



Commercial Cargo Bicycle Pilot

A New Mode for Last Mile Deliveries in NYC

Evaluation Report (5/2021)

Table of Contents

1. Executive Summary (pp. 3 – 5)
2. Goals & Context (pp. 6 – 9)
3. Pilot Program Timeline & Structure (pp. 10 – 15)
4. On-Street Infrastructure (pp. 16 – 18)
5. Findings (pp. 19 – 25)
6. Challenges & Opportunities (pp. 26 – 29)
7. Lessons & Next Steps (pp. 30 – 34)

Executive Summary



Executive Summary

- The Commercial Cargo Bicycle Pilot launched on 12/4/2019 with 3 participants (UPS, DHL, Amazon) and 100 bikes. As of January 2021, there are 6 participants and over 350 bikes in the pilot. We anticipate further growth in 2021, especially in parcel deliveries.
- Commercial cargo bicycles enrolled in the pilot can load and unload wherever commercial vehicles can, & at designated cargo bike corrals, and this has proved to be a powerful incentive for companies. In exchange, participants are required to share GPS data for their fleets, which DOT used to analyze cargo bike operations.
- Between May 2020 and January 2021, the number of cargo bike deliveries increased 109%, expanding into Brooklyn in June 2020. In January 2021 alone, there were more than 45,000 cargo bike deliveries.
- 80% of cargo bike deliveries are being made to residential addresses, mostly on residential blocks with few or no commercial curb regulations, and cargo bikes are uniquely equipped to make these deliveries.
- Each cargo bike covers an average of 20 service miles per day, replacing vans or box trucks on a 2:1 or even 1:1 basis. 20 cargo bike miles per day replace 20 van or box truck miles, resulting in a per bike CO₂ savings of approx. 7 tons/year, equivalent to over 100 planted trees, or 15,436 passenger car miles traveled.

Executive Summary (continued)

- The pilot has adapted to and grown around the pandemic, providing essential services like contactless grocery delivery.
- Cargo bikes have proven to be an effective mode for last-mile goods delivery in NYC provided curbside space continues to be made available for their use.
- Uptake of cargo bikes by major delivery companies and small businesses – desirable because it reduces double parking, enhances traffic safety, and reduces greenhouse gas emissions – should be further incentivized. In pursuit of this:
 - DOT supports State Senator Jessica Ramos' recently introduced bill to increase the maximum width of e-bikes, which will re-legalize many standard cargo e-bike models
 - DOT will release a Request for Expressions of Interest (RFEI) for cargo bikes and cargo bike-related products
 - DOT will explore making the cargo bike program permanent, and is considering creating a yearly operator permit for businesses looking to operate 5 or more cargo bikes for commercial purposes, and a 'Cargo Bike Loading Only' curb regulation to compliment the existing cargo bike corrals

Goals & Context

2

Program Goals

In alignment with OneNYC and DOT's Strategic Plan, this program seeks to:

- **Reduce congestion** by replacing trucks and vans with cargo bikes, and by reducing illegal and double parking.
- **Enhance safety** by using more context-appropriate vehicles for last mile deliveries in high-density areas, creating fewer turning conflicts
- **Cut GHG emissions** by reducing truck VMT, and using low-power electric bicycles

Cargo bicycles are uniquely equipped to achieve all three goals without negatively impacting delivery operations. Though some cargo bikes were already operating legally, this pilot allows the city and businesses to work together to better understand how cargo bikes can successfully fit into the city's streetscape.



Reduce illegal parking



Minimize the blocking of sidewalks and bike lanes

Domestic & International Context

Companies approached NYC DOT with a desire to test cargo bikes in NYC because of their success in other markets:

- The cargo bicycle was first introduced in Denmark, and are used worldwide for personal and small commercial operations.

Larger Commercial Operations

- DHL operates cargo bicycles in cities throughout Europe & Asia.
- UPS has deployed cargo bikes in Canada and Europe, and is currently piloting them Fort Lauderdale, Pittsburgh, Seattle, and Portland.
- New York is the first city where Amazon piloted cargo bikes.



DHL Cubicycle in Antwerp, Belgium



UPS cargo bike in Rome, Italy

Legal Context

All commercial cargo bicycles are expected to comply with the following:

New York State Laws

1. Article 34 of the New York State Vehicle and Traffic Law relating to the operation of bicycles.
2. Section 102-c of the New York State Vehicle and Traffic Law defining bicycles with electric assist

New York City Laws

1. Section 4-08: Parking, Stopping, Standing (k) detailing parking, stopping, and standing rules for commercial vehicles
2. 4-12 (p) of the NYC Traffic Rules relating to the operation of bicycles.
3. 4-12 (p) (4) of the NYC Traffic Rules also pertaining to businesses that use bicycles for commercial purposes
4. Administrative Code of the City of New York §10-157 and §10-157.1 pertaining to businesses that use bicycles for commercial purposes
5. 4-12 (p) (5) of the NYC Traffic Rules relating to the requirements for pedal-assist bicycles.

