



Microhubs Pilot

**Recommendations for distributing goods via sustainable modes of transportation
Prepared in Response to Local Law 166 (2021)**

April 2023



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Context



Local Law 166 (2021)

Bill to support micro-distribution centers (microhubs) for distributing goods via sustainable modes

- The bill required the Department of Transportation (DOT) to issue a request for expressions of interest (RFEI) from entities interested in facilitating, operating, or using micro-distribution centers and to seek feedback on potential challenges and opportunities.
- This legislation became effective on December 24, 2021, and requires NYC DOT to publish a report on findings by the end of 2022 and, by July 1, 2023, establish a pilot program (“Pilot”) to support micro-distribution centers within the boroughs of New York City.

Microhubs are a critical part of the City's comprehensive freight strategy

The City is committed to encouraging greener and more efficient truck deliveries, increasing the share of goods moved by water, rail, and cargo bicycles while supporting innovative practices.

- **Delivering Green:** Lays out five bold steps the City will take to fundamentally restructure freight distribution and create a sustainable system for getting goods where they need to go.
- **Delivering New York:** DOT's blueprint to advance our vision of a safe, sustainable, equitable, and efficient "last-mile" freight delivery system.
- **NYC Streets Plan:** DOT's five-year transportation plan outlines steps to improve the safety, accessibility, and quality of the City's streets for all New Yorkers, prioritizing areas that need the most investment.



Alignment with Broader NYC Goals

“New” New York Plan

- Reimagine New York’s Commercial Districts as Vibrant 24/7 Destinations
 - Flexible option to repurpose underused spaces and fill vacancies
 - Improve quality-of-life issues in business districts by promoting sustainability
- Make It Easier for New Yorkers to Get to Work
 - Reduce demand for trucks on local streets and provide curb access to decrease double-parking
- Generate Inclusive, Future-focused Growth
 - Cutting edge strategies can generate new transportation jobs, technical innovation, and business opportunities
 - Vision to equitably scale microhubs pilot in ways that support fair access to opportunity

Public Realm Priorities

- Work with businesses, community partners, and city agencies to build vibrant, attractive, and inclusive public spaces
 - Microhubs require public and private sector coordination to adapt public space in support of economic recovery, exemplifying forward-thinking reforms that break down silos and build public-private partnerships
 - Opportunity to pilot innovative designs and technologies that improve public space management



Background

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Consumer & Freight Trends

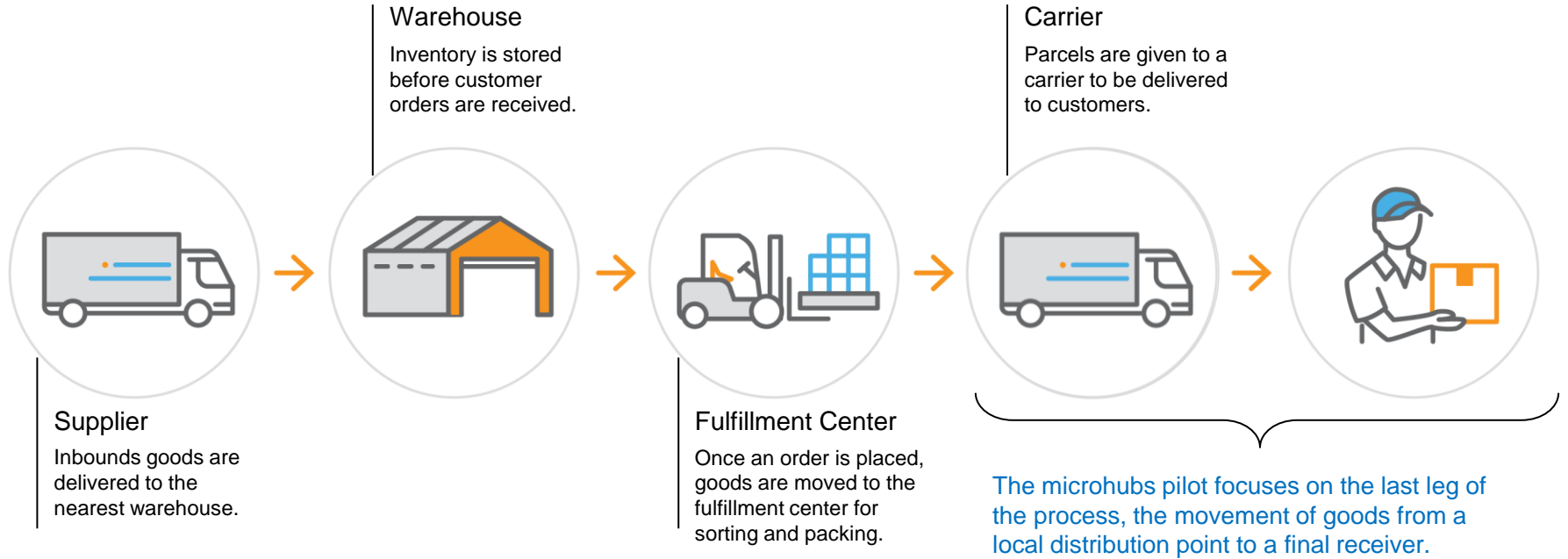
Increasing freight movement is driven by consumer demand.

