of city truck rules and regulations, including the use of apps to assist truck drivers operating in the city.
- S5.4** Seek to require companies with city contracts to integrate urban driver training modules and videos into existing training programs.

4.2 Efficiency

Reduce overall congestion resulting from truck trips

E1: Increase the number of participants in the Off-Hour Deliveries Program.

- E1.1** DOT will continue to expand the number of Off-Hour Deliveries (OHD) locations of food and non-food retail locations by the end of 2021 through targeted outreach and marketing to BIDs, businesses and transporters in Manhattan, Downtown Brooklyn, and other congested areas citywide.
- E1.2** DOT will work with DCAS and other City agencies to study the feasibility of off-hour deliveries at city-owned facilities by the end of 2021.

E2: Promote urban freight consolidation concepts.

Many high-rise buildings, often located in congested neighborhoods, either do not have loading docks or the freight demand is so great that delivery trucks stop at the curb. The impact of delivery vehicles to these buildings can be mitigated through the implementation of urban consolidation centers, voluntary vendor programs, and the timing of delivery activity.

- E2.1** Starting Spring 2021, partner with mobility solutions platforms and private garage operators initially with OMNIH and Reef Technology to facilitate off-street freight consolidation and other off-street facilities to reduce congestion and double parking in congested areas and evaluate the opportunities for larger scale deployment.
- E2.2** Work with NYC Department of City Planning and NYC Economic Development Corporation to assess the application of urban consolidation centers to service high rise buildings, districts with high pedestrian volumes, locations with constrained delivery infrastructure, and locations requiring heightened security screening of trucks.
- E2.3** Promote voluntary vendor procurement consolidation programs where businesses in the same location or building can pool their buying power and purchase common goods from the same supplier. DOT will initially explore a preferred vendor program with one BID in a congested area to inform a wider rollout of the program to other BIDs.
- E2.4** Develop and promote guidance for Building Delivery and Servicing Plans in partnership with interested building owners and private industry stakeholders to promote more sustainable, efficient, and safe delivery activity and waste management in buildings.

Urban Consolidation Centers

Urban Consolidation Centers pool multiple deliveries from different suppliers to a central location. Evidence from European cities suggests that these centers can reduce delivery traffic at the final delivery point by 80%.

NYC RFEI Pilot for Public Realm Refuse and Recycling Solutions

DSNY partnered with DOT to seek creative solutions for containerized refuse and recycling in efforts to increase waste diversion, reduce vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions.

E3: Pilot shared-use storage locker solutions for improved last-mile goods delivery.

Shared use locker systems reduce delivery time by eliminating failed delivery attempts, and provide more reliability of last-mile delivery service by consolidating packages to a single location in a neighborhood with limited person-to-person contact.

- E3.1** In Spring 2021, DOT will issue a Request for Expressions of Interest (RFEL) soliciting ideas and information from shared use locker providers to determine key factors for deployment on public right of way.
- E3.2** Evaluate the feasibility of authorizing the operation of shared use lockers in the public right of way, on city-owned property, or in partnership with private entities for improved freight distribution efficiency and service effectiveness.

Streamline regulations and restrictions to align with practices that reduce externalities and costs of freight transportation within New York City.

E4: Pursue a rule change to amend truck width limits.

Update DOT regulations to align with trucking industry, federal, and state regulations:

- E4.1** Pursue a rule change amending the truck width requirement to bring New York City into line with domestic standards for truck width requirements, without compromising Vision Zero safety goals.

E5: Pursue policy reform of overweight truck permitting and application process.

DOT will work with relevant agencies to reform overweight truck permitting and reduce the number of overweight trucks in the city.

- E5.1** Continue to work with New York State DOT to incorporate the online permit system into the NYSDOT Highway Oversize/ Overweight Credentialing System (HOOCS) in efforts to improve the processing time for oversize/ overweight permit applicants.

- E5.2** Pursue legislation to streamline regulatory discrepancies regarding overweight truck permitting.

- E5.3** Explore requiring the use of portable scales to weigh trucks at construction sites on City-owned land or by City contract for procurement contracts involving the movement of bulk material, such as road salt, aggregates, and construction material.

E6: Manage the New York City Urban Goods Truck Route Network.