Pilot Program Timeline & Structure

3

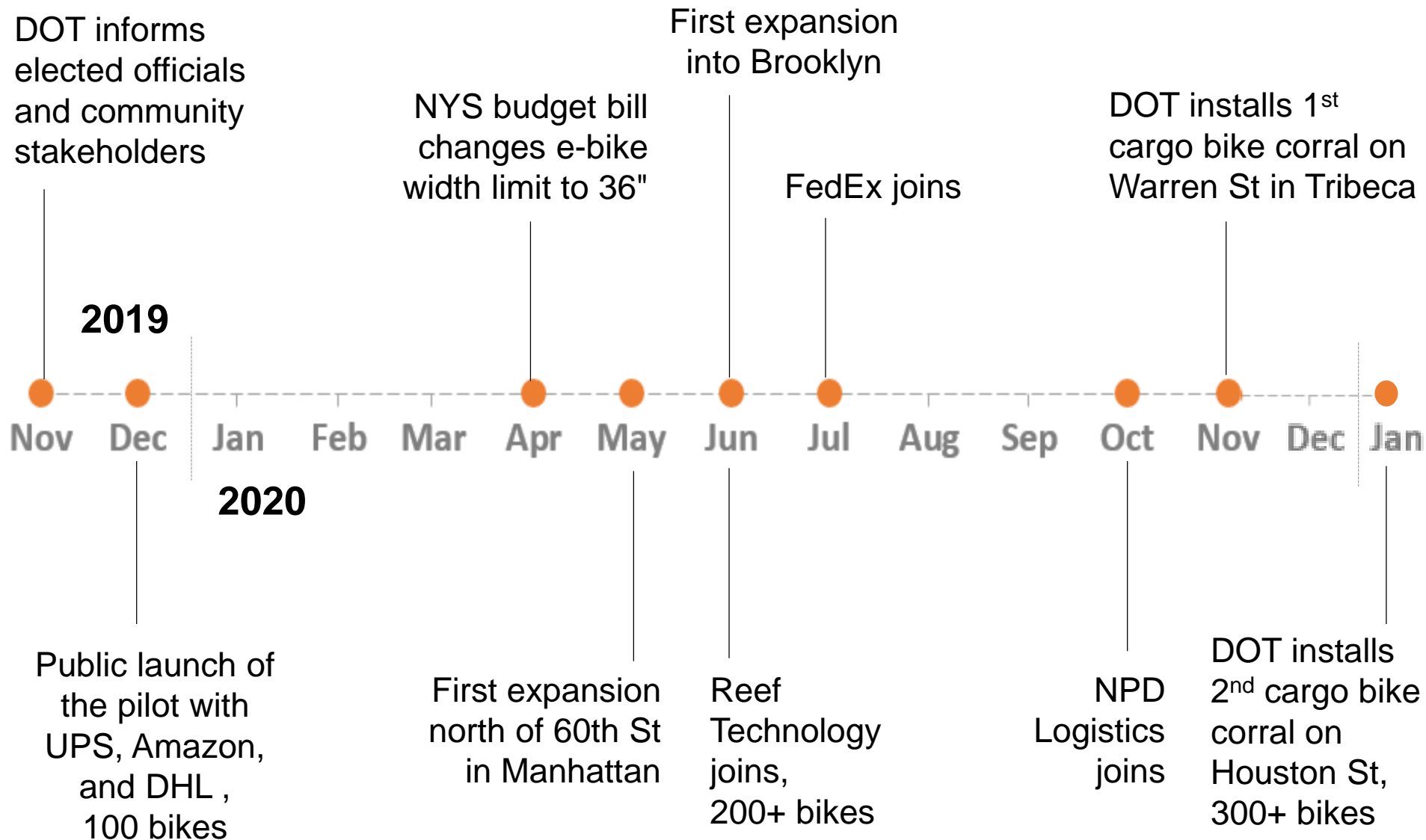
Program Launch

- Program went public on 12/4/2019 at mayoral press event held at Flatiron Public Plaza.
- Started with 3 participants (Amazon, DHL, UPS) and about 100 bikes on launch day. We currently have 6 participants (added FedEx, Reef Technology & NPD Logistics) and over 350 bikes (all e-bikes), and the pilot is continuing to grow.
- Managed by NYC DOT Freight Mobility, coordinated with NYPD, NYC DOT Parking, Commercial Bicycles Unit, and Safety Education teams.



Photos from 12/4/2019 Press Event

Pilot Timeline



Program Participants

amazon



Pilot Program Guidelines

Highlights

Vehicle Specifications

- >48" wide has to use travel lane, rather than bike lane (>36" now illegal under state law)

Safe Operation

- 12 MPH speed limit, including using context-sensitive speeds in busy pedestrian areas