- Over 80% of New Yorkers received a package at home in the last 7 days, 18% received packages on 4 or more days
- Pre-COVID-19, 60% of the deliveries were made to commercial customers and 40% to residential customers.
- Approximately 80% of deliveries are now going directly to residential customers
- Trucks conduct 90% of freight deliveries in NYC, leading to impacts on air quality, traffic, quality of life, and safety; disproportionately impacting environmental justice communities



DOT aims to improve infrastructure for the safe, equitable, efficient, and responsible movement of goods.

Typical Logistics Process



Local Distribution

Local distribution is consuming street, curb, and sidewalk space.



On-street sorting and transloading of deliveries impact the safety of the operators



Double parking and haphazard delivery staging in the parking lane impacts road users, and impedes mobility



Growing demand for deliveries increases truck circulation across neighborhoods, contributing to increased traffic congestion and concerns about poor air quality and safety

Pilot Goals

The adoption of microhubs will support:



Greater adoption of sustainable delivery strategies by volume of deliveries switched to decarbonized modes.



Public safety improvements through the reduction in the roadway (i.e., double parking) and sidewalk obstructions.



Operational efficiencies and cost savings such as reduced congestion delays, toll costs, and fuel costs.



Air quality and noise level improvements from replaced truck trips, reduced truck traffic volumes in congested areas, and reduced truck idle times.



Increased delivery worker **safety**.



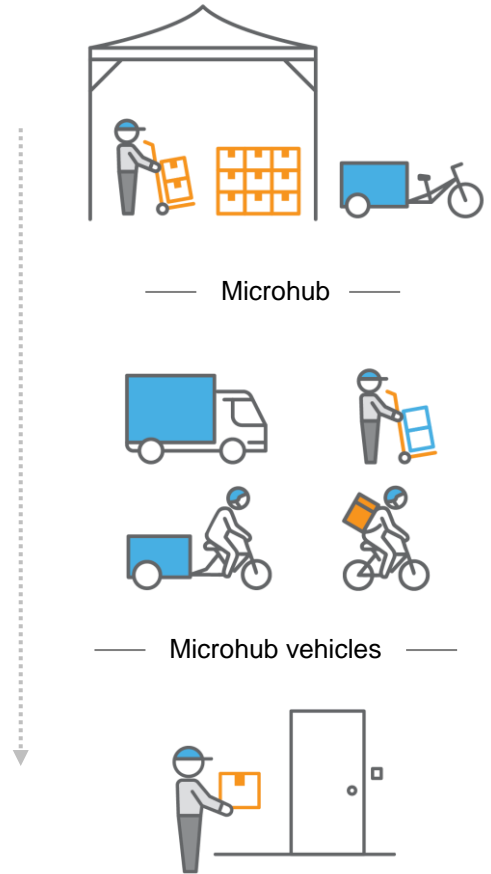
Increased programming and amenities promoting desired activity in underused public spaces.

Definition of Microhubs in NYC

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Microhubs Defined

- A **micro-distribution center or microhub** is defined as a space located within the public or private right-of-way where goods are transloaded by multiple operators from larger freight vehicles to smaller, low-emission and electric vehicles, or human-powered modes (e.g., cargo cycles, hand carts) for final delivery.
- A **microhub vehicle** is defined as a small, low-emission, or electric van or truck, or human-powered vehicle used to carry goods from a distribution center to a final receiver or destination.
- **Local micro-distribution** is defined as the movement of goods from a local distribution point to a final receiver via a low-emission or human-powered mode.



Microhub Vehicles

Last-mile delivery vehicles include but are not limited to the following:



Handcart



Bicycle/ e-
Bike



Cargo Bike



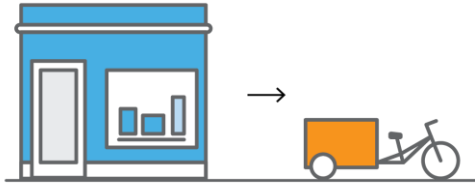
Bicycle/E-Bike
+ Trailer



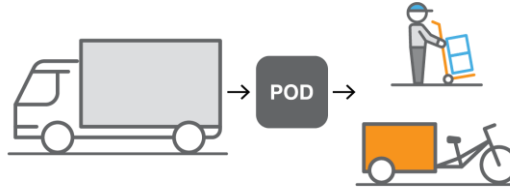
Electric Van

Microhub Variations

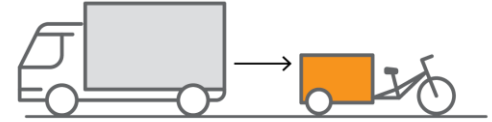
Microhubs have a variety of models to complement multiple programs:



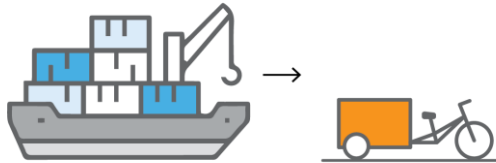
On-demand delivery/retail distribution



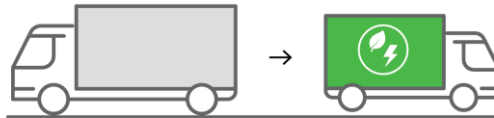
Truck-to-pod-to-cargo bike/handcart



Truck-to-bike/trailer



Barge-to-cargo bike



Box truck-to-EV van/sprinter van



Curbside box truck-to-handcart

Collaborative Programming

Microhubs present an opportunity to further test strategies that promote multi-purpose improvements to freight and the public realm in partnership

