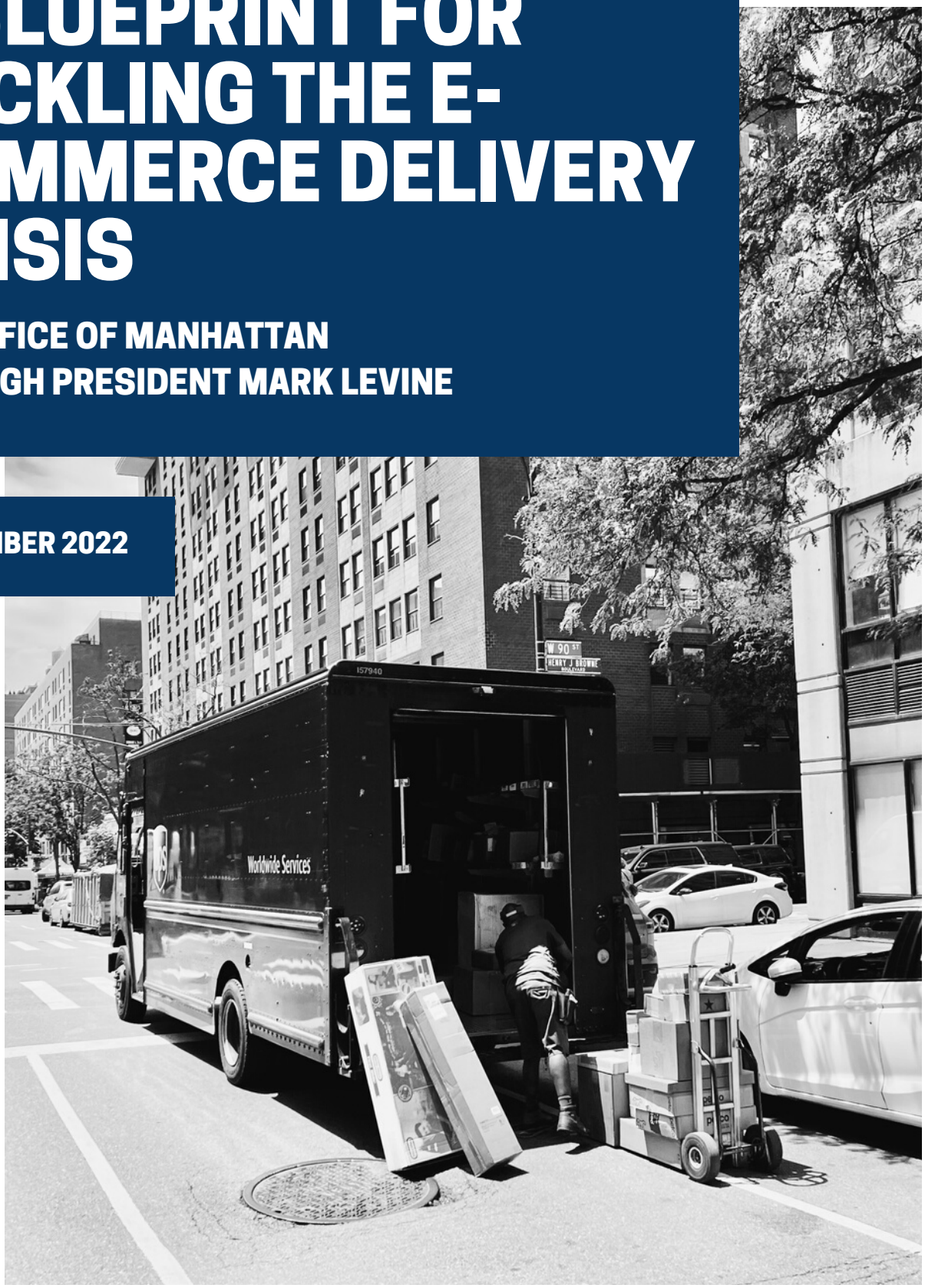
A BLUEPRINT FOR TACKLING THE E-COMMERCE DELIVERY CRISIS

THE OFFICE OF MANHATTAN BOROUGH PRESIDENT MARK LEVINE

SEPTEMBER 2022



MARK LEVINE
Manhattan Borough President

CAMPAIGN TO CURB CONGESTION

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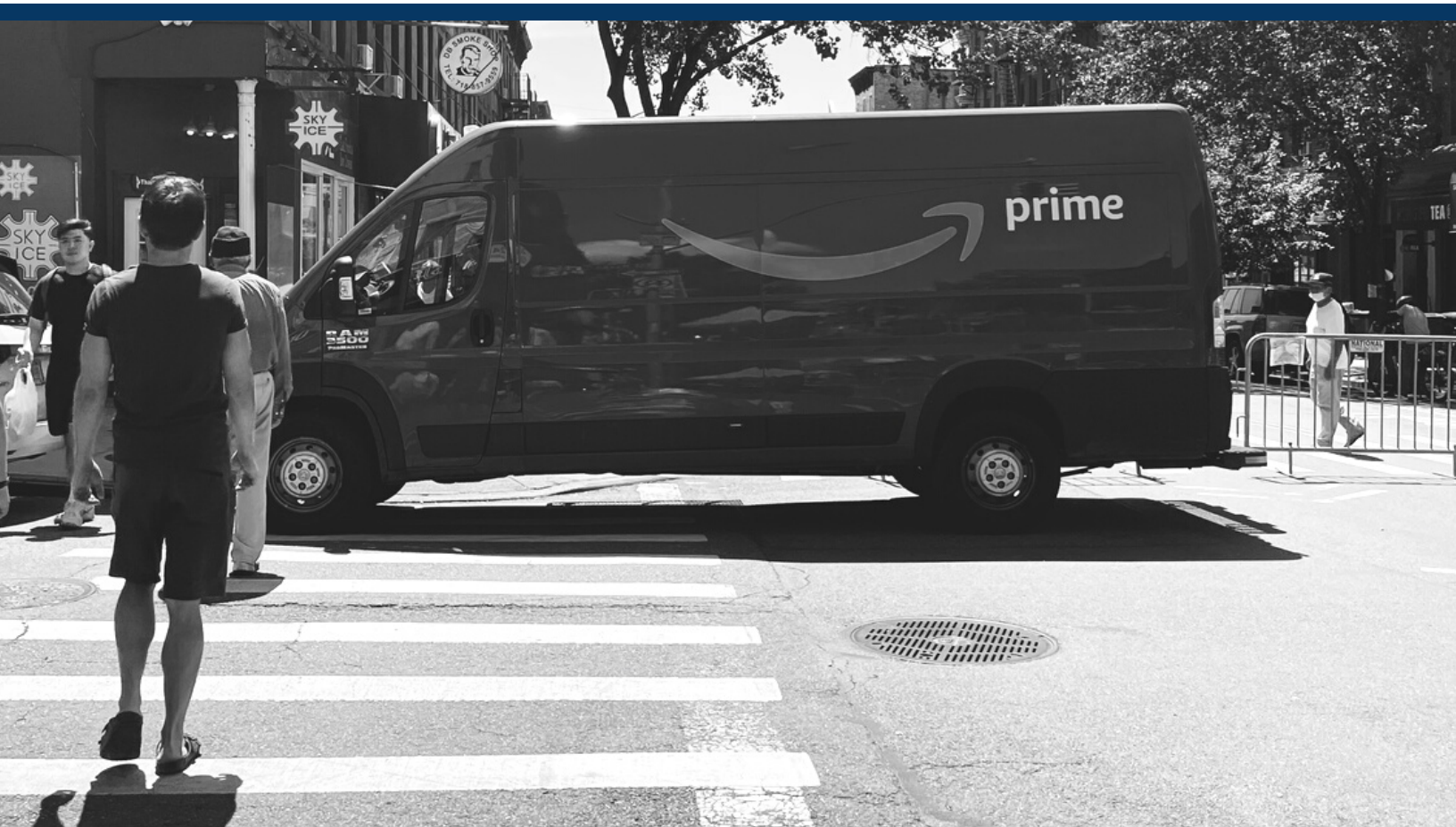