Data Sharing

- Participants are required to share GPS data for their fleets

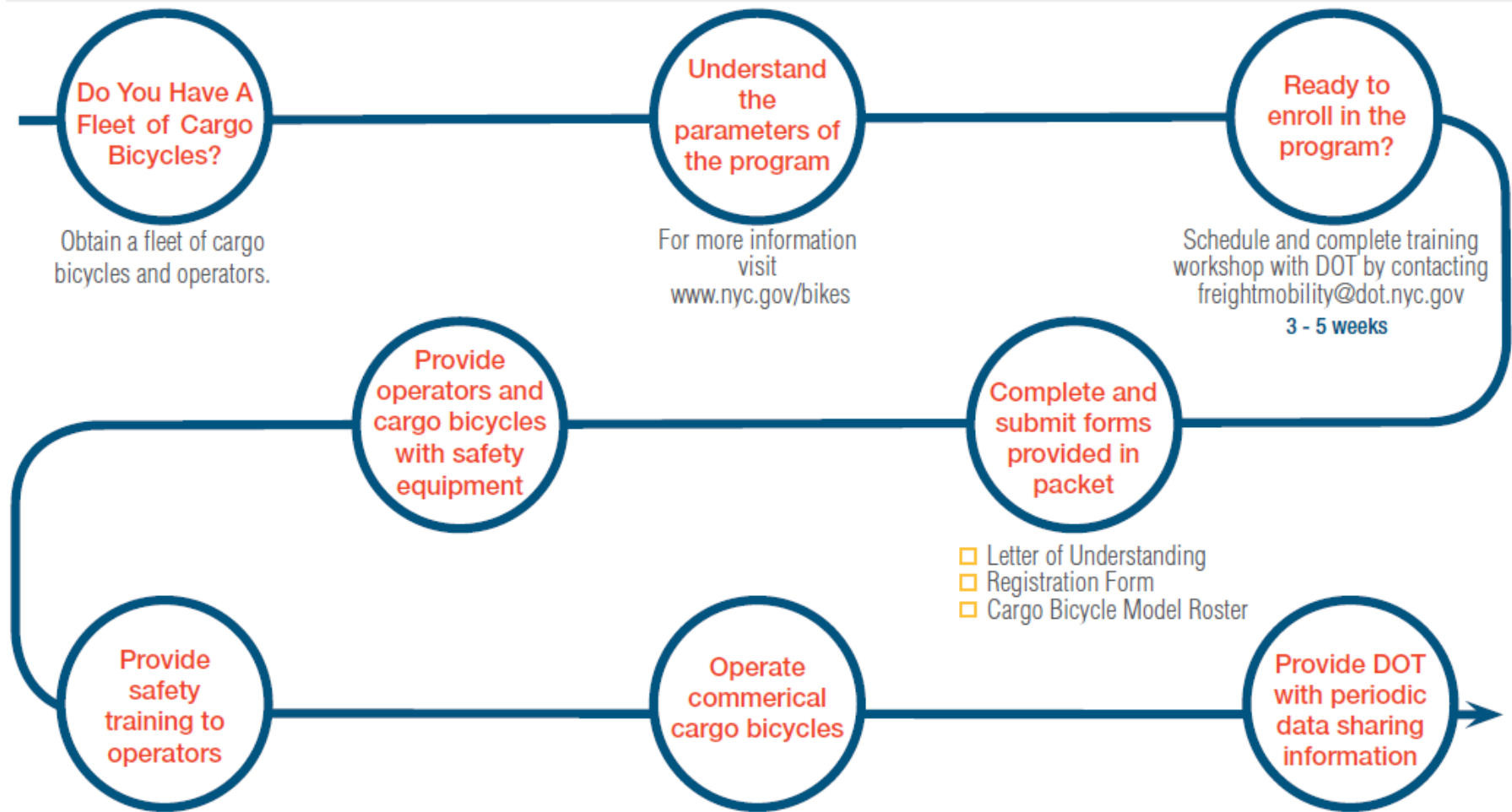
Loading, Unloading, & Staging

- Commercial cargo bicycles enrolled in the pilot can load and unload wherever commercial vehicles can, & at designated cargo bike corrals

Education & Enforcement

- Operator training is mandatory. Moving violations are enforced by NYPD, & other safety violations are enforced by DOT's Commercial Bicycles Unit

Training & Required Documentation



Letter of Understanding: Signing this, participants agree to the guidelines of the pilot.

Registration Form: Provides general contact and addresses for all dispatch locations

Cargo Bicycle Model Roster: Gives specs, fleet size, and vehicle ID information

On-Street Infrastructure

4

Cargo Bike Corrals

Cargo Bike Corrals are designated cargo bike loading areas marked by bike sleds, flexible bollards, and markings in the curbside lane

- Increases supply of publicly available bike parking (sleds on side are reserved for public use)
- Provides additional space for cargo bikes to load, unload, and stage in the street

Maintenance partner (pilot participant) keeps corral clear of snow and debris, reports derelict bikes

Cargo Bike Corral on Warren St, Tribeca. Other location is on Houston St between Chrystie St and Bowery. We work closely with our pilot partners, who can request a new corral at any time based on their current operations.



Bike Lane Network Expansion

- The growing network of protected bike lanes supports cargo bike delivery by maximizing delivery cyclist safety and comfort
- DOT will work to coordinate cargo bike delivery area expansion with protected bike lane network expansion (Green Wave plan) where possible
- Bike paths near distribution hubs have potential to incentivize last mile mode shift