Commercial Cargo Bikes

Bike Parking Initiatives



Design & Regulations



Blue Highways/ Waterborne Freight



December 2021



Marine Freight (Blue Highways)



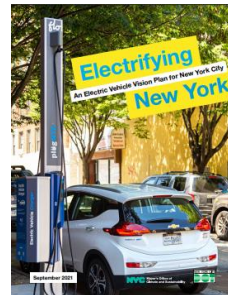
Curb Management/Freight Decarbonization

Curb Access Initiatives



Off-Hour
Deliveries

Freight Electrification

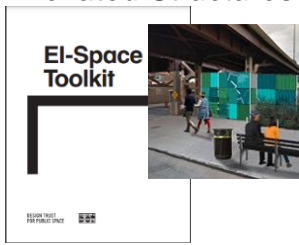


Safety & Public Realm Improvements

Better Barriers



Programming Under Elevated Structures



Examples from other cities

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Case Study Summary



Microhub pilots are in early phases worldwide

- Many case studies have been in operation for less than 5 years
- Participation rates and success tied to enforcement capacity



Pilots primarily meant to foster a change that promotes sustainability and congestion reduction

- Measured by observed double parking reductions and delivery reliability, and CO2 and air pollution reductions
- Part of government and private sector greening initiatives



Revenue generation was not a key factor in pilot design

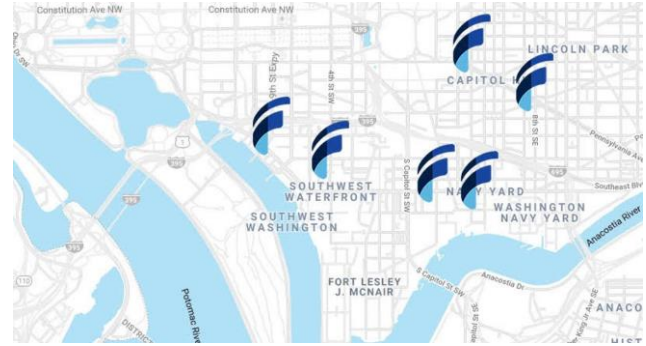
- Operations typically were cost neutral or subsidized
- Pricing followed market rates for parking space or area leases

CurbFlow Pilot – Washington, DC (2019)



App-Assisted, On-Street Curb Parking Reservations

- During the pilot, curb parking was removed at nine locations where commercial deliveries often resulted in double parking, and drivers could reserve loading zone time online either on-demand or in advance.
- 64% reduction in double parking
- Commercial drivers made space reservations more than 15,000 times
- Over 6,350 drivers from more than 900 companies registered to use the service
- Local businesses touted benefits from reliable and efficient deliveries



Locations of Pilot in Washington, DC

Delivery Mode

Area of Service



Pedestrian
Porters



9 curb segments in
Washington, DC

Takeaways for NYC

- Pilot was cut short due to enforcement challenges
- Can pair with future parking/curb management apps if also paired with enforcement solutions
- Interest from industry and businesses to improve reliability



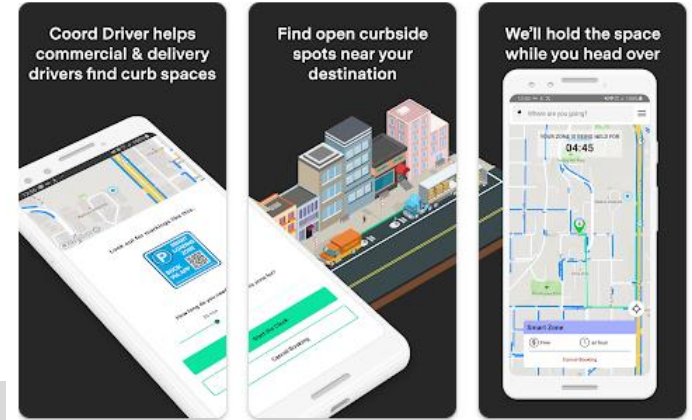
CurbFlow Pilot in Washington, DC

Smart Loading Zones Pilot – Philadelphia, PA (2022)



App-Assisted, On-Street Curb Parking Reservations

- Goal to provide a reliable and efficient way for delivery drivers to safely use the curb space through a six-month pilot of technologies that can improve experience for all curb users.
- Drivers download Pebble Driver App that displays Smart Loading Zones on a map. Driver can then reserve a Smart Zone if they're within 15 minutes of arrival, get directions to the zone, and pay via a preferred payment method for the length of time stopped in the zone.