- E6.1** Identify appropriate changes to the Truck Route Network in the city to better serve critical freight hubs. DOT will continue to update the City's Truck Route Network every two years to reflect current land use and truck access needs and evaluate select qualified access routes for select combination vehicles operations servicing freight hubs.

GPS Analysis of Truck Activity

Maintaining and enhancing connections to key industrial areas, ports, and commercial locations while reducing the impact of trucks on communities is vital to New York City's continued economic vitality and livability. DOT analyzed truck activity using commercial GPS sources and examined key origin-destination pairs for truck deliveries. This analysis revealed routes most frequently used by trucks, which helps DOT identify candidates for truck route network additions and/or off-truck route enforcement.

- E6.2** Release a 2021 Truck Route Network map codifying network changes, including a clarification of new rules and regulations and additional truck driver resources.
- E6.3** Actively disseminate printed truck route maps to local and regional businesses serving the city annually.
- E6.4** Create an online interactive truck route map and continue to produce and distribute the most updated truck route map to the freight industry and other stakeholders

Improve delivery vehicles' access and mobility for the last 50-feet

E7: Improve commercial vehicle access at the curb.

DOT is committed to increasing dedicated commercial space at the curb with a focus on areas of high demand, particularly in the outer boroughs:

- E7.1** Increase commercial vehicle access to the curb in commercial areas, while balancing curbside needs through street design changes, and exploration of treatments for various levels of commercial vehicle type and activity.
- E7.2** Building on the successful demonstration program, DOT will expand the Neighborhood Loading Zone (NLZ) program to more residential neighborhoods receiving large numbers of deliveries and increased use in FHV trips. By the end of 2021, DOT will expand NLZs to 10 additional neighborhoods and double number of NLZs citywide. Implementing NLZs in combination with other creative curb management strategies will collectively reduce the need for double parking in residential neighborhoods, which can be a hazard for vulnerable road users.

Maintain and improve truck freight mobility and access.

E8: Study the prioritization of goods movement along with transit movement in dense commercial corridors.

Creating bus and truck only streets or limited access streets for local delivery has the potential to maximize available road space for both efficient movement of people and goods. This has been implemented along 14th Street in Manhattan, Main Street in Flushing, Queens and tested in many cities, including London, Toronto, and Stockholm

- E8.1** Evaluate 14th Street Transit Truck Priority, and evaluate other locations where combined bus and truck prioritization can be created by the end of 2021.

E9: Assess opportunities to allow small commercial vehicles on parkways.

With an increase in small commercial vehicles in the city, diverting small light-weight commercial vehicles or vans to portions of the parkway system can provide for improved mobility and the removal of truck traffic from local streets:

- E9.1** Evaluate the geometric, safety and regulatory impacts to be addressed to accommodate these small light duty vehicles, starting with the Belt Parkway in Brooklyn by the end of 2022.

Transform how freight enters New York City by investing in maritime and rail solutions

E10: Support the implementation of NYCEDC’s FreightNYC plan to modernize the city’s urban freight transportation network and meet OneNYC efficient mobility goals.

E10.1 To shift freight to NYC’s local waterways, NYC EDC will:

- Invest \$25M to jumpstart the development of a new “hub and spoke” marine-based freight system, linking key New York City sites with North Jersey freight distribution centers and seaports.
- Modernize the South Brooklyn Marine Terminal (SBMT) facility to handle the development of an Offshore Wind (OSW) installation in the Atlantic Ocean, furthering strengthening the City’s maritime freight handling capabilities. OSW is anticipated an important role in the generation of clean energy for electric vehicles which will contribute to the widespread adoption and uptake.
- Support USDOT’s America’s Marine Highway Program at the regional level by continuing to engage with industry partners in the North Atlantic Marine Highway Alliance (NAMHA).

E10.2 To Improve NYC’s Freight Rail Connections, NYCEDC will:

- Invest approximately \$15M to construct a rail transfer center to provide industrial and food-related businesses with direct access to the national rail network, introducing new points to transfer shipments from one mode of transportation to another.
- Support the Metropolitan Rail Freight Council (MRFC) Action Plan and its goal to increase rail freight service to locations east of the Hudson, support industrial jobs, and promote environmental sustainability.

