

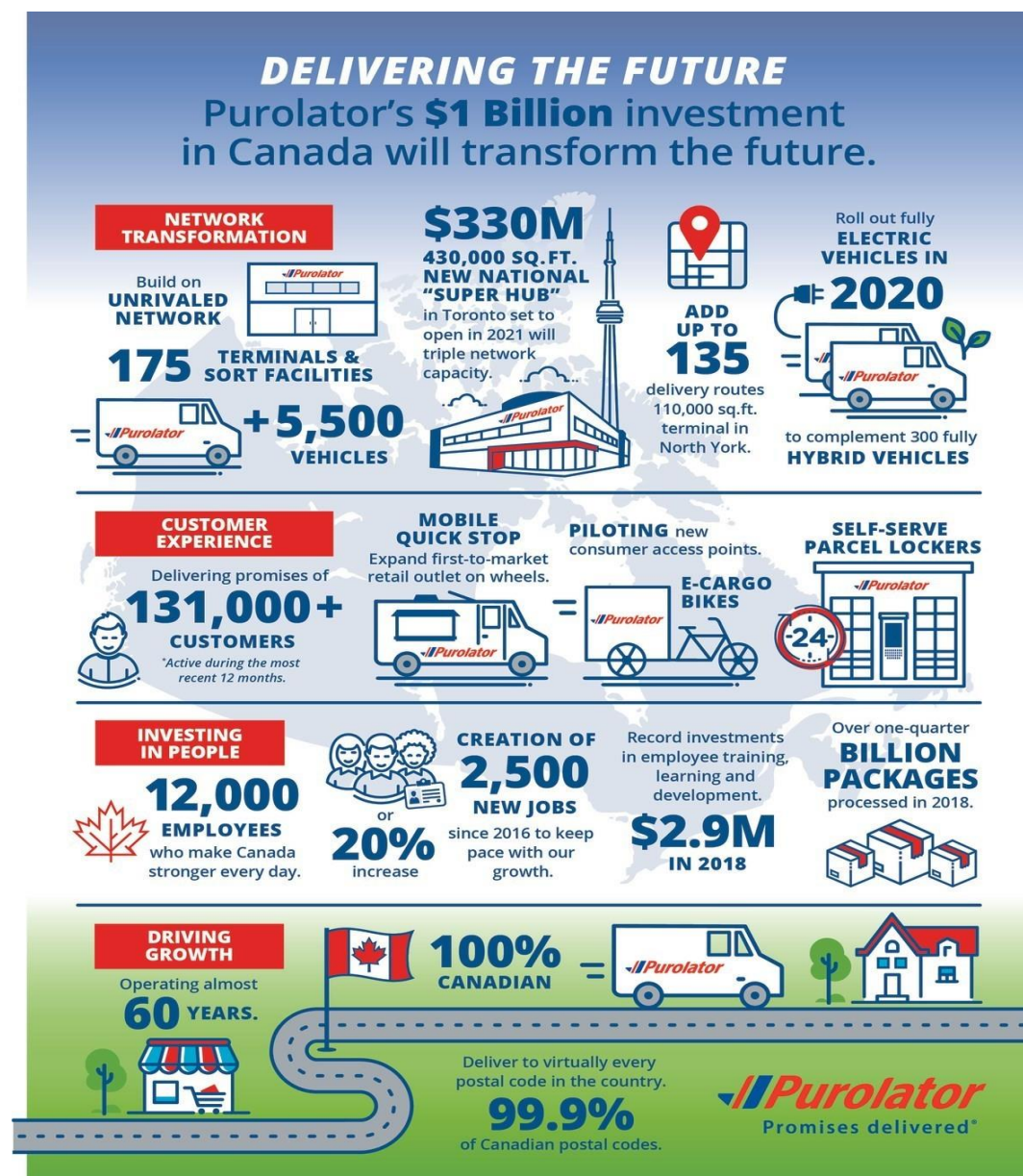
# Applied Research and Innovation

Digital Lab – Purolator Inc.