Delivery Mode Area of Service



Pedestrian Porters



21 loading zones in District 1, east side of So. Broad St

Takeaways for NYC

- Can pair with future parking/curb management apps, including Park NYC pay-by-app initiatives
- Can pair with Green Loading Zones pilot
- Interest from industry in using app for reliable curb access

Pebble Driver App for Smart Loading Zones



Kerbside Management Platform – London (2021)



App-Assisted On-Street Distribution Hub

- Curb space management booking app allows current freight, service, and delivery vehicles to pre-book designated curbside spaces.
- This initiative addresses how future freight movements are planned and operated in already congested city centers. So far, operators have benefitted from a 21% increase in productivity due to less time searching for suitable curb space to unload goods and services.

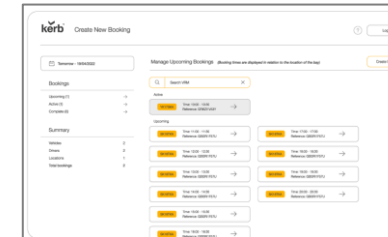
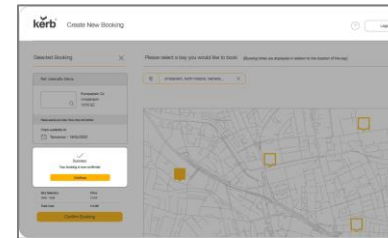
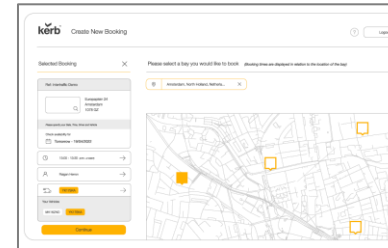
Area of Service



Curb spaces along
Bankside Pier in
Southwark

Takeaways for NYC

- Opportunity to combine hub with future parking/curb management apps, including Park NYC pay-by-app initiatives
- Can pair with Green Loading Zones pilot
- Decreased double parking
- Reliable commercial vehicle curb access



1. Search and book curb space by selecting the date and timeslots, then assigning a driver and vehicle.
2. The assigned driver can park during the allotted time.
3. Drivers can view and manage the bookings made on behalf of the organization.

Common Microhub Pilot – Seattle (2020)

Neighborhood Delivery Distribution Hub

- At the delivery hub, trucks drop off parcels to then be:
 - delivered by electric-assist cargo tricycles using last-mile delivery routing software
 - picked up at an on-site common carrier parcel locker
- A ghost kitchen is also located on-site for businesses to prepare and deliver food, or for customers to pick up.



Electric Pallet (EP1)



Electric-Assist Cargo Bike Fleet

Area of Service



Seattle's Uptown Neighborhood

Takeaways for NYC

- Can pair with NYC DOT Shared-Use Locker Pilot
- Can partner with small businesses focused on delivery-based industries
- Can activate underused open space

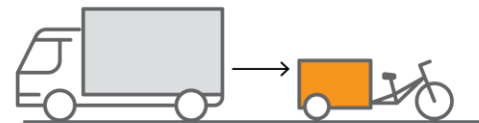


Neighborhood Kitchen and Infrastructure



Common Carrier Parcel Lockers

Amazon Last Mile Logistics Hub – London (2020)



Parking Space Distribution Hub

- The City of London Planning and Transportation Committee approved the initiative to transform 39 car parking spaces within the underutilized London Wall Car Park into a hub for Amazon Logistics, leased at market rate for the spaces.
- Removing **85** delivery vans each day equates to 23,000 less vehicle journeys in central London every year. Replacing just 10% of van freight with bikes/walkers saves as much as 133,300 metric tons of carbon dioxide and 190.4 thousand kilograms of nitrogen oxide on an annual basis.



Amazon e-cargo bike (picture credit Amazon)

Delivery Mode



Pedestrian Porters
and Cargo Bikes

Area of Service

1-1.5-mile
Radius



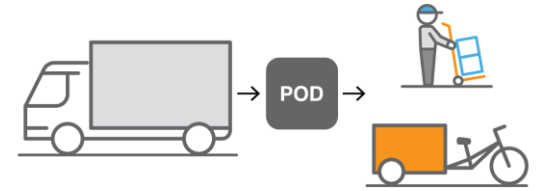
Comprises entire city of London and
parts of neighboring boroughs

Takeaways for NYC

- Could be an opportunity to activate underused DOT or DCAS parking lots using a lease agreement
- Even small shifts to sustainable modes can have large impacts

KoMoDo – Berlin (2018)

Container/Pod Distribution Hub



- KoMoDo comes from 'Kooperative Nutzung von Mikrodepots'. The cooperative supports micro-depots for the delivery industry in order to promote the use of cargo bikes in Berlin.
- Berlin subsidizes a portion of the operational costs by providing stationary shipping containers located at a central point in the city. Various parcel operators deliver to these containers via larger vehicles. Cargo bikes then arrive at the shipping container for loading and last mile delivery. Operators incur facility maintenance costs.



Delivery Mode



160,000 parcels delivered in 12 months by 11 cargo bikes

Area of Service

1-2 mile
Radius



Reduction in noise levels,
emissions and double-parked vans.