E10.3 Develop Freight Hubs Connected to Multimodal Freight Network

Freight hubs are existing industrial areas where multiple forms of transportation (rail, maritime, and highway) support urban distribution and manufacturing businesses. Freight hubs also host support facilities, such as off-street truck plazas and alternative fueling stations. NYC EDC will:

- Make investments in freight hubs that meet current freight demand while accommodating growth in e-commerce, ensuring economic growth, and making New York City more resilient against supply chain disruption.
- Support the development of geographically dispersed freight hubs across the city in the following locations:
 - Brooklyn: The Brooklyn Army Terminal in Sunset Park
 - The Bronx: Bathgate, Hunts Point
 - Queens: JFK Area
 - Staten Island: West Shore and North Shore.

E10.4 To accelerate adoption of cleaner trucks in NYC, NYCEDC will support the development of clean fuel infrastructure in freight hubs, including sites for electric charging and compressed natural gas (CNG).



Global Container Terminal in Staten Island



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4.3 Sustainability

Incentivize the use of cleaner vehicles and technology; promote and advocate for the use of zero emission vehicles.

SR1: Reduce emissions from private truck fleets in priority communities.

As of December 2018, DOT's Hunts Point Clean Truck Program replaced scrapped or replaced over 600 older, heavy-polluting diesel trucks with Class 3 to Class 8 trucks compliant with 2010 EPA standards, including diesel-hybrid and compressed natural gas. DOT will build on the success of this program:

SR1.1 Launch the NYC Clean Truck Program to additional industrial business zones citywide using funding from the Volkswagen Settlement and other sources.

SR2: Reduce the number of older transport refrigeration units and pilot zero emission refrigeration technology.

Food and other sensitive products such as pharmaceuticals must be transported at specified temperatures, which is achieved through transport refrigeration units (TRUs) that provide cool air into truck bodies and are predominantly fueled by diesel. While smaller than truck engines, they produce significant volumes of pollutants. To prove feasibility, DOT directed OneNYC investment which supported the replacement of 58 TRUs within the Hunts Point Food market, drastically reducing the amount of emissions generated by these significant polluters and upgrading the old diesel units to electric and hybrid-electric technology.

SR2.1 Secure non-city funding to expand the OneNYC's 'TRU Replacement Program' to replace all stationary Tier 0-3 TRU engines, and pilot-test cutting edge technology, such as cryogenic refrigeration units and other technological changes.

SR3: Encourage uptake of zero-emission vehicles and pedal-assist cargo bicycles for last mile freight deliveries.

In 2018, DOT issued a rule defining pedal-assist bikes and clarifying that they are legal to use in NYC. Urban logistics companies have since capitalized on this change and are actively exploring the use of electric pedal-assist cargo cycles and electric vehicle for last-mile freight delivery. In December 2019, DOT announced the launch of a pilot program for cargo bikes that will be concentrated within Manhattan's central business district. The program will strive to both reduce congestion and improve safety on city streets.

SR3.1 Evaluate the Commercial Cargo Bike Pilot program, and explore a longer-term solution for accommodating pedal-assist cargo bikes and the companies that want to use them on New York City streets.

SR3.2 Investigate the feasibility of designating "green loading zones", dedicated to particular vehicle types and/or reserved for use by particular companies to incentivize electric vehicle and pedal-assist cargo bikes adoption.

SR3.3 Work to increase the adoption of zero emission vehicles for a market share of 20% of freight deliveries in Manhattan CBD by 2030 to meet GHG goals.

SR4: Incentivize the uptake of cleaner trucks through City contracts.

Cleaner fuel types, such as electric and compressed natural gas (CNG), are beginning to become more prevalent in the trucking industry. DOT will incentivize a broader up-take of cleaner fuels by trucks.

SR4.1 Advocate for legislation that would phase in the requirement for trucks involved with city contracts to be fueled by low or zero emission fuels (where this is operationally feasible).

SR4.2 Work with City agency partners to launch a smart fleet rating recognition program.

SR5. Promote New York City to Zero and Low Emission Truck Manufacturers and support the funding and installation of alternative fuel infrastructure.

The number of companies developing zero and low emissions trucks is expected to substantially increase as better technology and manufacturing techniques reduce the cost of electric truck batteries and other clean fuel engines. The city provides a unique operating environment for these types of technologies and has a significant number of companies who could be potential pilots and early adopters.

