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Sustainable Urban Freight Transport: The Case for E-Cargo Tricycles

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Abstract

Electrically assisted cycles are a relatively new mode of last mile urban freight deliveries in North America. They have the potential to reduce negative externalities of freight transport, especially if they can reduce the movement of gasoline or diesel powered vehicles. However, regulatory and logistical barriers have prevented their widespread use. This talk will describe a pilot study in downtown Toronto which consists of electrically assisted cargo tricycles and a micro-hub on the University of Toronto campus. The regulatory challenges that were overcome to initiate the pilot will be described. Our before/after comparison of cargo tricycle and truck deliveries will be presented including our consideration of environmental, health, and operational characteristics. We gathered data from GPS sensors, engine sensors, air quality sensors, and driver logs for shipment pickup/deliveries. We found that, in general, one cargo tricycle can replace one delivery truck without compromising operational efficiency for a courier last mile delivery. Electric cargo tricycles can substantially reduce greenhouse gas emissions and have positive impacts on driver's health. The presentation will also share findings on the potential efficiency of e-cargo bike deliveries more broadly across the City of Toronto, as the potential next phase of implementation.