Takeaways for NYC

- Opportunity to program underused off-street open spaces
- Opportunity to provide a shared space, where individual containers balance industry privacy with shared use of space

DPD Chronopost Urban Logistics Area (ULA) – Paris (2018)



Office/Retail Space Distribution Hub

- Hub located in the basement level of a commercial/office building, which covers 4000 sq m. on a single floor, 300 sq m of which is a mezzanine office space.
- ULA's delivery fleet made up of electric vans, electric-assisted carrier tricycles, and trolleys.
- ULA handles 4,500 - 5,500 parcels each day, and processes up to 50 delivery rounds per day.



Facility Features

- Two loading bays support six semi-trailers and light commercial vehicles.
- Cold rooms: store fresh products (200 sq m) and frozen products (32 sq m)

Area of Service

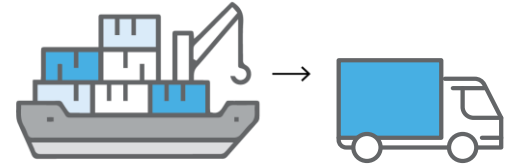


2nd, 3rd, 4th, 5th, and 11th arrondissements in Paris

Takeaways for NYC

- Opportunity to combine micro-hub with cold storage capacity
- Can use existing “dark store” zoning allowances
- Opportunity to program vacant retail and office space

Port of La Bourdonnais – Paris (2022)

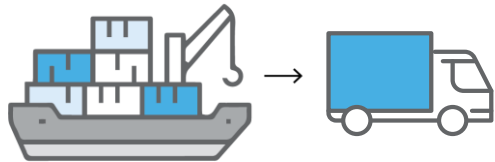


Waterborne Freight Distribution Hub

- Port of La Bourdonnais, located at the foot of the Eiffel Tower, was adapted to accommodate transshipping containers by Franprix, a grocery store chain.
- Goods transported by container ships between the port of Bonneuil-sur-Marne and the port of Bourdonnais in the center of Paris are loaded onto trucks for the last leg of delivery.
- Trucks loaded from container ships on River Seine serve 135 of 350 Franprix stores in Paris, replacing 2,600 truck trips each year and reducing 180,000 vehicle miles traveled.



Delivery Mode



Transshipping
Containers

Delivery Trucks

Area of Service

2.5 mile
Radius



All Franprix retail stores are
located within a
2.5 mile radius

Takeaways for NYC

- Containers and dock infrastructure must be scaled to support sustainable last mile distribution modes
- Requires strong public-private partnerships
- Has potential to significantly reduce truck trips in congested urban areas

Feedback from the RFEI

5

RFEI Response Summary

Respondents described their desired characteristics for different microhub models, including:

- Transportation system characteristics
- Distribution facilities and their characteristics
- Indoor vs. outdoor benefits and facility ownership

DOT will use the findings from the RFEI to shape the recommendations for a pilot program

23 respondents submitted complete or partial responses, out of which:



11 Freight Operators
Carriers or supply chain management companies



10 Stakeholders
Technology, vehicle, or infrastructure providers



2 Community Partners
Organizations interested in supporting microhub activities

Transportation System Characteristics

Below are some of the characteristics respondents mentioned in their RFEI:

Curb Access

- Dedicated truck parking
- Curb cuts for handcart access



Operator Safety

- Low speed roadway
- Sorting and loading space free from vehicle/pedestrian/bicycle conflicts



Network Access

- Transit access for workers
- Truck route access for incoming freight
- Wide bike lanes to facilitate use by 48" wide cargo bikes/trailers



Distribution Facilities Characteristics

Below are some of the characteristics respondents mentioned in their RFEI:

Distribution Center

- Security
- 24/7 availability
- Vehicle access (trucks, bikes)
- Space for sorting and storage
 - Short term racking
 - Micro distribution vehicle loading
 - Parking and vehicle storage
 - Conveyors and forklifts
- Space for on-site repairs
- Utilities and communications
 - Employee bathroom
 - Electricity (for charging, refrigeration, heat)
 - Wi-Fi for package tracking and other technologies
- Other employee amenities (e.g., locker room, kitchen, workspace for dispatcher)

Off-Street Public Space

- Parking for inbound truck
- Space for sorting and loading
- Lighting



Distribution Facility in Flushing

Pod

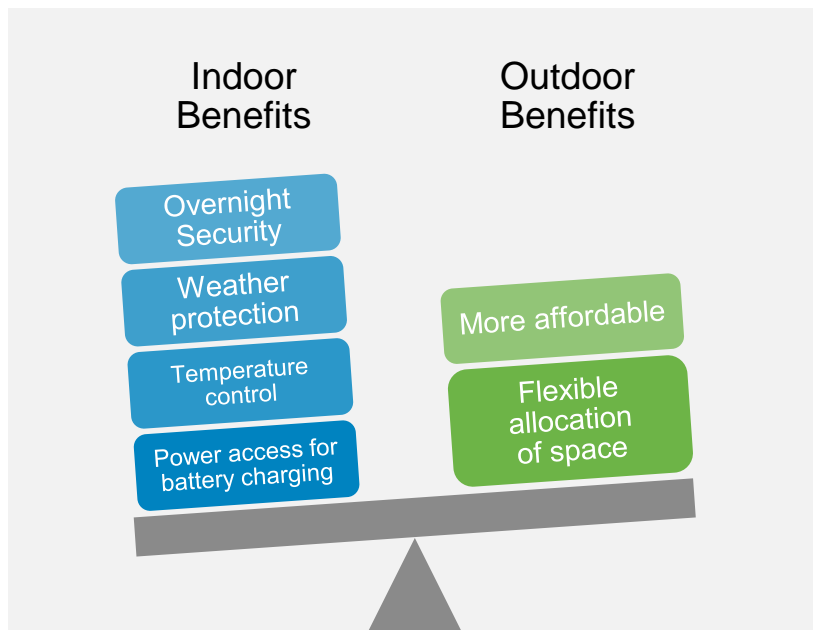
- Parking for inbound truck
- Space for pod (curbside, sidewalk, under bridge, in park, in garage)
- Enclosed, FDNY-compliant charging