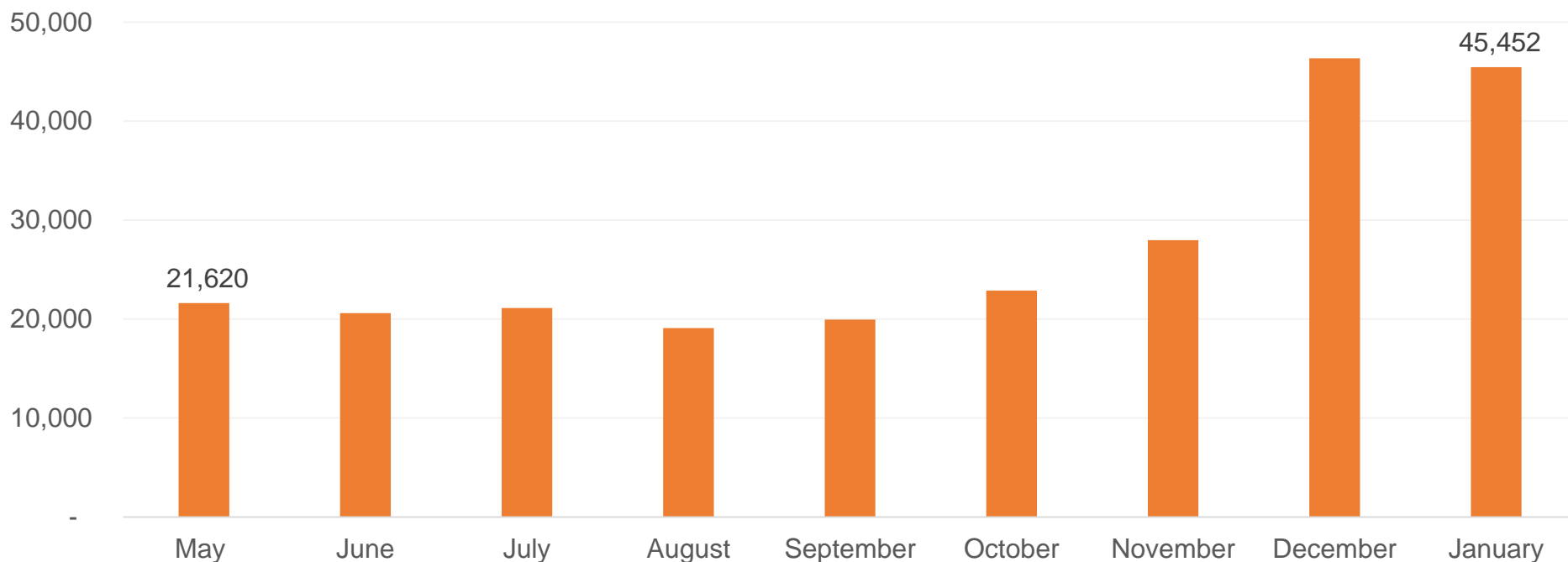
2020 NYC Bike Map- snapshot

Findings

5

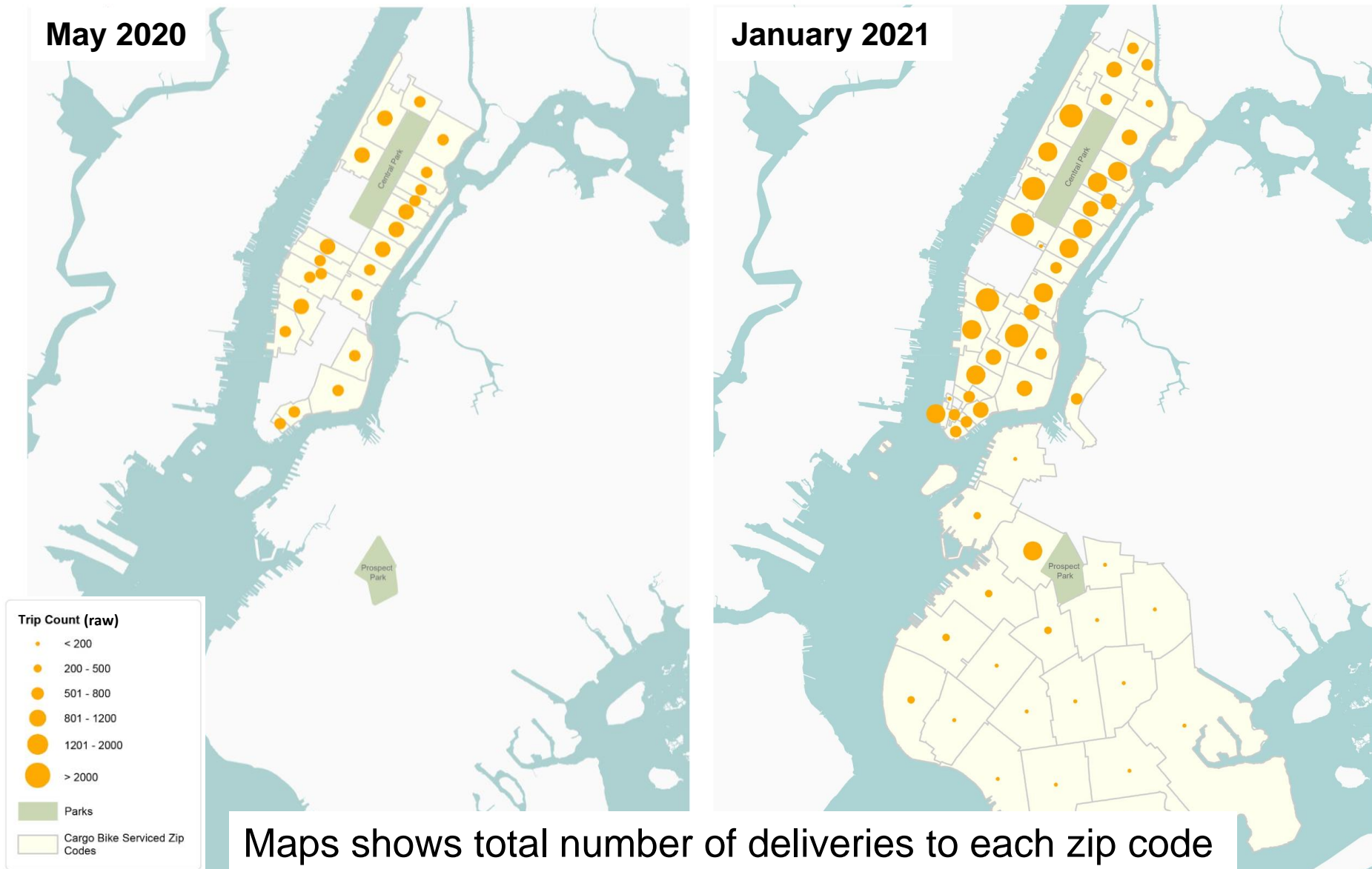
Increases in Trips

Commercial Cargo Bicycle Deliveries by Month



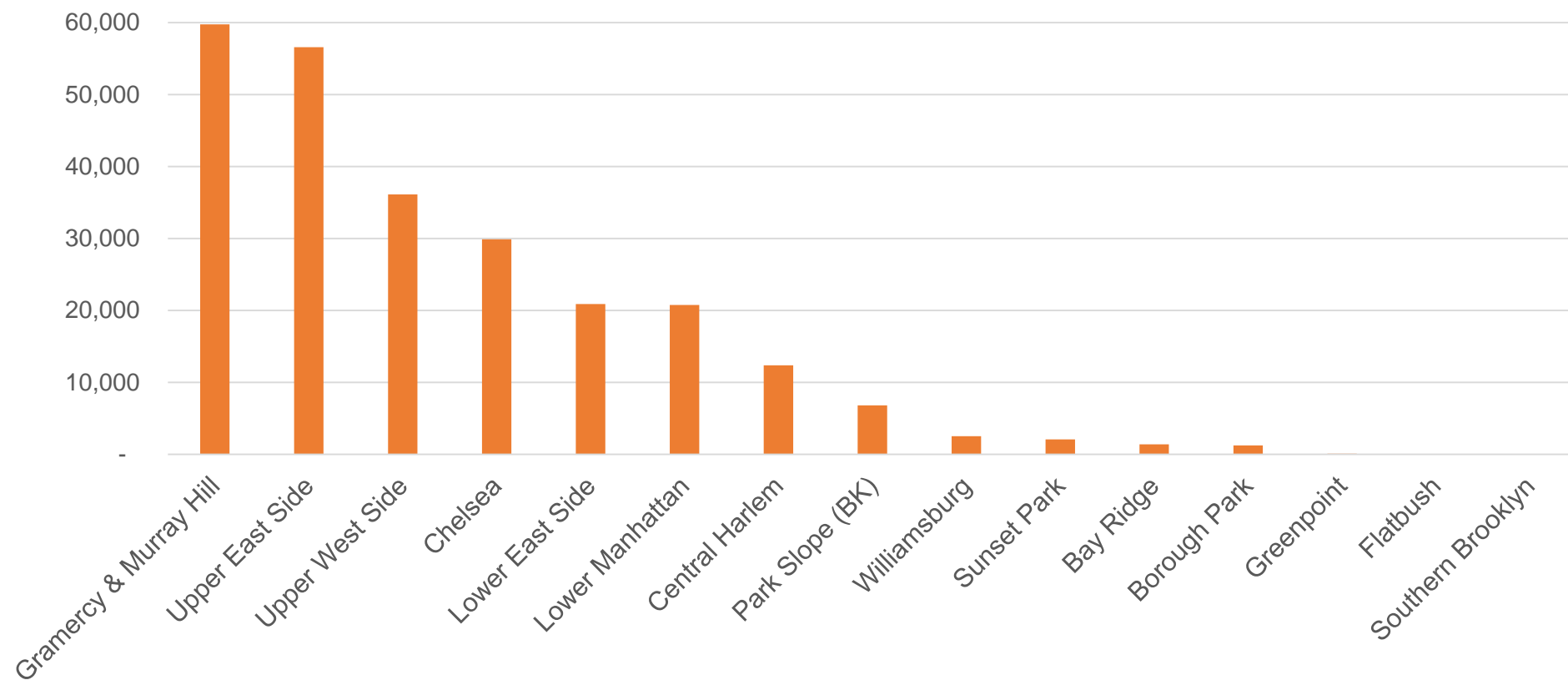
Between May 2020 and January 2021, the number of cargo bike deliveries increased 109%, and the number of trips continues to grow as the number of bikes in the pilot grows.