A LETTER FROM THE BOROUGH PRESIDENT

Dear fellow Manhattanites,

Every day, 2.4 million products are bought online, packaged, transported, and delivered to residents and businesses throughout the five boroughs. Manhattan receives by far the highest concentration of these deliveries per square mile.

The pandemic-induced explosion in online shopping has caused delivery vehicles to overwhelm our roads and neighborhoods. Far too often, these trucks are found illegally double-parked or blocking bus lane s, bike lanes, and sidewalks to sort, unload, and deliver parcels. This last-mile delivery system exacerbates congestion, road safety issues, air pollution, greenhouse gas emissions, package waste, and a variety of other quality-of-life concerns in Manhattan and throughout the city.

Online shopping is not going away, so we must be forward-thinking and take action now to counter the negative environmental, health, safety, economic, and quality-of-life issues currently associated with e-commerce delivery.

This report – based on insights from city agencies, elected officials, advocates, academics, and constituents – represents an important step in that effort. The following pages shine a light on the various challenges posed by the surge in e-commerce deliveries and evaluate the successes and shortcomings of current City policies aimed at addressing these issues. It concludes by offering a series of common-sense, actionable recommendations – that can be implemented immediately or over the next several years – to truly make e-commerce delivery greener, safer, and more efficient.

I want to thank all of the stakeholders who contributed to the findings in this report and our broader campaign to curb congestion. I look forward to continuing to work together to build a healthier and more livable city for all New Yorkers.

In partnership,

MARK D. LEVINE
MANHATTAN BOROUGH PRESIDENT

THE PLAN AT A GLANCE

The Manhattan Borough President's office has identified 4 overarching goals – and 12 accompanying policy recommendations – to make e-commerce package delivery more efficient, sustainable, and safe in Manhattan and throughout the city.

GOAL 1

Take last-mile operations off our streets.

Delivery vehicles regularly block our streets, sidewalks, bus stops, and bike lanes to unload, sort, and deliver packages, creating severe traffic jams and unsafe roads. Recommendations to establish more appropriate locations for these last-mile operations include:

- Repurposing parking garages for e-commerce fulfillment space
- Utilizing our waterfront for cargo delivery and staging

GOAL 2

Ensure residential areas can meet the growing demand for deliveries.

The swell in e-commerce deliveries has intensified competition for scarce curb and street space in neighborhoods, resulting in bottlenecks, air pollution, increased conflict between curb users, and delayed packages. Recommendations to reduce package-related stress in residential areas include:

- Making loading zones ubiquitous in all residential neighborhoods in Manhattan
- Growing the network of access point locations at mom-and-pop shops
- Launching a common carrier parcel locker pilot program

GOAL 3

Make e-commerce deliveries more sustainable.

Gas-guzzling delivery vehicles generate high levels of greenhouse gas emissions, particulate matter, and other toxic contaminants, exacerbating climate change and air pollution, and harming New Yorkers' health. Recommendations to incentivize companies to electrify their last-mile fleets include:

- Vary Congestion Pricing fee by vehicle size, type, and level of congestion
- Pilot Green Loading Zones in Midtown and Lower Manhattan
- Amending legislation to allow e-cargo bikes to be 48 inches in width
- Building more public charging infrastructure for e-bikes

GOAL 4

Better enforce the City's traffic laws.

Delivery vehicles' pervasive illegal parking practices cause gridlock and create hazardous roadway conditions. Recommendations to improve e-commerce delivery vehicles' compliance with the City's traffic laws and parking regulations include:

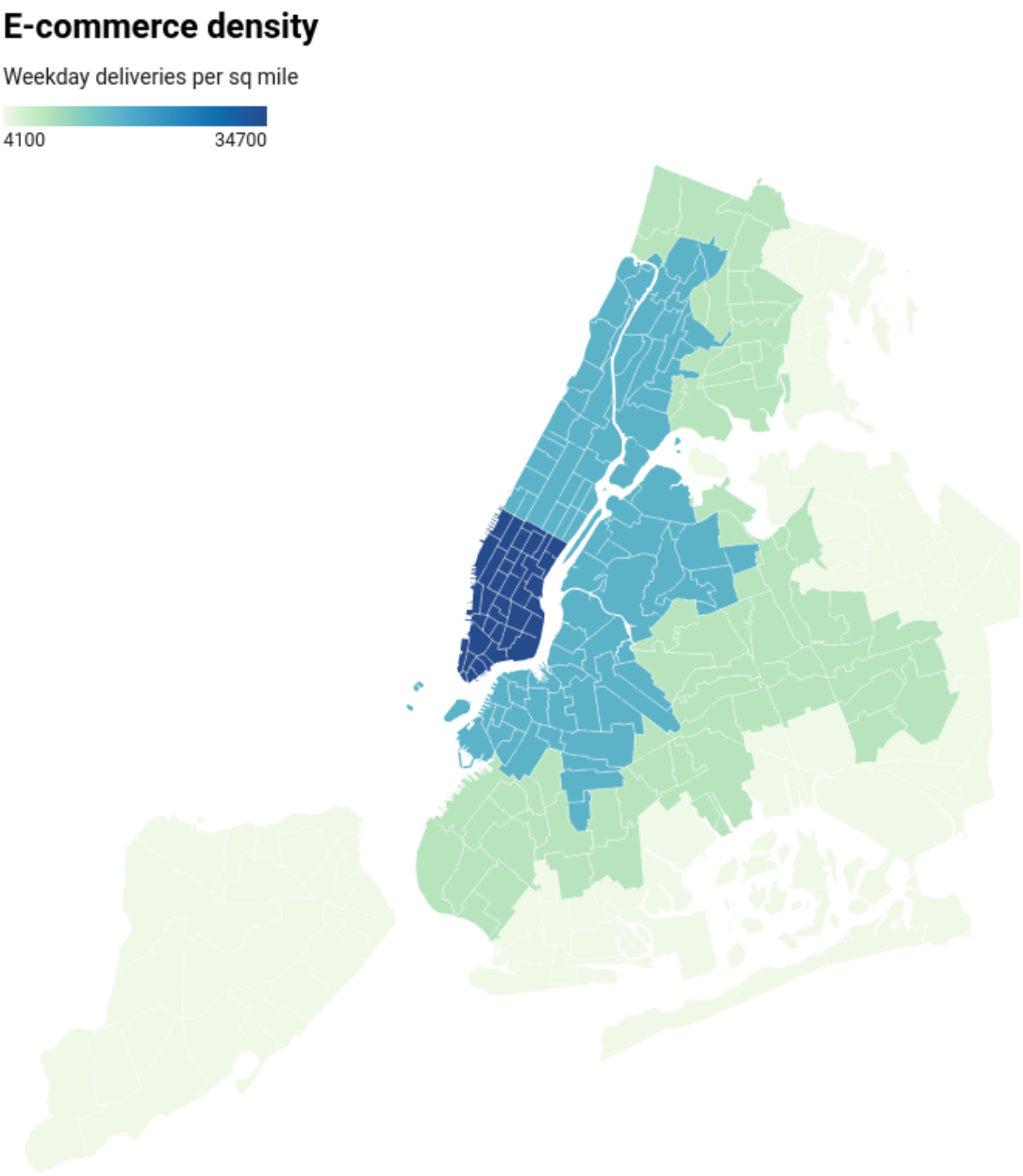
- Increasing enforcement of illegal parking violations in loading zones
- Updating the Stipulated Fine Program's fine schedule
- Expanding the use of automated enforcement technology