- SR5.1** Work with other City agencies including the Mayor's Office of Sustainability, NYCEDC, and other partners to explore clean truck technologies, ranging from battery electric, to compressed natural gas, and hydrogen to meet the City's GHG goals.
- SR5.2** Support measures such as test support and clean fueling infrastructure to establish the city as the number one location choice for companies to deploy clean truck technology in the US.

- SR5.3** Continue exploring funding streams and support private sector participation through promotion of city opportunities and requests for expressions of interests and proposals.

Reduce noise from truck deliveries.

SR6: Identify and promote quiet delivery practices for both goods transporters and receivers.

As part of the expansion of the Off-Hour Deliveries Program (see Efficient Freight Movement E1), DOT will promote various measures that reduce noise during off-hour deliveries, including quiet delivery practices for both transporters and receivers of goods, and the use of low noise delivery equipment.

- SR6.1** Stimulate innovation and implementation of quiet technologies by working with truck and equipment manufacturers to use NYC as a pilot environment for equipment trials and pilot programs consistent with safety standards.
- SR6.2** Launch a quiet delivery practices information campaign.

NYCEDC Clean Trucks Initiative

The lack of access to reliable alternative fuel sources is a barrier to greater adoption of alternative fuel vehicles. Some companies with large fleets are currently forced to invest in their own fueling infrastructure while others must rely on shared supplies. In 2019, NYCEDC released a Request for Expressions of Interest (RFEI) to develop an electric vehicle support structure in New York City, focusing on those that will support light-and-medium-duty commercial trucks and vehicles.

Source: NYCEDC



SR6.3 Work with DCAS to increase participation by quiet delivery technology manufactures at the New York City Annual Fleet and Equipment Show.

SR6.4 Continue to conduct research and work with other City agencies and private industry to promote the adoption of quiet delivery practices by goods transporters and receivers.

Improve Truck Route Network wayfinding in New York City.

SR7: Enhance the citywide truck signage wayfinding program.

DOT uses signage to effectively regulate truck traffic movement within the City. The proper signing of the City's truck route network is vital to identifying the network and providing easily identifiable, consistent direction to commercial vehicle operators in the area.

SR7.1 Upgrade positive truck route signage citywide, identify locations where truck signage is missing or not clearly visible, and evaluate the effectiveness of such signage.

SR7.2 Continue to track and evaluate wayfinding signage effectiveness and implement improvements where needed.

Improve the trucking industry's compliance of local rules and regulations.

DOT will work to ensure compliance with established and newly promulgated rules.

SR8: Promote regulations to reform commercial parking rules and reduce placard abuse.

SR8.1 Promote new rules to reform double parking and other rules related to curb lane regulations to make them easier to understand for drivers

and easier to enforce for Traffic Enforcement Agents.

SR8.2 Work with NYPD to enhance the management and enforcement of parking placards and permits citywide to reduce placard abuse in commercial loading zones. DOT will seek to remove Truck Loading Zones from the list of areas where placards can legally park.

SR8.3 Seek state legislative authorization to use sensor and camera technology to enforce truck route rules and promote a culture of compliance with truck routes, loading regulations, and overweight and over-dimensional rules.

SR8.4 Explore and evaluate the capabilities of existing and emerging technology for automated enforcement on truck routes, loading regulations, overweight truck restrictions, over-dimensional rules, and to determine the feasibility of obtaining State Legislation approval for use of these technologies for enforcement purposes.

Reduce the number of bridge strikes and over-height incidents within the city.

SR9: Expand and enhance the Bridge Strike Reduction Program.

DOT will protect bridge infrastructure, improve public safety for all motorists, and alleviate traffic congestion and delays caused by bridge strikes.

SR9.1 Develop educational materials and targeted outreach strategies to the trucking industry and commercial vehicle drivers.

SR9.2 Evaluate and install signage and pavement markings for each of the top 10 bridge strike locations.

- SR9.3** Work with city and state agency partners to improve data reporting and harmonize rules governing parkways across jurisdictions.
- SR9.4** Seek agency data-sharing partnerships and with GPS navigation providers.
- SR9.5** Explore technology-based solutions at frequently hit locations such as Over-height Vehicle Detection Systems. DOT will pilot such systems along the most frequently hit locations along the FDR Drive and/or Belt Parkway.