Delivery Area Expansion



Delivery Area Imbalance

Neighborhoods Served by Cargo Bikes

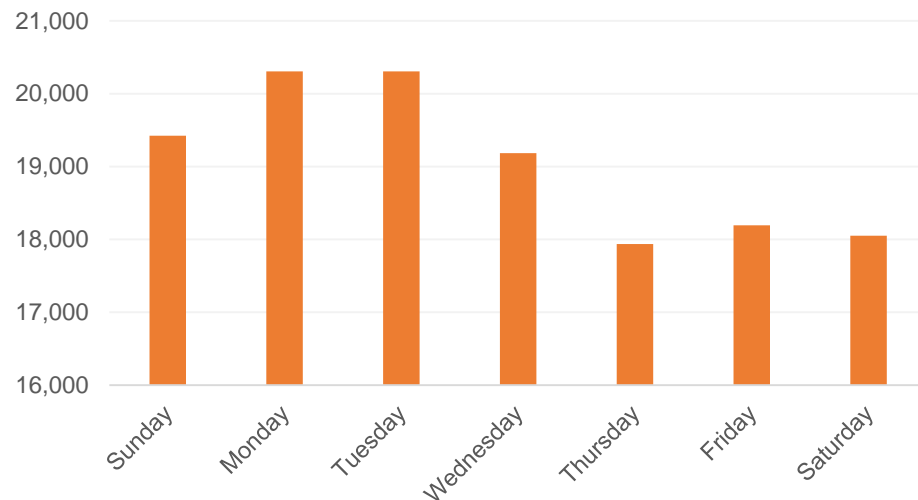


94% of cargo bike deliveries have been made in Manhattan, where most cargo bike dispatch locations are. Further expansion into Brooklyn & outer boroughs can be aided by further implementation of corrals & cycling infrastructure