THE STATE OF E-COMMERCE & LAST-MILE DELIVERY IN NYC TODAY

Many New Yorkers were already shopping online long before the Covid-19 pandemic. Since 2009, e-commerce sales have grown an average of 15% annually.[1] In 2017, 97% of consumers surveyed by 6-T and the Rudin Center for Transportation at New York University said they had bought a non-food item online before, and almost three-quarters had purchased groceries online. Almost half of the families surveyed revealed they made these purchases at least once a week.[2] The NYC Department of Transportation's (DOT) 2018 Mobility Report had similar findings, indicating that 41% of New Yorkers received home deliveries at least several times a week.[3] In 2019, there were more than 1.5 million packages delivered across the five boroughs every day, according to the New York Times.[4]

The onset of the pandemic caused New Yorkers to increase their online shopping habits. From March to August 2020, e-commerce sales more than doubled, and online retailers' total share of retail sales grew from 14.2% to 21.6%.[5] This growth took place across a number of retail categories. Grocery deliveries increased by a staggering 130%, prepared food deliveries grew by 28.6%, and household goods deliveries increased by over 70% compared to the same period the previous year.[6] Around 80% of these deliveries were to residential addresses, up from an estimated 40% pre-pandemic.[7,8]

Now, every weekday, approximately 2.4 million products – everything from household supplies and groceries to clothing and electronics – are purchased online, packaged, transported through logistics facilities and our freight system, and delivered to residents and businesses throughout the five boroughs.[9] Manhattan receives the highest concentration of these deliveries per square mile. According to a City-commissioned study by Charles Komanoff and Todd W. Schneider in 2021, there are around 34,700 e-commerce packages delivered per square mile in Manhattan south of 60th Street – the Central Business District (CBD) – and 17,600 package deliveries per square mile in Manhattan north of 60th Street every weekday.[10]



Map: BetaNYC/ MBPO. Data source: Charles Komanoff & Todd W. Schneider's "Taming New York City's E-Delivery Gridlock: Time-Based Charles for Street Space." Created with Datawrapper.

To meet this staggering consumer demand, e-commerce retailers and last-mile carriers have raced to secure additional warehouse space in and around the city. Amazon has acquired more than 50 facilities during the pandemic to support their fulfillment operations in the city, at least 12 of which are warehouses in the five boroughs. There are also more than a dozen mega-warehouses currently under construction in Brooklyn, Queens, and the Bronx for carriers including UPS, FedEx and DHL. Now, less than 1.6% of warehouses in the city – and 1.3% in New Jersey – are still available for lease.[11],[12]

The shortage of warehouse space, the rising cost of leasing that space, and the complex logistics and costs associated with last-mile deliveries have caused many companies to open micro-fulfillment centers (MFCs) in residential and commercial areas in the city.

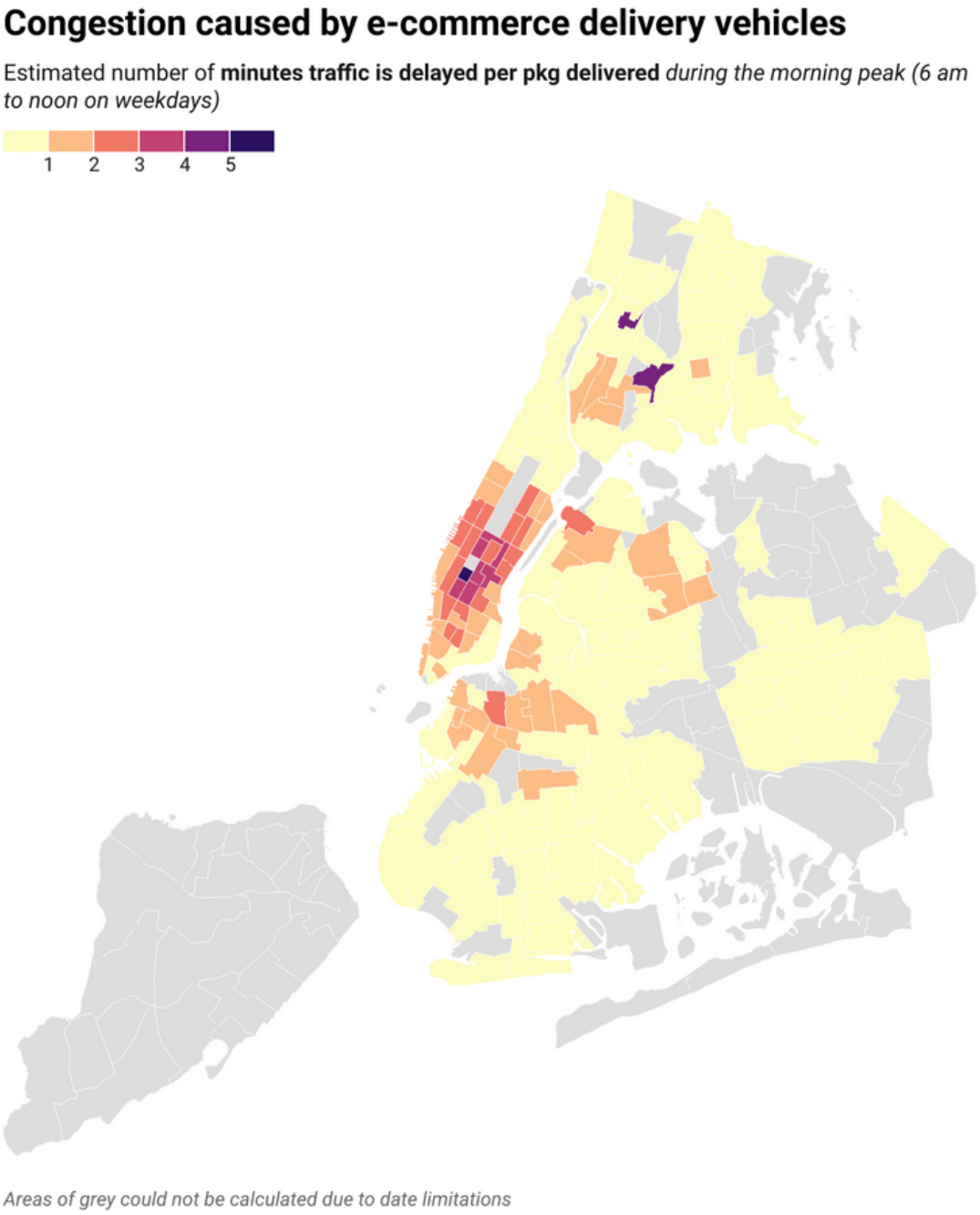
Since the start of the pandemic, grocery delivery apps – including DoorDash, Gorillas, and GoPuff – have opened at least 48 MFCs in Manhattan.[13] Amazon recently leased a building in Hell's Kitchen to use as a last-mile logistics hub.[14] Fabric – a robotic micro-fulfillment technology company – also recently opened two fully-automated MFCs that smaller retail and grocery clients use to fulfill their online orders.[15] Because of their close-proximity to the end-consumer, MFCs can make the last-mile shorter, faster, and cheaper, and enable companies to use smaller and more environmentally-friendly modes of transportation to make deliveries, including cargo-bikes and hand trucks.