Utilize enforcement approaches that protect communities and infrastructure and foster a culture of compliance in the trucking industry.

Effective and efficient enforcement of truck movement fosters a culture of compliance in the trucking industry.

SR10: Work with NYPD and other enforcement agencies to develop data-driven citywide truck enforcement strategies and training programs.

- SR10.1** Coordinate training events as traffic rules pertaining to commercial vehicles and trucks are updated and to digitize resource guides such as NYPD Memo Inserts and other information for wider dissemination.
- SR10.2** Promote inter-agency coordination and data sharing to ensure targeted enforcement of locations and dangerous truck behaviors, target truck operators who are not utilizing designated truck routes, driving unpermitted oversized trucks, or who fail to yield properly to pedestrians and cyclists.
- SR10.3** Improve investigation reporting of truck involved pedestrian and bicyclist crashes.
- SR10.4** Support efforts to expand specialized truck enforcement unit, precinct level officers, and enforcement equipment for heavy-duty trucks.
- SR10.5** Develop coordinated truck enforcement and roadside truck safety inspections with motor carrier safety units of NYPD, NYSDOT, and FMCSA to address hazardous safety and traffic infractions committed by truck operators. NYPD motor carrier safety units will coordinate closely and in conjunction with precinct Neighborhood Coordination Officers (NCOs) to facilitate a citywide reach. NYPD will increase the deployment of Transportation Bureau motor carrier unit members and establish rotational deployment of mobile variable message signs/CCTV units along priority safety corridors.
- SR10.6** DOT and NYPD will deploy a multi-neighborhood, multi-corridor strategy, targeting one high-crash corridor in each of the eight NYPD Patrol Boroughs. The 2021 Vision Zero Street Teams Corridor program is a joint effort between NYPD and the DOT Safety Education and Outreach and Highway Inspection and Quality Assurance units.
 - NYPD will engage in two-week deployments beginning January 2021 through December 2021 with each precinct along the targeted corridor involved no fewer than three times in the year.
 - DOT will deploy Vision Zero Street Team outreach effort for one week in every precinct involved in the program rotating among Patrol Boroughs which will include the dissemination of educational materials to New Yorkers at intersections along the corridors.
 - Locations where there have been high incidences of truck-involved crashes will feature outreach to truck drivers, pedestrians and cyclists about the obstructed views that are unique to large vehicles when interacting with vulnerable road users.

Reduce the impact and incidence of overnight truck parking on residential communities.

SR11: Identify solutions to mitigate overnight truck parking in residential areas.

While City regulations prohibit commercial vehicles from parking on a residential street between the hours of 9 p.m. and 5 a.m., this still appears to be a regular occurrence - partly due to insufficient overnight truck parking facilities and rest stops in the city.

Accommodating these drivers is important for the safe and efficient delivery of goods, as tired truck drivers present a hazard to other road users.

SR11.1 Partner with the FHWA Resource Center to host a Truck Parking workshop to assess solutions to address overnight truck parking in urban areas.

SR11.2 Continue to work with NYCEDC and PANYNJ to identify and establish over-night truck parking locations and coordinate with NYPD for targeted enforcement in residential areas.



4.4 Partnerships and Knowledge

Develop partnerships and reward programs to spur positive behavior in the city's freight activity.

PK1: Ensure continuous freight industry engagement through a freight advisory committee.

DOT will keep abreast of pressing and emerging freight issues and promote constructive dialogue with the freight industry.

PK1.1 Continue to increase engagement with the freight industry and other stakeholders through a formal Freight Advisory Committee. The Freight Advisory Committee will convene quarterly and serve as a forum for agency transportation decisions affecting the city's freight mobility.

Work with businesses, communities and partners to implement freight initiatives.

PK2: Explore opportunities to integrate freight demand management in large freight generators.

Voluntary leadership initiatives and public-private partnerships like the Mayor's Office NYC Carbon Challenge provide great opportunities to further reduce GHG emissions freight activity through strategies focused on freight demand management, vendor procurement consolidation, and waste management.