Practicing safe E-Bike charging

Indoor vs. Outdoor & Facility Ownership

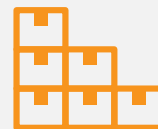
Below are some of the characteristics respondents discussed regarding indoor, outdoor, and private facilities:



Private space is generally preferred for the safety and security of:



Operator



Goods



Customer Information



Delivery equipment and maintenance tools

Current Challenges for Microhubs in NYC

Below are some of the challenges respondents mentioned in their RFEI:

- High cost of space
- Limited availability of dedicated parking
- Conflicts with other street and sidewalk users
- State restrictions on cargo-bike widths (36" limit vs. 48" width for common vehicle models)
- Limited access to electric vehicle battery charging
- Limited access to bathrooms (workers)
- Concerns and lack of information regarding zoning restrictions on repurposing garages and retail buildings

NYC DOT will address as many concerns as possible during the microhub pilot. We plan to work on policies in response to the concerns raised by RFEI respondents, including expanding electric vehicle charging opportunities and resolving the cargo bike restrictions at the city and state level. For example, DOT is planning to publish new rules at the city level to expand cargo bike width restrictions in support of the microhubs pilot and other programs.

Pilot Program Recommendations

6

Pilot Framework and Phasing

NYC DOT will launch a phased multi-year pilot to test what makes a successful microhub for NYC.

Throughout all phases, NYC DOT will:

- **Study key elements:** siting criteria, utilization, enforceability, safety/infrastructure, signage/markings
- **Engage stakeholders to** refine pilot locations and design, support more equitable outcomes, expand participation and sites, and help shift toward safer and more sustainable practices

Phase 1
Summer/
Fall 2023

- **Start with a format that is easier to implement and enforce**
 - Aim for 20 pilot microhub sites located throughout NYC
 - Begin pilot by drawing participants from RFEI respondents
 - Test on-street (curbside) and off-street (under elevated structures) hubs

Phase 2
Summer/
Fall 2024

- **Expand geographic and partner reach**
 - Consider additional microhub amenities and programming opportunities
- **Strategize options** for regulatory changes, incentives and enhanced enforcement
 - Assess technologies to support space sharing, monitoring, and compliance
- **Gather lessons** from pilot to develop a permanent program

Pilot Locations

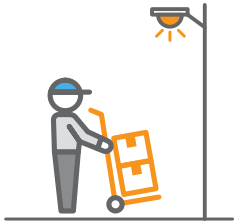


Pilot sites will be determined by the following factors:

- Geographic analysis of locations:
 - High density mixed land use (commercial/manufacturing uses near residential areas)
 - Close proximity to truck route, transit, and bike lane networks
- Stakeholder feedback on preferred locations
 - Based on engagement with local communities, industries, and businesses/BIDs

Selected pilot sites should include:

- Space for truck parking, transloading, and receiving modes (vans, bikes, handcarts)
- Good lighting and infrastructure to provide safety
 - Secure clear right-of-way for general public
 - Protect workers from exposure to traffic and deter risk of crime
- Signage and markings to designate the hub
 - Explore specific hours of operation based on surrounding land use and stakeholder feedback
 - Discourage undesired uses and illegal occupation of space

