

Cargo E-Bike Pilot

Date: November 18, 2021

To: Infrastructure & Environment

From: General Manager, Transportation Services

Wards: All

SUMMARY

Demand for e-commerce deliveries has sharply risen - leading to more emissions and traffic congestion. Cyclelogistics is the use of bicycles to deliver goods which has the potential to reduce operational costs, emissions and congestion, as well as contribute to road safety by replacing vans and trucks. In June 2021, City Council adopted by-laws to partially opt-in to the Province's pilot project by allowing cargo e-bikes, weighing *not more than* 120kg unladen, on streets, bike lanes and cycle tracks. A report on a pilot project for larger cargo e-bikes weighing over 120kg unladen was requested for the fourth quarter of 2021.

This report recommends amending by-laws to further opt-in to a provincial pilot that runs until March 1, 2026. The pilot will allow large cargo e-bikes over 120kg unladen to operate on roads, bike lanes and cycle tracks, and to be able to park like other commercial vehicles, including in designated on-street commercial loading zones and delivery vehicle parking zones. It also recommends authorizing the General Manager, Transportation Services, to develop and implement agreements with large cargo e-bike participants to ensure safety and data collection. The proposed approach largely follows New York City's cargo e-bike pilot which was a successful pilot that is now being made permanent.

Since June 2021, City staff have consulted with a diverse range of internal and external stakeholders on large cargo e-bike regulations. Based on consultations and research, there is overall positive feedback on the potential of large cargo e-bike pilot projects in terms of improving operational efficiencies and achieving environmental objectives. City staff expect that the roll-out at the early stages of the pilot will be small scale (e.g. 20 to 40 cargo e-bikes), similar to other Canadian cities, and will involve about 4 to 5 companies, with each company starting out with only a few cargo e-bikes to test them. Barriers to the uptake of cargo e-bikes include the high cost of cargo e-bikes, and the lack of locations for storage and distribution to support a fleet of them. The pilot project will be monitored and an evaluation report is proposed to be made public annually.

RECOMMENDATIONS

The General Manager, Transportation Services recommends that:

1. City Council opt-in to pilot large cargo power-assisted bicycles under *O.Reg 141/21 Pilot Project – Cargo Power-Assisted Bicycles* as outlined in this report dated November 18, 2021 titled "Cargo E-bike Pilot".

2. City Council amend City of Toronto Municipal Code Chapter 886, Footpaths, Pedestrian Ways, Bicycle Paths, Bicycle Lanes and Cycle Tracks, as follows:

A. By inserting a new definition of "large cargo power-assisted bicycle" in Section 886-1B in alphabetical order, to read as follows:

"LARGE CARGO POWER-ASSISTED BICYCLE - Includes a cargo power-assisted bicycle or tricycle with (i) a continuous rated output power not exceeding 500 watts; and (ii) a width that is greater than 0.9 metres and weighing more than 120 kilograms unladen, but does not include any vehicle or bicycle capable of being propelled or driven solely by any power other than muscular power."

B. By inserting in Section 886-10A the phrase ", a large cargo power-assisted bicycle," after the phrase "other than a bicycle".

C. By inserting in Section 886-10C the phrase ", including a large cargo power-assisted bicycle," after the phrase "stop a vehicle".

D. By inserting in Section 886-14 the phrase "or a large cargo power-assisted bicycle" after the phrase "in charge of a bicycle" and after the phrase "on a bicycle".

E. By inserting in Section 886-15A the phrase "or a large cargo power-assisted bicycle" after the phrase "bicycle".

3. City Council authorize the City Solicitor to make application to the Province of Ontario, Ministry of the Attorney General, and/or Regional Senior Justice to revise any established set fines/set fine short form wording or establish any new set fines under the Provincial Offences Act, as necessary, as may be identified by the City Solicitor or the General Manager, Transportation Services, in order to give effect to Parts 1 and 2 above, and that the City Solicitor in consultation with the appropriate City staff, determine the amount of the set fine to be requested.

4. City Council amend City of Toronto Municipal Code Chapter 950, Traffic and Parking, as follows:

A. By deleting in Section 950-101B the word "motor" from the definition of "delivery vehicle".

B. By deleting from the definition of "vehicle" in Section 950-101B the phrase "with a continuous rated output power not exceeding 500 watts and weighing not more than 120 kilograms unladen" after the phrase "cargo power-assisted bicycle".