PK2.1 Work with Mayor's Office of Sustainability (MOS) to evaluate how freight transportation milestones can be incorporated into the Carbon Challenge initiative across retail, hotel, and office sectors by the end of 2021.

PK2.2 Partner with MOS on a Freight Logistics Efficiency and Environmental (FLEET)

Transportation Challenge to incentivize large freight generators and accelerate GHG reduction by the end of 2021.

PK2.3 Explore recognition and accreditation schemes for large buildings engaged in reducing their freight carbon footprint.

PK3: Increase public engagement, awareness, and education of freight transportation.

Feedback from public outreach engagement revealed a lack of awareness of the role of freight transportation, its connection to the local economy and businesses, and its effect on the city's livability and sustainability goals. DOT will increase public engagement efforts to promote better awareness of freight activity.

PK3.1 Produce general information and facts and freight trends for the public.

PK3.2 Develop resource guides for DOT staff, City agencies and elected officials.

PK3.3 Educate the wider public on freight related rules and regulations, and promote actions individuals can take, such as reducing or consolidating their online shopping, to reduce their freight carbon footprint.

Improve freight data and information for decision-making.

PK4: Establish an annual freight data collection program.

Access to the right type of freight-related data supports the implementation of initiatives, monitors trends in trucking activity, and helps DOT understand associated disparate impacts on communities. Sensor technologies can help to better understand where and when truck activity is the greatest.

PK4.1 Identify automated count locations to collect continuous, accurate truck volume information to inform truck route network updates and enhancements, improve our understanding of truck activity, and produce biennial state of freight reports.

PK 4.2 Routinely update the Citywide Low Bridge Clearance inventory for truck route planning and make publicly available by the end of 2021.

PK4.3 Advocate for reintroducing the FHWA Vehicle Inventory and Use Survey that collected valuable data on truck and other vehicle activity.

PK4.4 Explore ways to expand the WIM network to capture overweight truck data to inform truck enforcement and infrastructure asset management policy if additional enforcement is permitted by state legislation.

PK4.5 Continue to participate in the PANYNJ Good Movement Action Program to support efforts to create a quality geospatial dataset for all truck routes.

PK5 Partner with university researchers to evaluate freight transportation needs and challenges.

PK5.1 Establish a Smart Urban Freight Lab with university researchers to study, test, and evaluate innovative last-mile freight strategies for the efficient delivery of goods. The partnership will support evidence-based research, cultivate industry engagement, and foster innovation and excellence in freight mobility.

Integrate freight activity into planning efforts.

Understanding freight activity allows for context-sensitive street designs that can safely accommodate all road users without creating unnecessary complications for trucks.

PK6: Enhance standards and guidance to ensure freight activity is properly integrated within complete street design.

Given the growth in e-commerce and online shopping, freight activity must be included in future building and street designs.

PK6.1 Develop freight toolkit guidance for planners and project managers seeking to integrate freight into street designs.

PK7: Evaluate future land use development and freight impacts.

To improve understanding of freight delivery needs, impacts on the transportation network, land use, environment and community for new commercial, industrial, and residential land uses, DOT will:

PK7.1 Work with DCP and other City agencies to initiate a freight trip generation and land use assessment in 2021 starting with last-mile distribution facilities.

PK7.2 Update the City Environmental Quality Review Technical Manual guidelines on freight trip generation and freight planning accommodations by the end of 2022.

Seattle Urban Freight Lab

The Urban Freight Lab in Seattle, Washington, investigates high-impact, low-cost solutions for businesses delivering goods in urban settings and cities trying to manage limited curb and parking space where delivery trucks, bicycles, pedestrians, and cars all need to coexist. The lab is comprised of retailers, technology companies, goods delivery firms, building owners and cities that need to manage urban street space for multiple uses.

Concluding Statement



New York City's growing population of residents, commuters, and visitors will need to be resupplied by an ever-increasing number of trucks, rail cars, and barges. Simply put, freight keeps New York City moving and New York City needs to keep freight moving. Today, trucks directly compete for road space and curb access with growing numbers of cyclists, pedestrians, transit riders, and For-Hire Vehicles. Managing for all of these uses requires forward-looking, creative solutions to make our transport network more efficient.