E-commerce companies' enlarged presence in the city has been embraced by some New Yorkers who point to the convenience of online shopping and the economic benefits that warehouses and MFCs create, including new jobs. However, many others have sounded the alarm about the impacts of these facilities. One critical concern advocates have long raised is that the majority of these mega warehouses are located near low-income communities and communities of color like Red Hook, Sunset Park, and Hunts Point. These neighborhoods are disproportionately harmed by the air pollution, street safety hazards, traffic, and noise the warehouses create.[16],[17] Moreover, the people working in these warehouses are often subject to unsafe working conditions, inadequate safety protections, and low wages.[18]

Other stakeholders have focused their attention on the new "dark stores" operated by rapid-delivery grocery apps that have taken over empty storefronts during the pandemic. Opponents argue that these facilities undermine mom-and-pop shops like bodegas and delis, deaden our streetscapes, and potentially violate zoning regulations and other city ordinances by operating as mini-warehouses in commercial corridors.[19],[20]

While much more could be said about each of these important issues, this report primarily focuses on another crisis facing Manhattan amid the e-commerce boom: the dramatic uptick in last-mile deliveries. As consumer demand for online shopping and fast delivery has reached an all-time high, so has the volume of delivery vehicles on our streets. Komanoff and Schneider's calculations suggest there are at least 7,830 delivery trucks exclusively carrying e-commerce parcels throughout the city every day.[21] As these trucks transport hundreds of thousands of parcels from warehouses and MFCs to their final destinations, they create a host of livability and environmental concerns.

First, delivery vehicles create considerable congestion by occupying space on our roads while driving and often parking illegally when they reach delivery destinations.



Map: Map: BetaNYC/ MBPO. Data source: Charles Komanoff & Todd W. Schneider's "Taming New York City's E-Delivery Gridlock: Time-Based Charles for Street Space." Created with Datawrapper.

Drivers – who are under pressure to make hundreds of deliveries on time every day to keep their jobs – are often unable to find parking or curbside space to accommodate their deliveries. To avoid delayed or missed deliveries – or having to circle until parking becomes available – many double-park or park in bus lanes, bike lanes, sidewalks, and crosswalks to unload, sort, and deliver packages. Trucks are frequently left blocking these areas for hours, resulting in long delays for drivers, emergency vehicle operators, bus riders, and cyclists.[22,23] Delivery vehicles slow traffic throughout the five boroughs, but these delays are most pronounced in Manhattan. Komanoff and Schneider note that 22 of the city's 25 neighborhoods with the greatest congestion caused by e-commerce delivery vehicles are in Manhattan, and 18 of those are located in the Central Business District.[24]

The 25 NYC neighborhoods with the greatest congestion caused by e-commerce delivery vehicles

Taxi Zones ranked by the **travel delays caused per pkg delivered** *during the morning peak (6 am to noon on weekdays)*

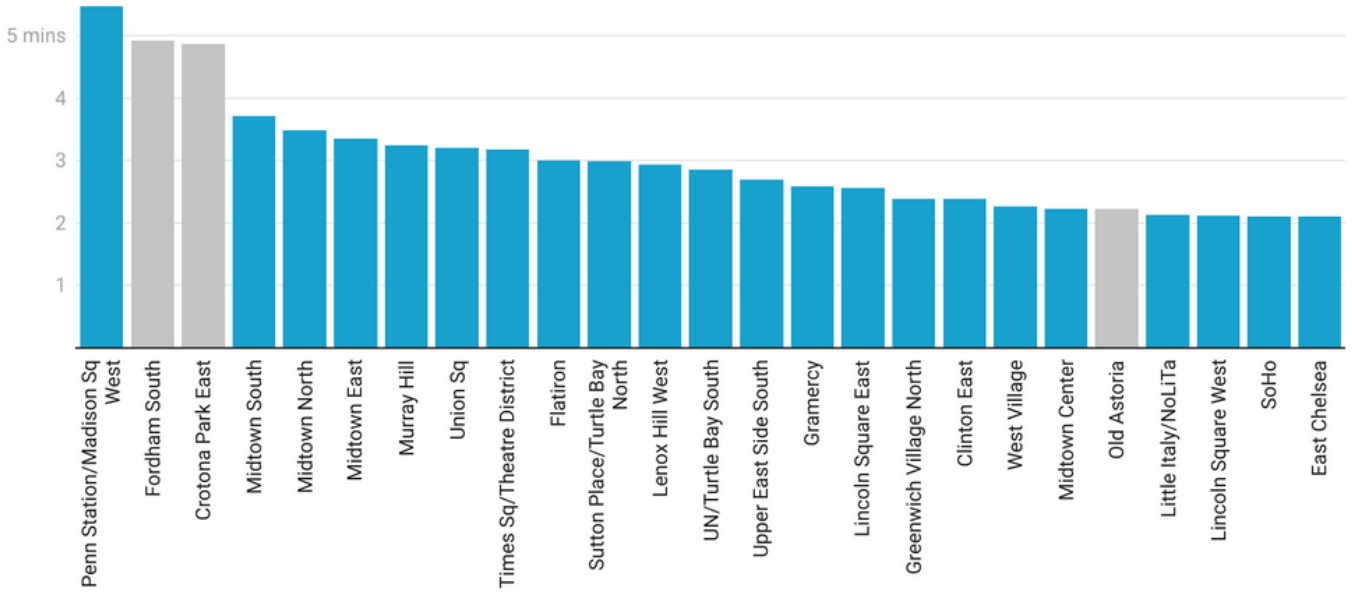


Chart: BetaNYC/ MBPO. Data source: Charles Komanoff & Todd W. Schneider's "Taming New York City's E-Delivery Gridlock: Time-Based Charles for Street Space." Created with Datawrapper.