C. By deleting the word "motor" in Sections 950-200D (1) and (2).

D. By (i) deleting the word "or" between "bicycle" and "cargo power-assisted bicycle"; (ii) inserting a comma after the phrase "leave a bicycle"; (iii) deleting the phrase "with a continuous rated output power not exceeding 500 watts and weighing not more than 120 kilograms unladen"; and (iv) inserting the phrase "or other similar vehicle" after the phrase "cargo power-assisted bicycle" in Section 950-201B.

E. By deleting from Section 950-201C(1) the phrase "and weighing not more than 120 kilograms unladen" after the phrase "not exceeding 500 watts".

F. By deleting from Section 950-201E the phrase "with a continuous rated output power not exceeding 500 watts and weighing not more than 120 kilograms unladen" and inserting the phrase "or other similar vehicle, " after the phrase "cargo power-assisted bicycle, ".

G. By inserting a new Section B.1 in Section 950-1200 as follows:

"B.1 Unless at the time of the contravention the bicycle, cargo power-assisted bicycle, or other similar vehicle was in the possession of another person without the bicycle, cargo power-assisted bicycle, or other similar vehicle owner's consent, if a bicycle, cargo power-assisted bicycle, or other similar vehicle has been left in contravention of §§ 950-201B, the bicycle, cargo power-assisted bicycle, or other similar vehicle owner shall, upon issuance of a penalty notice, be liable to an administrative penalty."

5. City Council establish the new offences as set out in Item 4D above and set an associated penalty amount of \$150.00 for offences in 950-201B; and amend Schedule A, Table 10: Chapter 950, Traffic and Parking, in City of Toronto Municipal Code Chapter 610, Penalties, Administration of, in numerical order, generally as follows::

Addition to Schedule A, Table 10: Chapter 950, Traffic and Parking:

Column 1 Designated Part of Chapter	Column 2 Short Form Wording	Column 3 Penalty Amount
§ 950-201B	Leave (bicycle/cargo power-assisted bicycle/similar vehicle) on highway	\$150.00

6. City Council authorize the City Solicitor to make application to the Province of Ontario, Ministry of the Attorney General, and/or Regional Senior Justice to revise any established set fines/set fine short form wording or establish any new set fines under the Provincial Offences Act, as necessary, as may be identified by the City Solicitor or the General Manager, Transportation Services, in order to give effect to Parts 1, 4 and 5, above, and that the City Solicitor in consultation with the appropriate City staff, determine the amount of the set fine to be requested.

7. City Council authorize the General Manager, Transportation Services to negotiate, enter into, and execute a letter of agreement, where possible, with potential participants of the *O.Reg 141/21 Pilot Project - Cargo Power-Assisted Bicycles* that weigh more than 120kg unladen to secure their respective commitments and obligations to deliver the pilot project generally in accordance with the terms and conditions set out in the report dated November 18, 2021 from the General Manager, Transportation Services, and upon such additional terms and conditions satisfactory to the General Manager, Transportation Services, and in a form acceptable to the City Solicitor.

8. City Council authorize the City Solicitor to introduce the necessary bills to give effect to City Council's decision and City Council authorize the City Solicitor to make any necessary clarifications, refinements, minor modifications, technical amendments, or by-law amendments as may be identified by the City Solicitor or General Manager, Transportation Services, in order to give effect to Parts 1 to 7, inclusive, above.

FINANCIAL IMPACT

There are no immediate financial impacts arising from the adoption of the recommendations.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on June 8-9, 2021, City Council adopted Item IE22.15 Regulatory Clarity for Cargo E-bikes that opted-in partially to the Province's pilot project to allow cargo e-bikes, weighing not more than 120kg unladen, on streets, bike lanes and cycle tracks. Transportation Services was requested to report back on a micromobility strategy on all e-bike types and a pilot project for larger cargo e-bikes (over 120kg unladen) for the fourth quarter of 2021.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.IE22.15>

At its meeting on October 27, 28 and 30, 2020, City Council adopted Item IE16.1 Freight and Goods Movement Strategy that included a strategic action to implement a cargo e-bike pilot with partners such as courier companies and to promote cargo e-bike usage to reduce impacts of urban goods movement on the City's streets.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.IE16.1>

On June 29 to 30, 2020, City Council through Member Motion 22.41, directed the General Manager, Transportation Services, among other things, to consult "...with relevant Divisions, to report to the Infrastructure and Environment Committee on July 9, 2020 with proposed by-law amendments to support cargo cycles weighing over 40 kg to be used on bicycle lanes and cycle tracks under Chapter 886 of the Toronto Municipal Code."