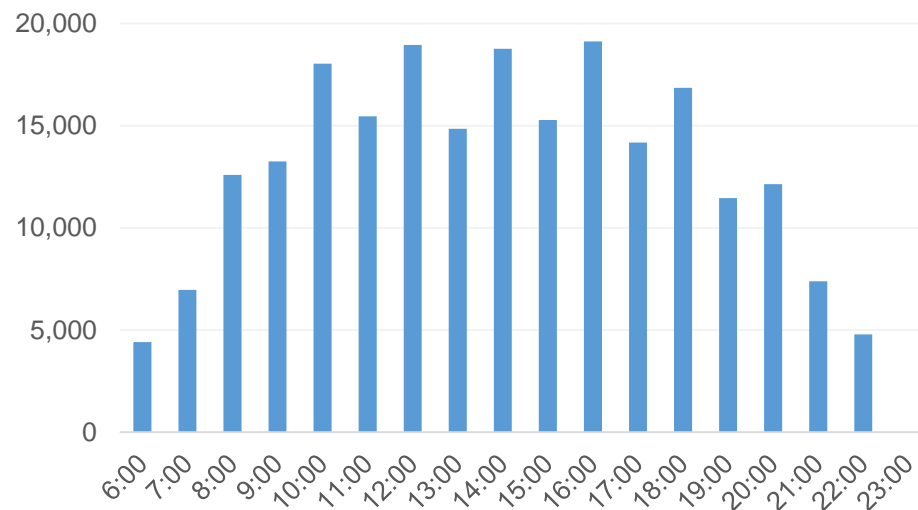
Delivery & Safety Characteristics

- 72% of cargo bike deliveries occur during the week, possibly reflecting current pandemic conditions where more people are working from home.
- 60% of cargo bike deliveries occur during the daytime hours (9a-5p), though some extend into the evenings to meet demand
- Cargo bikes typically spend 5 mins or less unloading at each address.
- Despite evening hours of service, there have been no recorded crashes with a cargo bike since the start of the pilot.