Delivery companies' pervasive illegal parking practices not only create congestion, but they also make our roads and neighborhoods less safe. When trucks park illegally, cars and buses are forced to maneuver around them on tight, busy roads; emergency vehicles' access is blocked; cyclists are forced into vehicle traffic; pedestrians' sight lines are obscured. When crashes occur, they are also far more likely to cause serious injury or death because of delivery trucks' size and weight.[25] Last year, a pedestrian was killed by a DHL van at West 73rd Street and Broadway.[26] A few months later, a delivery worker was killed in a crash with an illegally parked delivery truck on First Avenue.[27] These heartbreaking deaths are two of many that have resulted from delivery truck-involved pedestrian and cyclist accidents in recent years.

The pollution-spewing fleet of last-mile delivery trucks and vans also pose serious environmental and public health challenges. They generate significant levels of nitrous oxide, benzene, particulate matter, and other toxic contaminants while idling on our roads, thus exacerbating climate change and air pollution. Beyond undermining our climate and clean air goals, this pollution has alarming health consequences. Numerous studies indicate that traffic-related air pollution is a major risk factor for developing asthma, respiratory infections, cardiovascular diseases, lung cancer, leukemia, and a myriad of other diseases.[28],[29],[30] The loud noises these trucks create can also cause anxiety, hearing damage, headaches, and sleep issues.[31]

THE POLICY LANDSCAPE: SUCCESSES & SHORTCOMINGS

The City has launched a range of initiatives over the last two decades to manage the last-mile. This section offers an overview of many of those key initiatives – and their successes and shortcomings – to identify the gaps that still exist in the City's efforts to ameliorate e-commerce deliveries' harmful impacts on our transit system, street safety, health, air quality, environment, and overall quality of life.

THE STIPULATED FINE PROGRAM (SFP):

The SFP gives large delivery companies reduced parking fines in exchange for them waiving the right to contest their tickets in court. Created by the NYC Department of Finance in 2004, the City argues that the courts do not have capacity to hear even a small percentage of the hundreds of thousands of tickets delivery companies annually receive, and that enrolled companies end up paying roughly the same fine amounts as those who dispute their tickets.[32,33]

However, the SFP allows companies to commit traffic and parking offenses with near impunity. According to the NYC Independent Budget Office, the program saved the top 10 most heavily fined companies – including UPS, FedEx, and FreshDirect – over $20.4 million in summonses in 2018 alone.[34] These steep discounts have caused delivery giants to view tickets as simply a small cost of doing business in the city, eliminating their incentive to follow our traffic laws.[35] One illustrative anecdote: a FreshDirect driver told the New York Post that they illegally park a truck in a Hell's Kitchen crosswalk from 6 am – 10 pm every day to make deliveries because the discounted tickets are "not a big deal to the company."[36]

OFF-HOUR DELIVERY (OHD) PROGRAM:

The OHD program encourages companies to receive their deliveries during the off-hours – between 7 pm – 6 am – to reduce truck traffic during morning and evening peak periods. It was first launched as a small-scale pilot in 2010 and then expanded by the de Blasio administration. There are now more than 1,150 locations enrolled in the program – predominantly businesses in Manhattan's CBD and Downtown Brooklyn – including Whole Foods Market, Peet's Coffee, New Deal Logistics, Sysco, and Foot Locker.[37],[38],[39]

The OHD program benefits participating delivery companies, receiver businesses, our communities, and the environment.[40] Carriers have faster and more efficient routes – and therefore more reliable delivery times – when making deliveries during the off-hours, reducing their operational costs.[41] Receiving businesses benefit from the more predictable delivery windows, which allow them to better manage their inventory levels and ensure their stores are fully prepared before opening.[42] There is less truck traffic on our roads during busy daytime hours. Finally, the quicker delivery routes during off-hours reduce the emissions generated by delivery trucks by 55-67%, eliminating millions of metric tons of carbon dioxide annually.[43],[44]

Despite these tremendous benefits, there are key barriers to a more large-scale expansion of the program. Most importantly, it is logistically challenging and/or unfeasible for many retail businesses to receive deliveries during the off-hours; companies either have to install an unassisted delivery system that enables drivers to make deliveries without supervision – which can be expensive – or arrange for employees to stay late to accept the deliveries.[45] There has also been pushback from some community members who have expressed concern that the program is pushing noisy delivery vehicles into residential areas when they are trying to sleep.[46]

COMMERCIAL CARGO BIKE PROGRAM:

The Commercial Cargo Bike program encourages delivery companies to make more of their last-mile deliveries via electric cargo bikes.[47] The program was launched by DOT as a pilot in 2019 – with three participants (UPS, Amazon, and DHL) and 100 bikes – to explore the role cargo bikes can play in sustainable urban deliveries and how the City can better incentivize their uptake. While the pilot was welcomed as a step in the right direction by most, it was also criticized for its small-size and for not providing dedicated staging areas for the bikes.[48]

The program has since been enhanced and expanded. DOT built dedicated staging areas for enrolled cargo bikes to use on Warren Street and Houston Street, and the City Council authorized cargo bikes usage of commercial loading zones.[49] Three new carriers also enrolled in the program – FedEx, Reef Technology, and NPD Logistics. Together, they use around 350 cargo bikes to make more than 45,000 deliveries a month.[50] For context: considering that there are more than 7,000 delivery trucks carrying e-commerce parcels on our roads daily, deliveries made via cargo-bike still only represent a tiny fraction of all last-mile deliveries.

CLEAR CURBS AND CLEAR LANE INITIATIVES:

The Clear Curb and Lane initiatives – components of former Mayor de Blasio's 2017 Congestion Action Plan – aimed to reduce the congestion caused by last-mile deliveries. Clear Lanes only permitted deliveries on one side of the road between 6 am – 7 pm on 11 busy crosstown streets in Midtown Manhattan. Clear Curbs, a six-month pilot, prohibited curbside loading on both sides of the street during peak hours in parts of Midtown, Flatbush Avenue, and Roosevelt Avenue.[51] Both initiatives received strong criticism from officials, residents, and business owners – who argued their design and implementation were rushed and that the delivery disruptions they caused harmed small businesses – and were ultimately terminated.[52],[53],[54]

PUBLIC ELECTRIC VEHICLE CHARGING INFRASTRUCTURE:

The expansion of public charging infrastructure has been another component of the City's efforts to increase delivery companies' uptake of electric vehicles (EV) for last-mile deliveries. To date, DOT has installed at least 117 publicly accessible fast-charging plugs – capable of supporting medium and heavy-duty EVs – and 1,400 level 2 curbside plugs across the five boroughs that are compatible with most EVs.[55,56] These stations, while a good start, fall dramatically short of the infrastructure that would be required to support a more widespread and accessible transition to EVs for both the general public and last-mile logistics industry.[57]

NEIGHBORHOOD LOADING ZONES (NLZ):

The NLZ program provides dedicated curbside space for active loading and unloading, deliveries, pick-ups, and drop-offs in residential areas.[58,59] Launched as a pilot in 2019 by DOT, these zones were shown to be highly effective at reducing double-parking. On the 26 blocks where they were first implemented, double-parking decreased by almost 73%.[60] Despite its overwhelming success, the pilot was criticized by some residents who were upset about the loss of private passenger vehicle parking.