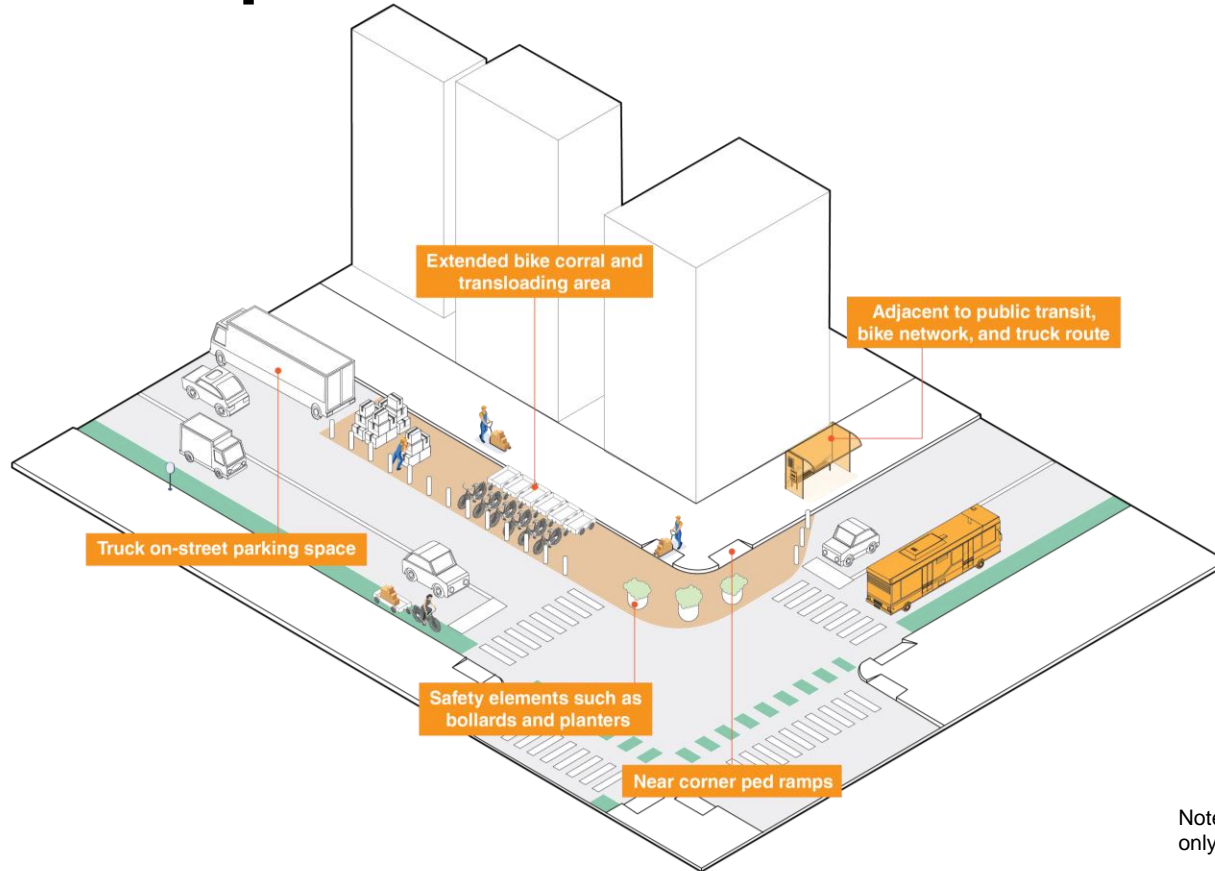


Pilot Phase 1: Implementation

DOT will work with pilot participants, agency partners, and community stakeholders to:

- Establish operating agreements and contract mechanism for pilot
 - Operating agreements will emphasize using sustainable modes for last leg of delivery, microhub maintenance and safety, data sharing to help improve pilot, and working with DOT to make adjustments to operations as needed
- Pursue rulemaking to create permitted system for the pilot
- Site and assign microhubs to each participant and determine design elements
- Set initial fees for microhub use
- Establish data collection strategy from participants and microhub sites to help plan, evaluate, and refine program
- Address community feedback to make improvements as needed