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.MM22.41>

On April 25, 2019, the Infrastructure and Environment Committee requested a report back on a proposed regulatory framework, safe road design and intersection requirements for low-speed wheeled modes under 25 km/hr, including cargo cycles, and e-assist cycles in Toronto.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.IE4.5>

COMMENTS

Cargo E-bikes for Urban Goods Movement

Demand for e-commerce deliveries has risen sharply: from 2016 to 2020 e-commerce sales by Canadians grew more than 350%. The World Economic Forum predicts 36 per cent more delivery vehicles in cities by 2030, and emissions and traffic congestion will rise more than 30% in the most populous cities. In the Greater Toronto and Hamilton Area (GTHA), transportation emissions represent 34% of total emissions. Interventions such as cyclelogistics - the integration of bicycles into the goods movement network in cities like Toronto, have the potential to reduce operational costs for businesses and address climate resiliency, traffic congestion and safety concerns by replacing the use of vans and trucks for deliveries in the GTHA. (Pembina Institute, 2021) According to New York City's Department of Transportation's (NYC DOT) cargo e-bike pilot evaluation, each cargo bike can replace vans or box trucks on a 2:1 or even 1:1 basis and the average cargo bike miles travelled per day replaces 20 van or box truck miles, resulting in a per bike CO2 savings of approximately 7 tons/year, equivalent to over 100 planted trees, or 15,436 passenger car miles traveled.

Proposed By-law Amendments to Support Use of Large Cargo E-bikes (over 120kg unladen) for Deliveries

On March 1, 2021 the Province released *O.Reg 141/21 Pilot Project – Cargo Power-Assisted Bicycles* under the Highway Traffic Act (HTA). Municipalities need to opt-in to pilot the use of any cargo e-bikes greater than 55kg unladen (see Figure 1). Recommendations to City Council in *Item IE22.15 Regulatory Clarity for Cargo E-bikes*, adopted by the Infrastructure and Environment Committee on May 25, 2021, provided a partial opt-in to the province's pilot project for cargo e-bikes weighing not more than 120kg unladen (see Figure 2), and requested a report back on allowing large cargo e-bikes over 120kg unladen (see Figure 3) for commercial deliveries in the fourth quarter of 2021.

Figure 1 - Example of cargo e-bikes weighing 55kg unladen and under. Allowed in Ontario without opting-in to pilot and allowed to tow a trailer. (Photo credit: Cycling Magazine)



Figure 2 – Example of cargo e-bikes weighing not more than 120kg unladen. Majority of models are less than 0.9m wide. Council adopted IE22.15 on June 8-9, 2021 which allows their use on roads, bike lanes and cycle tracks. (Photo credit: Centaur)



Figure 3 – Example of large cargo e-bikes weighing over 120kg unladen and wider than 0.9m. Under the HTA, they must be no wider than 1.3m and no longer than 4m.

This report recommends allowing their use on roads, bike lanes and cycle tracks; and to prohibit any cargo e-bikes wider than 0.9m from stopping on bike lanes and cycle tracks. (Photo credit: Bike Portland)



Since June 2021 City staff consulted a wide range of external and internal stakeholders to inform the pilot project parameters and proposed by-law amendments. Stakeholders included delivery companies (e.g. Canada Post, DHL, FedEx, Penguin Pick-Up, and Purolator), cargo cycle retailers, business improvement areas (BIAs), various cycling groups (e.g. Cycle Toronto, Bike Brigade, Our Greenway, Toronto Centre for Active Transportation, etc.), pedestrian and accessibility stakeholders, university researchers, as well as a range of internal stakeholders from relevant Divisions. In addition, the proposed by-law amendments are informed by cargo e-bike research and a jurisdictional scan including best practices from peer cities (e.g. New York City) conducted by the Pembina Institute.

The proposed by-law amendments will achieve the following:

- Allow large cargo e-bikes to operate on the City's roads, bike lanes and cycle tracks, and prohibit large cargo e-bikes (greater than 0.9m in width) to stop on bike lanes and cycle tracks;
- Allow large cargo e-bikes to park (and load/unload) in designated on-street commercial loading zones and delivery vehicle parking zones;
- Not allow large cargo e-bikes to be left in a manner that blocks pedestrian or vehicular traffic;
- Require large cargo e-bike riders/operators to stop for TTC buses that have passengers boarding/alighting and crossing cycle tracks;

- Not allow large cargo e-bikes to be ridden on sidewalks, except to be able to cross the sidewalk at driveways (similar to other vehicles);
- Not allow large cargo e-bikes to be ridden on certain highways such as expressways;
- Authority for the General Manager, Transportation Services to develop and implement a letter of agreement for pilot project participants to ensure safety requirements and data collection;
- Provide for new penalty amounts, in line with current penalty amounts for similar offences, for the stopping and leaving offences created; and
- Allow the City Solicitor to update the wording for set fines to reflect the new terms and definitions in the City's by-laws and to apply for new set fines, where required.