Nonetheless, as demand for residential curb space for deliveries soared during the pandemic, the City Council passed Local Law 168 to create more of these zones. This law requires DOT to create a public methodology to determine where NLZs are needed to enhance street safety and reduce traffic congestion, and subsequently, build at least five zones in every neighborhood identified by the methodology annually (provided that at least 500 new NLZ are created every year for at least the next three years).[61] For context: There are an estimated 120,000 city blocks throughout the five boroughs.[62]

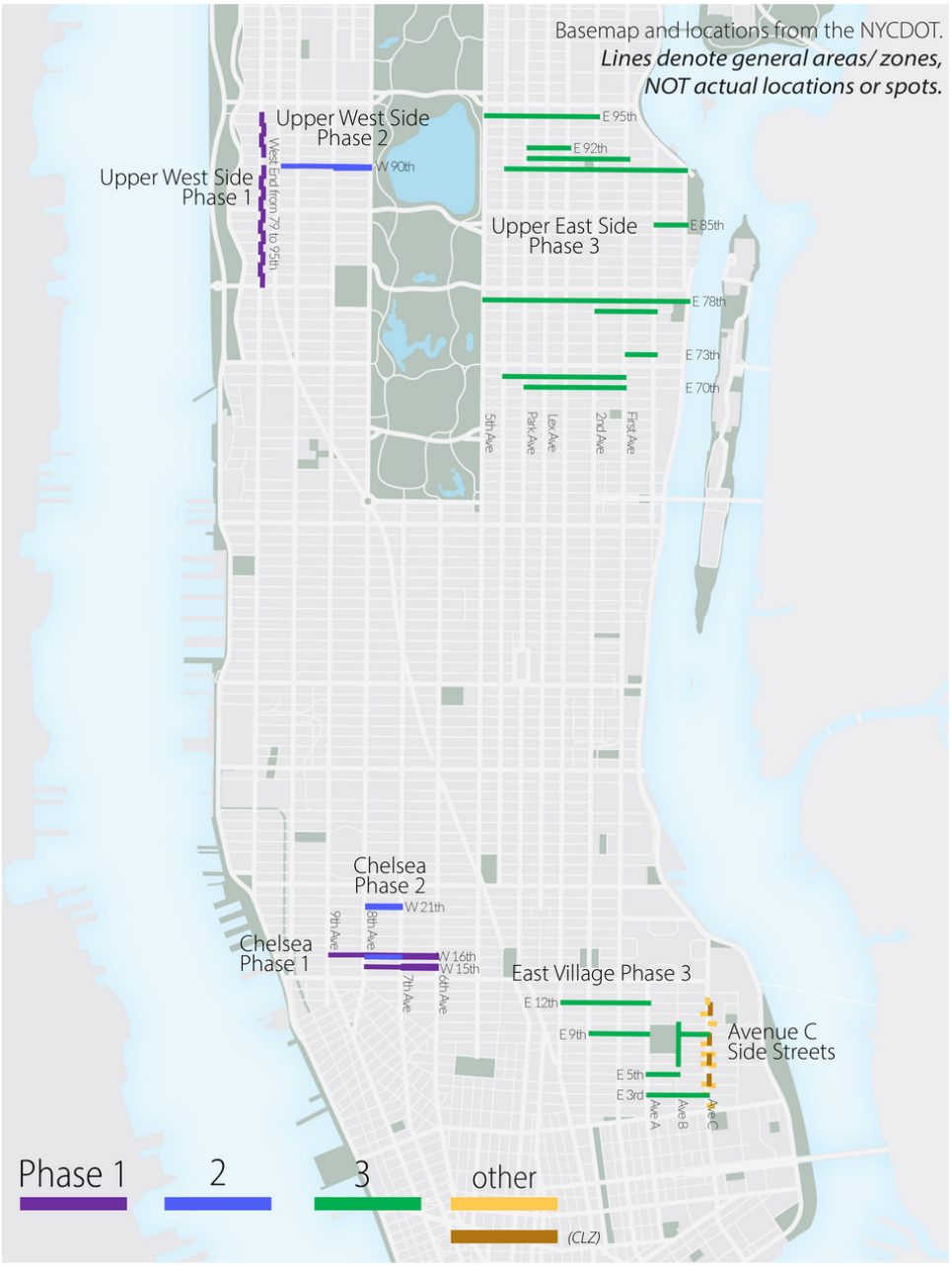
DOT has been slow to identify locations for – and subsequently build – the 500 new NLZs that are required to be created in 2022 under Local Law 168 to date. Its methodology for determining where exactly these zones are needed to support street safety has also not been publicly released yet. However, the agency is working with Community Boards and residents to solicit feedback on suitable locations for them.[63] There are currently about 30 NLZs located in Manhattan. These zones are concentrated in Chelsea, the Upper West Side, the Upper East Side, Avenue C, and the East Village.[64]

COMMERICAL LOADING ZONES (CLZ):

Local Law 167 – passed in 2021 – prohibits the use of City-issued parking placards in commercial loading zones in Manhattan's CBD, requires all commercial loading zones have a Muni-Meter – and that parking rates be no less than $6 for the first hour and increase by at least $2 every additional hour – and extends the hours for commercial vehicle parking in loading zones from three to eight hours.[65,66] The delivery industry had complained that it often takes drivers well over three hours to deliver parcels given the height and density of the city's apartment buildings and that loading zones were often blocked by vehicles using City-issued placards.[67]

Despite the passage of Local Law 167, a "Placard Census" conducted by Streetsblog NYC in August 2022 emphasized that placard abuse still remains a rampant issue in lower Manhattan, with vehicles bearing placards continuing to regularly block loading zones.[68]

Commercial and Neighborhood Loading Zones (CLZ/ NLZ) in Manhattan



MICRO-DISTRIBUTION CENTERS:

2021's Local Law 166 required DOT to release a request for expressions of interest (RFEI) to solicit feedback from freight operators and other stakeholders interested in facilitating, operating, or using micro-distribution centers in the city.[69] It was released by DOT in August 2022 and includes questions about city-level policy changes that are needed to help micro-distribution centers operate more successfully, ways to facilitate the shared use of these facilities by multiple operators, and effective approaches to regulate and manage these centers.[70] DOT is required to publish a report with the RFEI's findings by the end of 2022 and then establish a pilot to support micro-distribution centers by July 1, 2023.[71]

POLICY RECOMMENDATIONS

While the City has established a strong policy foundation to cope with the dramatic rise in e-commerce deliveries, gaps remain. To help fill them, the Manhattan Borough President's office has identified 4 goals that outline an ambitious and strategic vision for a more efficient, sustainable, and safe e-commerce delivery system in Manhattan and throughout the city. The goals are accompanied by 12 policy recommendations that would help transform this vision into reality.