CLUE Event 2022: Overview on Montreal e-cargo bike project

Serving our cities with sustainable, innovative and efficient delivery solution









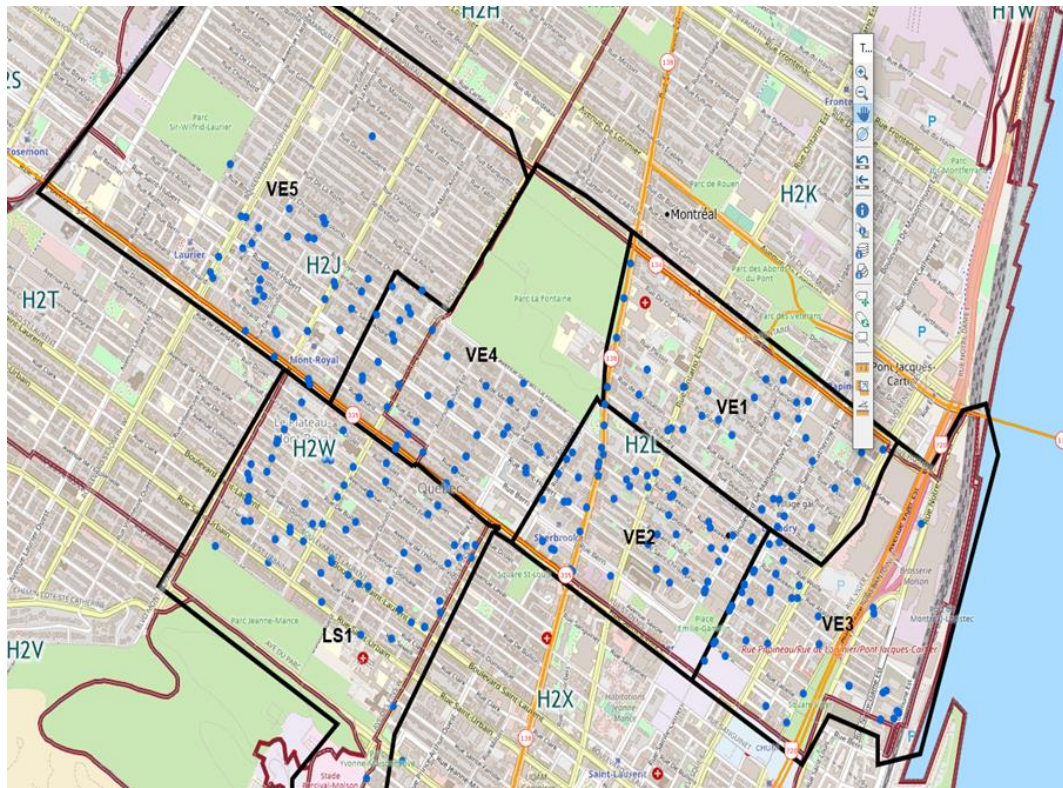
## Les vélos-cargos s'en viennent au centre-ville