Expected Roll-Out of Large Cargo E-bikes

City staff expect the roll-out of large cargo e-bikes (weighing over 120kg unladen) to be at a small scale in its early stages (e.g. 20 to 40 cargo e-bikes in the Downtown Core in 2022-2023). Four companies have expressed interest in piloting large cargo e-bikes, and each company may be interested in testing one or a few cargo e-bikes in the early stages. This is in keeping with similar peer cities such as Montréal (e.g. around 36 to 40 in its pilot) in Canada. Cargo e-bikes will be allowed to park in designated on-street commercial loading zones and delivery vehicle parking zones at no cost, similar to other commercial delivery vehicles. As part of the Freight and Goods Movement Strategy, Transportation Services Division staff will continue work to explore:

- the expansion of parking opportunities for commercial vehicles by location and time of day;
- the identification of infrastructure needs such as security, storage, electrical charging stations and safety to support adoption of cargo cycles; and
- the development and implementation of a pilot permit parking system to serve commercial vehicles loading and unloading.
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- In addition, the proposals for microhubs - which are locations for the distribution of parcels and potential storage of cargo e-bike fleets - will be considered on a case-by-case basis and would be reported out separately depending on the proposal itself, such as any opportunities facilitated by Transportation Services between CreateTO and/or the Toronto Parking Authority and delivery companies.

In the meantime, given the initial small scale of the proposed large cargo pilot project, City staff recommend using a letter of agreement between the General Manager, Transportation Services Division and company participants in the large cargo pilot project to set out safety and data requirements (see Attachment 1), until such time as the Freight and Goods Movement Strategy has further developed a pilot permit parking system for commercial vehicles. This is similar in approach to New York City (NYC) which used a letter of understanding between the NYC Department of Transportation with pilot project participants, rather than a permit system upfront which takes resources and significant process and time to set-up prior to any permanent cargo e-bike program. New York City's cargo e-bike pilot was a success, and the recommendation is now to make it permanent and to work on developing a permit system.

Social Equity and Personal Use Cargo E-bikes

In addition, based on feedback from external stakeholder consultations, there is demand for access to secure convenient and affordable parking for cargo e-bikes (ones that are 55kg or under, as well as not more than 120kg unladen (see Figures 1 and 2 above) for personal use, in order to support improved transportation options for grocery shopping and other errands across the City and especially for equity-deserving neighbourhood improvement areas where transportation options and access are lacking. Access to cargo e-bikes would open up various opportunities including improved job access/business opportunities, and financial and time savings. The lack of cargo e-bike parking in existing and new buildings has been raised by stakeholders and suggests an opportunity to review policies and incentives to require the provision of secure parking and charging facilities for cargo cycles/e-bikes in residential, commercial and City-owned facilities by relevant Divisions such as City Planning and Energy and Environment. Initiatives are underway by City Planning to review bike parking policies, including guidelines for new developments.

Next Steps - In Summary

Similar to the timing of New York City's cargo e-bike pilot launch, the pilot project for large cargo e-bikes in Toronto will be enabled in time for testing large cargo e-bikes for deliveries for the holiday season 2021 if the recommendations in this report are adopted by City Council. One of the benefits of cargo e-bikes is that they are operable year-round. City staff will then work with delivery companies and other partners, such as the Pembina Institute and the University of Toronto, to support the evaluation framework, data gathering and evaluation of the pilot project on an annual basis and intend to make the evaluation report publicly available. It is anticipated that the pilot project will start at small scale to gauge interest, benefits and outcomes of testing large cargo e-bikes.

Based on the monitoring and evaluation, Transportation Services staff will use this information to shape the ongoing work on the Freight and Goods Movement Strategy implementation and its next steps to expand and improve commercial vehicle loading and unloading, including the support and adoption of cargo e-bikes.