GOAL 1: TAKE LAST-MILE OPERATIONS OFF OUR STREETS

Delivery vehicles regularly block our streets, sidewalks, bus stops, and bike lanes to unload, sort, and deliver e-commerce packages, creating severe traffic jams and unsafe roads. Recommendations to establish more appropriate locations for last-mile operations include:

Recommendation: Repurpose Parking Garages for E-Commerce Fulfillment Space

The City should update its zoning regulations – either by creating a special permit or using a zoning text amendment – to allow e-commerce carriers to rent space from private parking garages to use for last-mile fulfillment operations. Freight trucks could deliver parcels to the garages during off-hours for processing and sorting. The packages could be delivered the following day via cargo bikes or hand trucks. This system would help take package unloading and sorting off our streets and allow carriers to use more green and efficient modes of transit for last-mile deliveries.

Similar programs are underway in other major cities. A 3.8 million-square-foot parking garage under Millennium Park in Chicago is being converted into a MFC for e-commerce retailers.[72] Montreal launched a pilot program in 2019 to turn a vacant bus depot into an e-commerce consolidation hub; the five carriers who participated in the pilot used the microhub to transload parcels from freight trucks to zero-emission cargo bikes for delivery.[73] London approved a plan in 2020 to convert an underused parking garage into a last-mile consolidation hub; Amazon Logistics won the competitive bid to operate the hub, committing to use zero-emission vehicles for all deliveries from the facility.[74]

Recommendation: Utilize our Waterfront for Cargo Delivery and Staging

The City should leverage its waterways and waterfront to support more efficient and sustainable last-mile operations. One potential approach could involve using barges to transport cargo-bikes – already loaded with packages – from warehouses to Manhattan's piers. Once the barges dock, the delivery workers could bike directly into neighborhoods that are well-suited for cargo bike delivery, including many of those in lower Manhattan. The DOT and NYC Economic Development Corporation (NYCEDC) acknowledge the untapped potential of our waterfront and marine freight infrastructure, and recently issued a RFEI to explore launching a pilot program to address it. However, the RFEI's findings have not yet been shared.[75,76]

GOAL 2: ENSURE RESIDENTIAL AREAS CAN MEET THE GROWING DEMAND FOR DELIVERIES

The swell in e-commerce deliveries has intensified competition for scarce curb and street space in our neighborhoods, resulting in more bottlenecks, air pollution, conflict between curb users, and delayed packages. Recommendations to reduce package-related stress in residential areas include:

Recommendation: Make Loading Zones Ubiquitous in all Residential Neighborhoods in Manhattan

DOT must go well above the requirement laid out under Local Law 168 of installing 500 NLZs citywide per year. This should be considered a minimum target, with the goal being making NLZs ubiquitous across all of Manhattan's residential neighborhoods. The agency should, as a first step, prioritize installing these new zones on dense residential blocks, particularly in lower-income areas that experience excessive double-parking, traffic-related injuries and deaths, and air pollution. The City's traffic camera network, parking citation data, and other metrics can be used to identify these areas. Community Boards, residents, local elected officials, and carriers must be consulted in this process.[77] DOT should publish information about these zones – including where and when they are anticipated to be built – in a user-friendly format, ideally, an online, interactive map.

Recommendation: Expand the Network of Access Point Locations at Local Small Businesses

The City should partner with e-commerce companies and carriers to expand their network of access point locations at mom-and-pop shops – including bodegas, pharmacies, dry-cleaners, barber shops, and bookstores – in Manhattan. Like parcel lockers, these access points help carriers consolidate low-volume pickups and deliveries – thus reducing the volume of delivery trucks in our neighborhoods – and provide consumers with a convenient and secure way to get packages. Importantly, they also boost foot traffic and business at participating retailers, many of whom have been hard-hit by the pandemic.[78] Despite these benefits, Amazon and FedEx predominantly use other large corporate retailers as access points, including Walgreens and Office Depot, while others do not use access points at all.[79] To encourage the creation of more access points at local small businesses, the Department of Small Business Services should dedicate staff to conducting outreach, facilitating these partnerships, and launching a localized and targeted media campaign that features access points at local retailers and the companies that use them.

Recommendation: Launch a Common Carrier Parcel Locker Pilot Program

The City should pursue a public-private partnership to launch a common carrier parcel locker pilot program in a residential area in Manhattan. By providing multiple carriers and retailers with a single secure location to deliver packages to, common carrier lockers eliminate the need for drivers to go door-to-door making individual deliveries, and thus, dramatically reduce truck dwell time, failed delivery attempts, and package theft. They also allow residents to receive all of their packages at once in a safe, convenient, and contactless way, particularly valuable during the pandemic.

A location for the pilot should be selected based on a variety of factors, including delivery density, rates of package theft and missed deliveries, traffic congestion, air pollution, and feedback from community members and last-mile carriers. Once a viable location has been identified – either in a public space or residential building – a Request for Proposals should be issued to identify a vendor to install, operate, and maintain the locker system.[80] Based on the pilot's outcome, the City should explore building a network of common carrier lockers throughout the five boroughs.[81,82]

Seattle offers an excellent example of what this program could look like. In 2018, the Urban Freight Lab at the University of Washington – in partnership with Seattle's Department of Transportation, retailers, freight carriers, parcel delivery companies, and a locker company – installed a common carrier smart locker system in the Seattle Municipal Tower downtown. Evaluations of the pilot found that delivery truck dwell time decreased by 78% and failed delivery attempts were entirely eliminated. Feedback from participating consumers, carriers, and e-commerce retailers was also overwhelmingly positive. Interestingly, smaller retailers shared that having access to the locker system helped them compete more with giants like Amazon that have their own branded, single carrier lockers.[83] The US Department of Energy provided funding to scale the pilot to several other locations across Seattle based on this resounding success.[84]

GOAL 3: MAKE E-COMMERCE DELIVERIES MORE SUSTAINABLE

Gas-guzzling delivery vehicles generate high levels of greenhouse gas emissions, particulate matter, and other toxic contaminants, exacerbating climate change and air pollution, and thus harming New Yorkers' health. Recommendations to incentivize companies to electrify their last-mile fleets include:

Recommendation: Pilot Green Loading Zones in Midtown and Lower Manhattan

DOT should partner with Community Boards to create at least one Green Loading Zone (GLZ) – curbside space reserved for low- and zero-emission commercial vehicles like cargo bikes – in every community district. According to a range of stakeholders recently surveyed by the Urban Freight Lab – including freight industry representatives, retailers, and carriers – Midtown and lower Manhattan would be the most beneficial locations to have GLZs.[85] The City could transform the curb space where abandoned outdoor dining sheds are currently being removed to create these zones. The zones should have EV charging infrastructure, clear signage that differentiates them from other loading zones, automated enforcement technology that tickets all unauthorized vehicles that park in them, and discounted parking rates for authorized vehicles.[86]

It is well-established that GLZs are a powerful incentive to encourage companies to transition to using greener modes of transportation for last-mile deliveries.[87] Several stakeholders surveyed by the Urban Freight Lab said they would only consider deploying EVs in the city if GLZs were created.[88] Other fleet managers shared similar sentiments about the City installing GLZs, indicating that access to GLZs would be just as valuable to their businesses as cash subsidies.[89]

Recommendation: Vary Congestion Pricing Fee by Vehicle Size, Type and Congestion Levels

When congestion pricing is implemented, the fee should be dynamic, varying based on vehicle size, type, and current levels of traffic congestion and demand.[90] Larger, petrol, and diesel vehicles must pay a higher fee than smaller and/or zero- or low-emission vehicles. Entering the CBD during the morning and evening peak hours must incur a significantly higher fee than trips made during the off-hours. This design would encourage e-commerce companies and carriers to transition to using smaller and greener vehicles, eliminate unnecessary packaging to lower shipping volume, and shift more routes to off-peak hours for cost savings. Ideally, this would lessen both the environmental and congestion costs imposed by delivery trucks below 60th Street.