Commercial Cargo Deliveries by Day of the Week

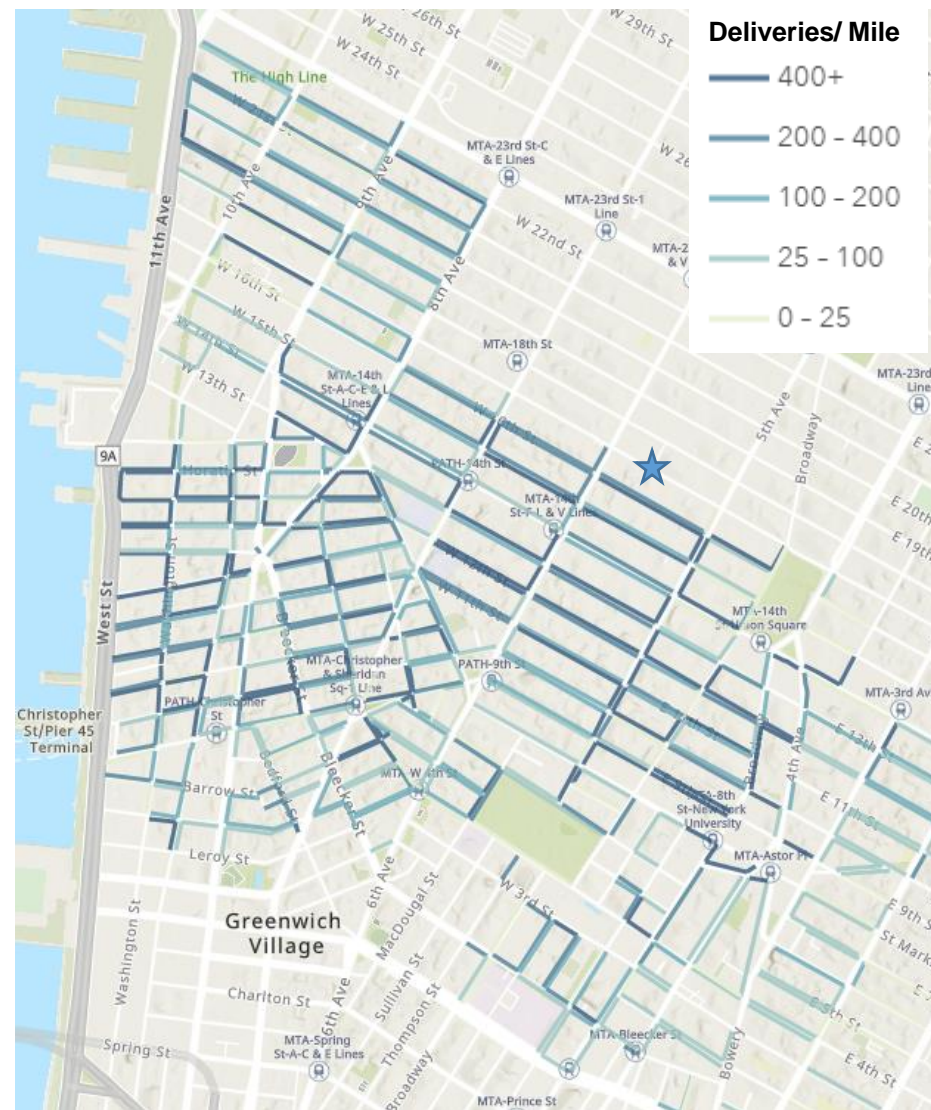


Commercial Cargo Bike Deliveries by Hour



Delivery Destinations

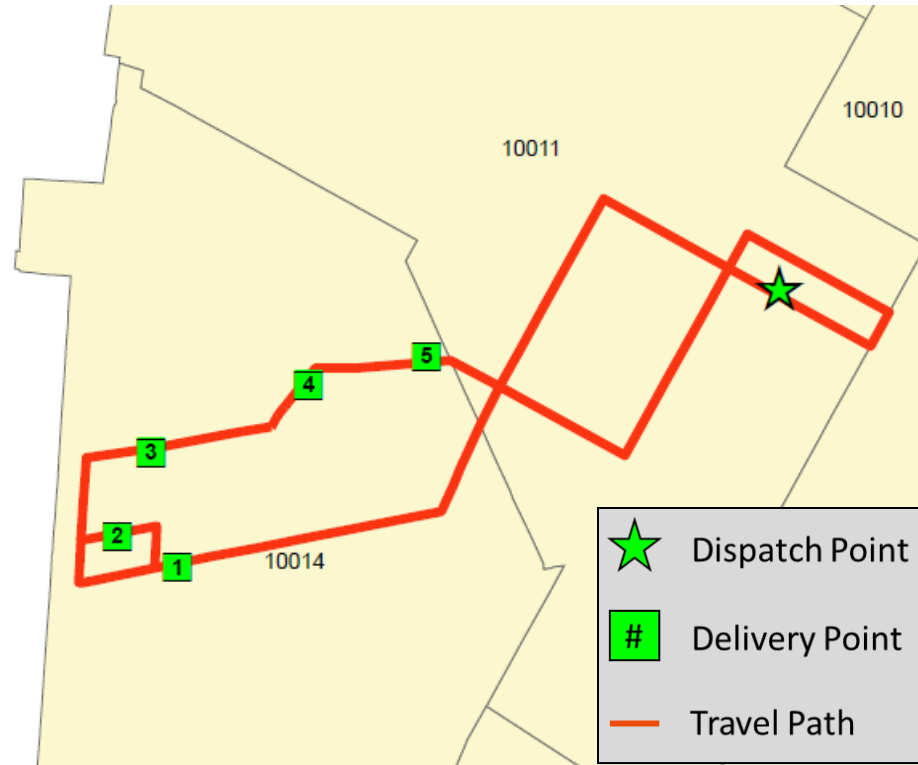
- 80% of cargo bike deliveries are made to residential addresses, most of which are on side streets with no commercial curb regs.
- Cargo bikes are uniquely equipped to make those deliveries without double parking by fitting into space between cars or briefly unloading on the sidewalk, reducing negative congestion and safety effects.



One company's deliveries in Union Square-Greenwich Village-West Village-Chelsea (Sep-Nov 2020) from a single dispatch point

Service & Environmental Characteristics

- Each cargo bike covers an average of 20 service miles per day, though individual bikes can cover up to 60 service miles in a day, and can replace vans or box trucks on a 2:1 or even 1:1 basis
- The ~3 mile example journey on the right shows a bike making 5 deliveries before returning to its dispatch point. Each bike makes 4-8 journeys in a day.
- 20 cargo bike miles per day replace 20 van or box truck miles, resulting in a per bike CO₂ savings of approx. 7 tons/year, equivalent to over 100 planted trees, or 15,436 passenger car miles traveled.



★ D: 12:41 p, A: 1:26 3 A: 1:03, D: 1:06

1 A: 12:49, D: 12:54 **4** A: 1:09, D: 1:13

2 A: 12:56, D: 1:00 **5** A: 1:15, D: 1:18

An example cargo bike journey with 5 delivery points,
and a return to the dispatch point to pick up more.
D (departure time), A (arrival time)

Challenges & Opportunities

6

COVID-19 Pandemic

Effect on Cargo Bike Rollout

- In March, April, and May in particular, the pandemic created staffing impacts that delayed roll-outs, and interrupted delivery operations.
- Outstanding questions about the difference in levels of exposure for operators of a cargo bike versus those in trucks or vans.
- The pilot has adapted to and grown around the pandemic, providing essential services like contactless grocery delivery when people were unsure about going into stores. Grocery deliveries have increased due to the pandemic, and cargo bikes are helping people get their groceries, while keeping store crowding levels down.
- Cargo bikes are more compatible with Open Streets and Shared Streets programs that have been providing additional public space for social distancing.

Stakeholder Feedback

Delivery Customers

- Customers are the invisible stakeholder, as most don't know how their delivery got to them. Potential to get feedback through the delivery company apps.