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SIGNATURE

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General Manager, Transportation Services

ATTACHMENTS

Attachment 1 - Letter of Agreement - Key Principles and Conditions for Companies/Organizations Participating in the Pilot Project of Large Cargo E-bikes (weighing over 120km unladen)

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Pilot Project Period

- If Toronto City Council opts-in to pilot large cargo e-bikes weighing more than 120kg unladen, the duration of the pilot project will be until March 1, 2026, subject to annual evaluations of the pilot project where the Transportation Services Division will decide whether to continue/extend the pilot or modify its terms and conditions.

General Regulations

- Cargo bicycles/e-bikes and their operators/riders participating in this pilot shall comply with all applicable laws, rules, and regulations including those under the *Ontario Highway Traffic Act* and its regulations; *Toronto Municipal Code Chapter 886, Footpaths, Pedestrian Ways, Bicycle Paths, Bicycle Lanes and Cycle Tracks*; and *Toronto Municipal Code Chapter 950 Traffic and Parking*.

Insurance and Indemnification

- Each pilot participant shall provide, maintain, and pay for liability insurance, with limits of not less than \$1,000,000 per occurrence, for bodily injury, death, and property damage, and shall be issued by an insurer licensed to write insurance in the Province of Ontario. The insurance shall be maintained in full force and effect for the duration of the pilot period. In addition, the pilot participant shall indemnify, defend and hold harmless the City of Toronto against any additional or uncovered third party claims arising out of or caused directly or indirectly by the cargo bicycle/e-bike operations. The policy shall be endorsed to provide the City of Toronto with 10 days' notice in writing of any cancellation, expiration, or suspension of the policy or of any reduction in the amount of coverage under the policy.

Education and Enforcement

- Pilot participants will ensure that cargo bicycles/e-bikes will be clearly labeled on both sides with the business name, the business's phone number, and a visible unique ID number identifying the bicycle/e-bike itself (i.e. similar in size to typical license plate numbers which are approximately 80mm tall, 50mm wide, with 14mm width stroke).
- Pilot participants will ensure that cargo bicycle/e-bike operators have undergone cargo bicycle/e-bike-specific training sessions regarding the laws and regulations covering cargo bicycles/e-bikes and the safe operation and maintenance of the cargo bicycle/e-bike models being used by the pilot participant.
- Transportation Services will work with pilot participants and Toronto Police Services to develop a process to provide notice to pilot participants where the operation of the cargo bicycle/e-bike negatively impacts the regular functioning of a street. If Toronto Police Services and/or Transportation Services cannot locate the cargo bicycle/e-bike operator or the pilot participant where there is a documented and communicated safety issue that is not resolved within a timely manner, Toronto Police Services and/or Transportation Services may remove and store the cargo bicycle/e-bike.

Data Sharing and Pilot Project Evaluation

-may include:

- Pilot participants will maintain a cargo bicycle/e-bike roster available upon request to Transportation Services for their cargo bicycles indicating the manufacturer name, model name, the unique ID number, and the date of last inspection.
- Pilot participants will be asked for weekly operational data for all operating cargo bicycles/e-bikes to be submitted to the City on a monthly basis, in order to understand the number of cargo bicycles/e-bikes operating and models used, aggregated by day, and for laden and unladen, including parcel volume, quantity and weight per cargo bicycle/e-bike route and delivery. In addition, pilot participants will be asked for weekly operational data for each cargo bicycle/e-bike (using its unique identification number) - to understand its status changes and route information including date, times (e.g. dwell times), and location (latitude and longitude). Other data to be provided by pilot participants include areas of operation within the City of Toronto, average number of trips per cargo bicycle/e-bike per day, average number of packages delivered by cargo bicycle/e-bike per day, and the anonymized trip and routing data.
- Transportation Services will engage pilot participants and other key stakeholders in the evaluation process of the cargo bicycles/e-bikes to provide an annual year-end evaluation report that will provide observations and recommendations on the continuation/discontinuation and/or modifications to the pilot project, e.g. including progress to address stakeholder concerns/complaints such as impacts on accessibility for persons with disabilities and pedestrians.
- Pilot participants may remove any data they reasonably deem to be confidential or proprietary before that data is transmitted to Transportation Services. Any data received by Transportation Services may be subject to disclosure pursuant to relevant statutes including the Municipal Freedom of Information and Protection of Privacy Act, or at Transportation Services' discretion.
- Transportation Services Division may use any data provided to the City at its discretion, including but not limited to, the ability to use the data in analyses, reports, studies, presentations, and publications.