Conceptual On-Street Hub

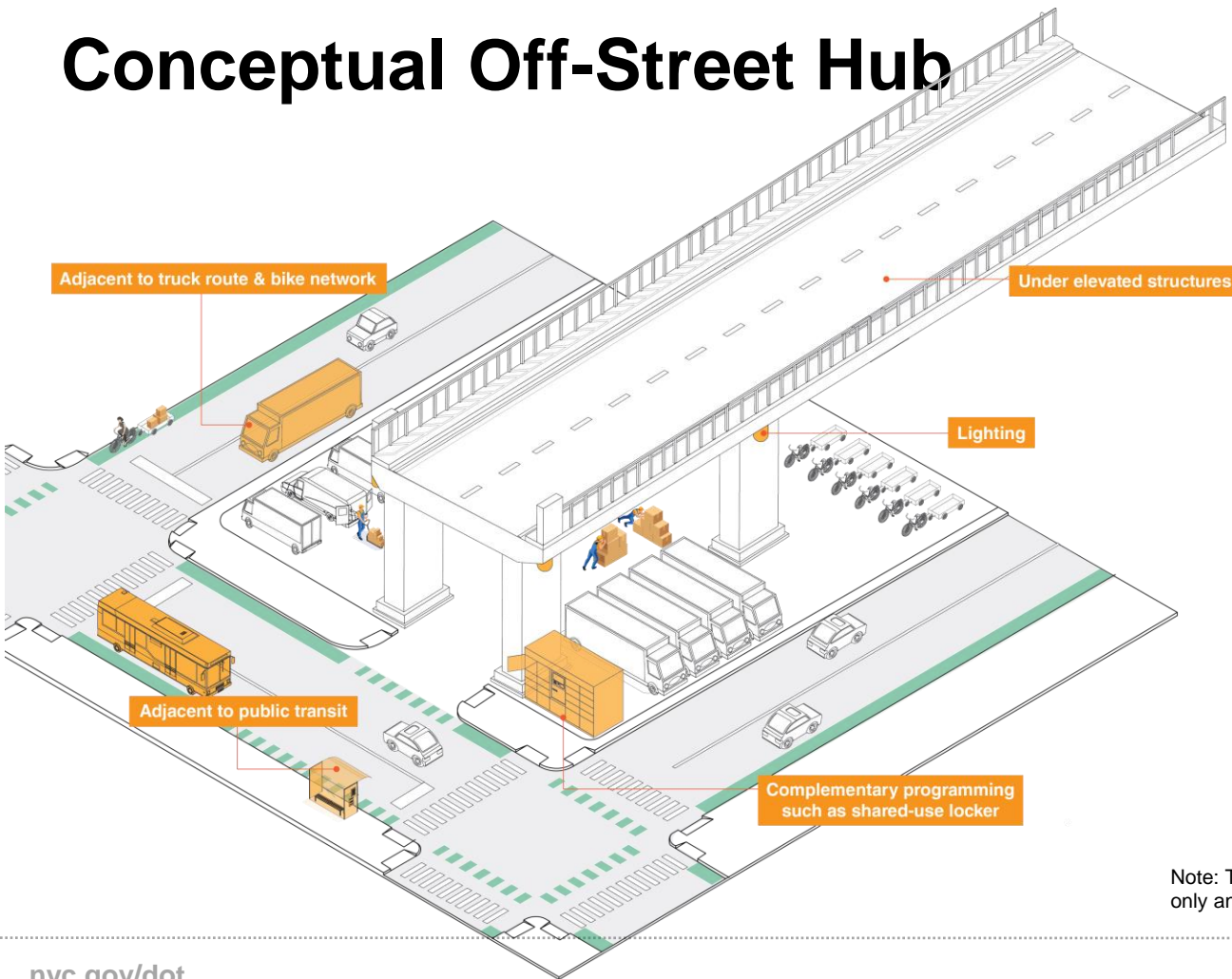


On-Street Hub Features:

- 80-100 feet in length
- Regulatory signage and/or other markings designating it as a microhub
- Transloading space for package sorting and transfer to electric vehicles, bikes, and walkers
- (Cargo) bike corrals
- Upgraded safety barriers (flexible delineators, bollards, armadillos, planters, etc.)

Note: This conceptual image is included for illustrative purposes only and does not reflect the final design of the microhub.

Conceptual Off-Street Hub



Off-Street Hub Features:

- Variation in size based on site location
- Vehicle and goods storage
- Vehicle repair/maintenance
- Transloading space for package sorting and transfer to electric vehicles, bikes, and walkers
- Weather protection and lighting
- Opportunities for additional amenities and programming

Note: This conceptual image is included for illustrative purposes only and does not reflect the final design of the microhub.

Pilot Schedule

<p>Spring/ Summer 2023</p>	<p>Finalize Design & Implementation Plan for Pilot Phase 1</p> <ul style="list-style-type: none">Finalize agreement terms, permit rulemaking, site selection, and design of microhubs. Share information with stakeholders and potential partners through outreach campaign such as briefings, digital outreach and in-person engagement
<p>Summer/Fall 2023 – 2024</p>	<p>Launch Pilot Phase 1</p> <ul style="list-style-type: none">Install sites and gather feedback on initial pilot implementationImplement data collection and monitoring of microhub operationsRefine strategies for equitable implementation and enforcementFinalize design & implementation plan for Phase 2 based on lessons learnedEngage public on pilot expansion through outreach campaign
<p>Fall 2024 – 2026</p>	<p>Launch Pilot Phase 2</p> <ul style="list-style-type: none">Add new participants and locations based on demand and needExplore new technology and amenity optionsGather data on effectiveness of pilot program
<p>Fall 2026</p>	<p>Report Pilot Outcomes and Recommendations</p> <ul style="list-style-type: none">Evaluate permanent program feasibility, structure, and goals

Appendices



Endnotes

List of references

- Delivering Green: <https://www.nyc.gov/html/dot/downloads/pdf/freight-vision-plan-delivering-green.pdf>
- Delivering New York: Smart Truck Management Plan: <https://www.nyc.gov/html/dot/downloads/pdf/smart-truck-management-plan.pdf>
- NYC Streets Plan: <https://www.nyc.gov/html/dot/html/about/nyc-streets-plan.shtml>
- “New” New York: https://edc.nyc/sites/default/files/2023-02/New-NY-Action-Plan_Making_New_York_Work_for_Everyone.pdf
- Kerbside Management Platform: [Kerb - Grid Smarter Cities](#)
- Last Mile Logistics Hub – City of London; <https://news.cityoflondon.gov.uk/city-of-london-corporation-teams-up-with-amazon-to-cut-delivery-vehicles-and-improve-air-quality/>
- KoMoDo, Berlin; <https://www.komodo.berlin/>
- DPD Chronopost Urban Logistics Area (ULA), Paris; <https://www.dpd.com/group/en/news/chronopost-france-establishes-its-new-urban-logistics-area-in-paris/>
- Common Microhub Pilot, Seattle; <https://www.seattleneighborhoodhub.com/>
- Port of La Bourdonnais, Paris; <https://www.citizenports.eu/intro/cohabitation-through-innovative-multipurpose-land-use/project-of-the-port-of-paris/>
- Delivering the Goods: NYC Urban Freight in the Age of E-Commerce, AIANY <https://www.aiany.org/wp-content/uploads/2022/11/AIANY-Delivering-the-Goods-NYC-Urban-Freight-Nov-2022.pdf>

Thank you!



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