Community Boards

- Presented to CB1, 3, & 10 about cargo bike corrals. Though corrals replaced truck loading zones, the most common complaint was about loss of overnight parking

Delivery Personnel

- Continued engagement with delivery cyclists to determine how the program can best meet their needs

The New York Times

Park It, Trucks: Here Come New York's Cargo Bikes

New York will allow Amazon, DHL and UPS to park cargo bikes in commercial loading zones as a way to get some trucks off the city's gridlocked streets.



The program has received generally positive press & reception from the advocacy community

Conflicting State & Local Laws

- Final April 2020 NYS budget bill included new e-bike definition including 36" max width, rendering some participants' models non-compliant after they procured them.
- The bill made it more difficult for smaller businesses to procure off-the-shelf cargo bike models (including from local manufacturers), as most are >36" wide, matching the dimension of the US standard freight pallet 48" x 40".

48" wide



36" wide



Lessons & Next Steps



Lessons from the Pilot Program

Transition to a permanent program

- The findings from the first year of the Commercial Cargo Bicycle Pilot demonstrate the operational successes of the program, and the potential for further growth.
- Cargo bikes have proven to be an effective mode for last-mile goods delivery in NYC provided curbside space continues to be made available for their use.
- Uptake of cargo bikes by major delivery companies and small businesses – desirable because it reduces double parking, enhances traffic safety, and reduces greenhouse gas emissions – can be further incentivized through the innovative street design and curb management tools demonstrated here, and by developing business friendly legislation and rulemaking for a permanent commercial cargo bike program.

Correcting E-Bike Width Limit

Proposed Change to State Legislation

- DOT supports State Senator Jessica Ramos' recently re-introduced bill to increase the maximum width of e-bikes.
- This change would allow all bike models in the pilot to once again be compliant with state law.
- The city can pursue further rulemaking if needed to regulate the allowable width in some or all bike lanes



STATE OF NEW YORK

9004

IN SENATE

September 25, 2020

Introduced by Sen. RAMOS -- read twice and ordered printed, and when printed to be committed to the Committee on Rules

AN ACT to amend the vehicle and traffic law, in relation to bicycles with electric assist and motorized scooters

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

1 Section 1. The opening paragraph of section 102-c of the vehicle and
2 traffic law, as added by section 1 of part XX of chapter 58 of the laws
3 of 2020, is amended to read as follows:

4 A bicycle which is no more than ~~thirty-six~~ fifty-five inches wide
5 and has an electric motor of less than seven hundred fifty watts,
6 equipped with operable pedals, meeting the equipment and manufacturing
7 requirements for bicycles adopted by the Consumer Product Safety Commis-
8 sion under 16 C.F.R. Part 1512.1 et seq. and meeting the requirements
9 of one of the following three classes:

10 § 2. Subdivision 2 of section 1243 of the vehicle and traffic law, as
11 added by section 8 of part XX of chapter 58 of the laws of 2020, is
12 amended to read as follows:

13 2. Notwithstanding any other provision of law to the contrary, all
14 trip data, personal information, images, videos, and other recorded
15 images collected by any shared bicycle system or shared bicycle with
16 electric assist system which is authorized to operate within a city,
17 town or village pursuant to this section: (a) shall be for the exclusive
18 use of such shared bicycle or shared bicycle with electric assist system
19 and shall not be sold, distributed, or otherwise made available for any
20 commercial purpose and (b) shall not be disclosed or otherwise made
21 accessible except (i) to the person who is the subject of such data,
22 information or record; or (ii) if necessary to comply with a lawful
23 court order, judicial warrant signed by a judge appointed pursuant to
24 article III of the United States constitution, or subpoena for individ-
25 ual data, information or records properly issued pursuant to the criminal
26 procedure law or the civil practice law and rules. Provided, howev-
27 er, that nothing contained in this paragraph shall be deemed to preclude
28 the exchange of such data, information or recorded images solely for the

EXPLANATION--Matter in italics (underscored) is new; matter in brackets
[~~-~~] is old law to be omitted.

LBD17301-01-0

Cargo Bike & Related Products RFEI

- DOT will release a Request for Expressions of Interest (RFEI) for cargo bikes and cargo bike-related products including:
 - Vehicle and container technology
 - Fleet management and GPS
 - Parking & vehicle storage
 - Curb check-in
 - Charging
 - Safety & security
- Potential for partnering to create cargo bike hubs with charging and secure parking. International examples in Berlin & Prague.



Pallet-sized containers



On-street e-bike charger



E-bike GPS device

Potential Elements of a Permanent Program

DOT will explore making the cargo bike program permanent, and is considering the following elements:

- A yearly operator permit for businesses looking to operate 5 or more cargo bikes for commercial purposes.
 - The permit fee (TBD) could scale with fleet size, and the conditions of the permit would mirror pilot guidelines with minor modifications
- Allowing commercial cargo bikes to continue loading and unloading wherever commercial vehicles can, exempt from meter payment
- A 'Cargo Bike Loading Only' curb regulation
- Allowing e-cargo 'bikes' of all state-compliant types, including throttle-based bikes and e-scooter + trailer combos, not just pedal-assist systems



Links & Resources

[Commercial Cargo Bicycle Pilot Program](#)

[Mayoral Press Release](#)

[Existing Commercial Bicycling Requirements](#)

[Trucks & Commercial Vehicle Info](#)

[General Bicycle Info](#)

[Filing a complaint](#) (cargo bikes is a topic)

Thank You!

Questions?



NYCDOT



nyc_dot



nyc_dot



NYCDOT