By 2045, the total tonnage carried by trucks in the city is expected to grow by almost 70%, to nearly 312 million tons (NYMTC). This future influx of trucks on the city's streets will occur at a time when the landscape is changing due to new development, and an increasing appetite for e-commerce and deliveries that show up at our workplace or front door within hours or even minutes.

The City's OneNYC plan and DOT's Strategic Plan 2016 both identified freight as a priority issue. And DOT has undertaken specific initiatives to address freight movement, including establishing the Office of Freight Mobility. However, as documented by the key findings in this Plan, planning for freight goes beyond just ensuring trucks can readily traverse city streets and access the curb: trucks contribute to congestion, wear and tear on city infrastructure, and create health and environmental hazards. As such, the 32 strategies and 101 initiatives in this plan, create a comprehensive roadmap to advance this Plan's vision: **Enhance the economic vitality and quality of life for all New Yorkers by providing for the safe, equitable, efficient, and responsible movement of goods.** Through DOT's commitment to transparency and public engagement with community residents, elected officials, business owners, and civic and advocacy groups, DOT will report back to the public on our progress over the next several years.

Implementing this Plan

The actions outlined in this Plan require broad consensus and partnership across the public and private sector; without private sector commitment many of the outcomes from these initiatives, strategies and projects cannot be fully realized. Just as this Plan recognizes that enforcement and regulation are essential tools in the freight toolbox, so is earnest cooperation and voluntary participation by the freight industry.

Industry Commitment

Implementing this plan also requires strong partnership with the freight industry. Many freight companies want to do the right thing and support these initiatives so they can continue to provide jobs and support their customers' needs while maintaining a healthy and thriving business.

Stakeholder Collaboration

DOT must continue to work with other City and regional agencies to better plan for future freight activity and growth, and improve the safety and responsible movement of freight. The City can continue to lead by example, showing what can be achieved through the smart application of policies and by making its own freight activity cleaner, greener, and more efficient.

Looking Ahead

The Plan's success is not just based on achieving the initiatives outlined in this plan, but also as an example for how New Yorkers can and should be able to receive the goods they need without compromising on environmental, financial, and social returns. DOT will work with partners to adopt the actions in this plan and put the City on a path towards a safer, more responsible, sustainable, and efficient freight system that grows the economy, supports freight-related jobs, and delivers the goods that residents and businesses need.

Acknowledgments

DOT would like to thank the following individuals, agencies and organizations that helped make this report possible.

This report was developed by the DOT's Division of Transportation Planning & Management. Deputy Commissioner Eric Beaton directed the project team which consisted of the following staff:

- Diniece Mendes, EIT, Director, Freight Mobility
- Tiffany-Ann Taylor, Deputy Director, Freight Mobility
- Jeremy Safran, Deputy Director, Freight Mobility
- Charles N. Ukegbu, Ed.D, Assistant Commissioner, Regional and Strategic Planning
- Karin Sommer, Executive Director, Transportation Planning & Management

Freight Mobility Staff

- Faheem Afridi
- Andrew Diaz
- Demel Gaillard
- Kimberly McNabb
- Reginald Manigault
- Stephen Solecki
- Catherine Ponte
- Matthew Roosa
- Eugenia Tang
- Jason Urias
- Esther Marcus-Carter (former staff)
- Pia Simpson (former staff)
- Michael Klatsky (former staff)
- Nicola Mammes (former staff)
- David Frick (former staff)

In addition, the following DOT officials and staff provided content and input in the creation of this document: Michael Repogle, Kate Mikuliak, David Stein, Matthew Garcia, Seth Hostetter, Anthony Galgan, Nicole Wallen, Ben Killen and David Moidel.

The following consultant leads from Arup and HDR contributed to the preparation of the Smart Truck Management Plan:

- Trent Lethco, Arup
- Varanesh Singh, Arup
- Rosanna Collars, Arup
- Lian Duan, Arup
- Mike Ernst, Arup
- Joseph Dack, HDR
- Tom Visee, HDR

DOT thanks the members of the Freight Advisory Committee for providing data and input in strategy development, specifically members of the Trucking Association of New York and the American Transportation Research Institute. Finally, DOT thanks all New Yorkers who participated in surveys, meetings, and open houses, and provided their comments during the Plan development.

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