Recommendation: Amend E-Cargo Bike Width Restrictions

State legislators should amend the law to increase the legal width of electric-assist cargo bikes from 36 to 48 inches.[91] Cargo bikes are one of the most sustainable and efficient modes of transportation for last-mile delivery – they reduce traffic, illegal parking, and greenhouse gas emissions – but their uptake has been slow among carriers.[92] In large part, this is the result of recently passed restrictions on their width, which make it challenging for companies to procure off-the-shelf cargo bike models; most are wider than 36 inches. Moreover, many of the cargo bikes that carriers already owned prior to the recent regulations have now been rendered non-compliant.[93] Amending these restrictions would allow for carriers to start using more cargo bikes and fewer trucks for last-mile deliveries.

Recommendation: Build More Public Charging Infrastructure for E-Bikes

There have been numerous reports of faulty lithium-ion batteries in e-bikes catching fire while being charged in apartment buildings. The City must advocate for federal and State action to better regulate the equipment used by delivery workers. At the local level, the City can help mitigate the risk of residential fire, injury, and death posed by e-bikes by building more public charging docks – similar to Citi Bike Stations — across the city. These stations should be concentrated in areas where large populations of delivery workers who use e-bikes live and work.

GOAL 4: BETTER ENFORCE THE CITY'S TRAFFIC LAWS

Delivery vehicles' pervasive illegal parking practices cause gridlock and create hazardous roadway conditions. Recommendations to improve e-commerce delivery vehicles' compliance with the City's traffic laws and parking regulations include:

Recommendation: Increase Enforcement of Parking Violations in Loading Zones

DOT must go well above the requirement laid out under Local Law 168 of installing 500 NLZs citywide per year. This should be considered a minimum target, with the goal being making NLZs ubiquitous across all of Manhattan's residential neighborhoods. The agency should, as a first step, prioritize installing these new zones on dense residential blocks, particularly in lower-income areas that experience excessive double-parking, traffic-related injuries and deaths, and air pollution. The City's traffic camera network, parking citation data, and other metrics can be used to identify these areas. Community Boards, residents, local elected officials, and carriers must be consulted in this process.[94] DOT should publish information about these zones – including where and when they are anticipated to be built – in a user-friendly format, ideally, an online, interactive map.

Recommendation: Update the Stipulated Fine Program's Fine Schedule

The Department of Finance (DOF) must update the SFP's fine schedule so that participants incur the full fine amount for certain dangerous parking violations, including standing in a bus lane, crosswalk, sidewalk, or safety zone. While DOF increased the fees for some stipulated fine infractions, including double-parking, at the start of 2022, these changes did not go far enough. The revenue generated by these violations could be used to support our transit system and the initiatives outlined in this report.

Recommendation: Expand Use of Automated Enforcement Technology

The City should expand its use of automated enforcement technology – enforcement via traffic cameras – to more frequently ticket delivery vehicles for their parking violations. A great first step would be scaling up the bus lane enforcement camera program. Every mile of bus lanes throughout the city should be covered. Next, the City should advocate to the State legislature to grant the City broader authority for camera enforcement of illegal parking and loading zone compliance. These actions would reduce the strain on the NYPD's enforcement efforts and increase delivery vehicles compliance with our parking regulations.

CONCLUSION

If New Yorkers continue shopping online at their current rate, there will be more than one billion packages delivered annually throughout the five boroughs by 2024.[95] The City must anticipate and prepare for this growth so that it does not further harm New Yorkers' health and well-being and undermine the city's climate resilience.

There is no silver bullet to fix the e-commerce delivery system, but the recommendations outlined in this report provide a helpful starting point. Repurposing currently underutilized land – including private parking garages and our waterfront – can help take last-mile operations off our streets. Parcel lockers, access points, and neighborhood loading zones can be leveraged to reduce e-commerce package-related stress in residential areas. Congestion pricing, Green Loading Zones, and expanded electric charging infrastructure for e-bikes can incentivize carriers to transition to using smaller and greener last-mile delivery vehicles, improving the quality of our air and reducing GHG emissions. Updating the Stipulated Fine Program's fine schedule, better enforcing loading zone violations, and expanding the use of automated enforcement technology can improve delivery vehicles' compliance with traffic and parking laws, thus reducing congestion and making our streets more safe for all street users.

This work is a top priority for the Manhattan Borough President's office, but we cannot do it alone. Successfully implementing and enforcing the policies outlined in this report will require sustained partnership and collaboration from a wide range of stakeholders across the public, private, and civil sectors. There will certainly be challenges along the way, but the potential cost of inaction is too high to risk.

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KEY TERMS

For the purpose of this report, the following terms are defined as:

- Commercial Loading Zones are metered, curbside zones set aside for use by commercial vehicles for the purpose of making pickups, and loading or unloading goods or other items permitted under the City's rules and regulations.
- E-commerce is the activity of buying or selling goods and services over the Internet.
- E-commerce retailers are companies that sell goods or services over the Internet. The term is used primarily in this report to refer to business-to-consumer (B2C) companies that sell goods or services to individual consumers or businesses. Examples of B2C companies include Amazon, Walmart, Apple, Target, and Ikea.
- Green Loading Zones are curbside zones set aside for use by low and zero-emission commercial vehicles, including electric cargo bikes and vans.
- Last-mile delivery is the final step in the delivery process where a parcel is transported from a fulfillment center, transportation hub, or warehouse to its final delivery destination.
- Last-mile delivery companies are businesses that provide last-mile delivery services. Many e-commerce companies outsource fulfillment operations – including packaging and delivery – to these companies. Examples include UPS, FedEx, DHL, XPO, and USPS.
- Micro-fulfillment centers are small facilities – usually 10,000 square feet or less – used by e-commerce companies to store a limited amount of inventory, and process and ship orders. They tend to be located in close proximity to end consumers, allowing companies to provide quick last-mile delivery services.
- Staging areas are locations where parcels are sorted, consolidated, and loaded onto delivery vehicles.

ABBREVIATIONS

CBD	MANHATTAN'S CENTRAL BUSINESS DISTRICT, COVERING MANHATTAN SOUTH OF 60TH STREET
DOF	NEW YORK CITY DEPARTMENT OF FINANCE
DOT	NEW YORK CITY DEPARTMENT OF TRANSPORTATION
EDC	NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATION
EVS	ELECTRIC VEHICLES
GHG	GREENHOUSE GAS EMISSIONS
GLZ	GREEN LOADING ZONE
MFC	MICRO-FULFILLMENT CENTER
NLZ	NEIGHBORHOOD LOADING ZONE
NYPD	NEW YORK CITY POLICE DEPARTMENT
OHD	OFF-HOUR DELIVERIES
SFP	STIPULATED FINE PROGRAM

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