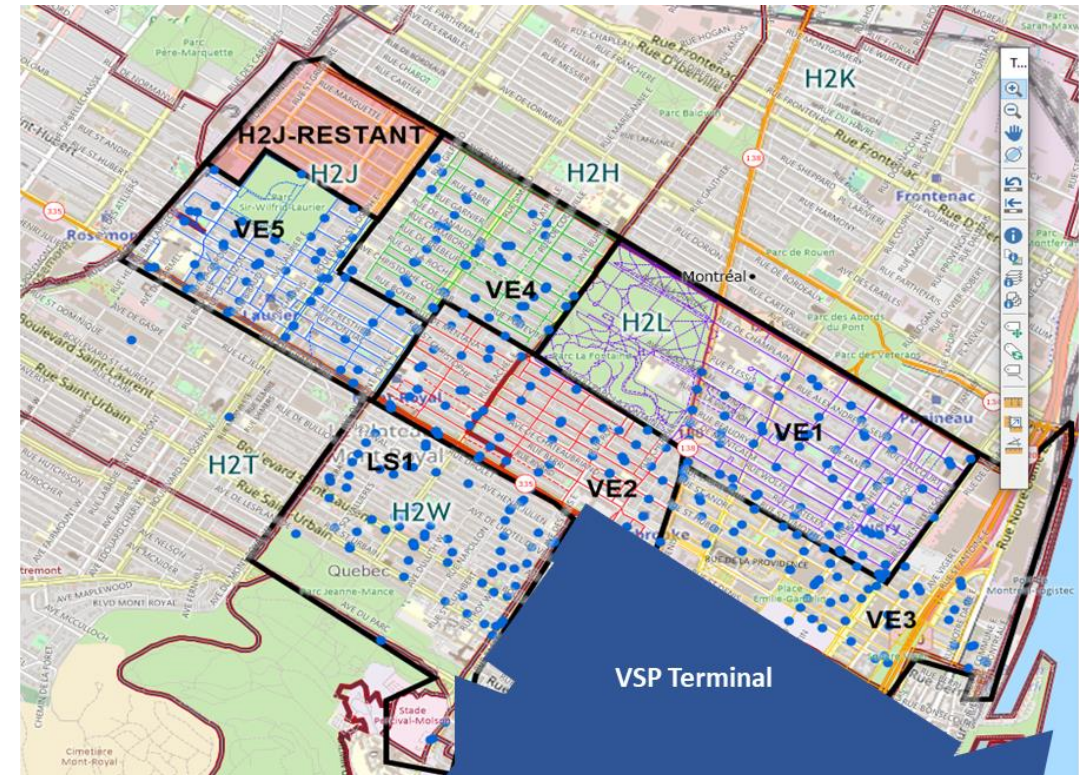


# Delivery Areas – Anjou Terminal FSA

Current territory (450 stops per day)



Target territory (including VSP Terminal (600 to 700 stops per day))





# First Test of E-Cargo Bike in 2018 -2019



## 2019 PoC Results

Operating Days (OD)	190	251	
# of STP/ day	110	63	175%
SPH	15.79	9.81	161%
On Road Hours	7	8.59	81%
Mileage	23	48	48%
Total Courier hours	8	9.15	87%

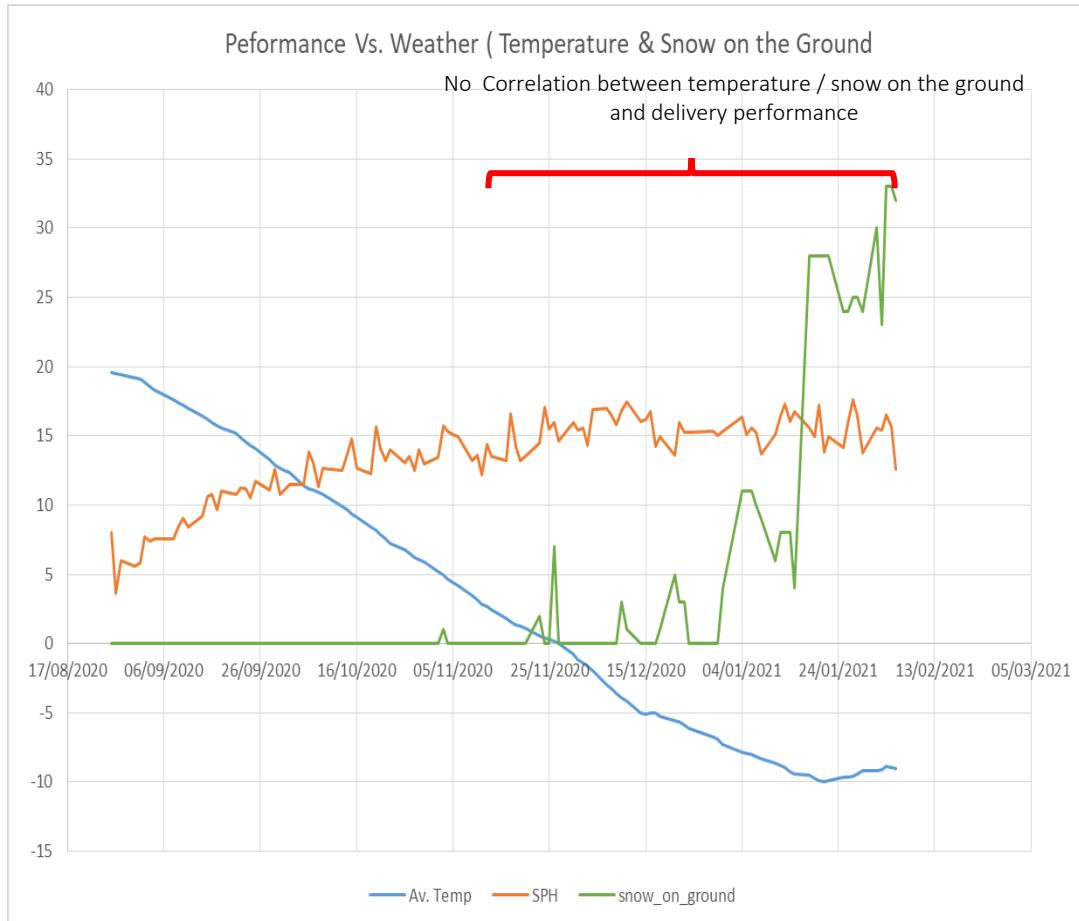
# Current Montreal urban distribution centre set up – Ilot Voyageur



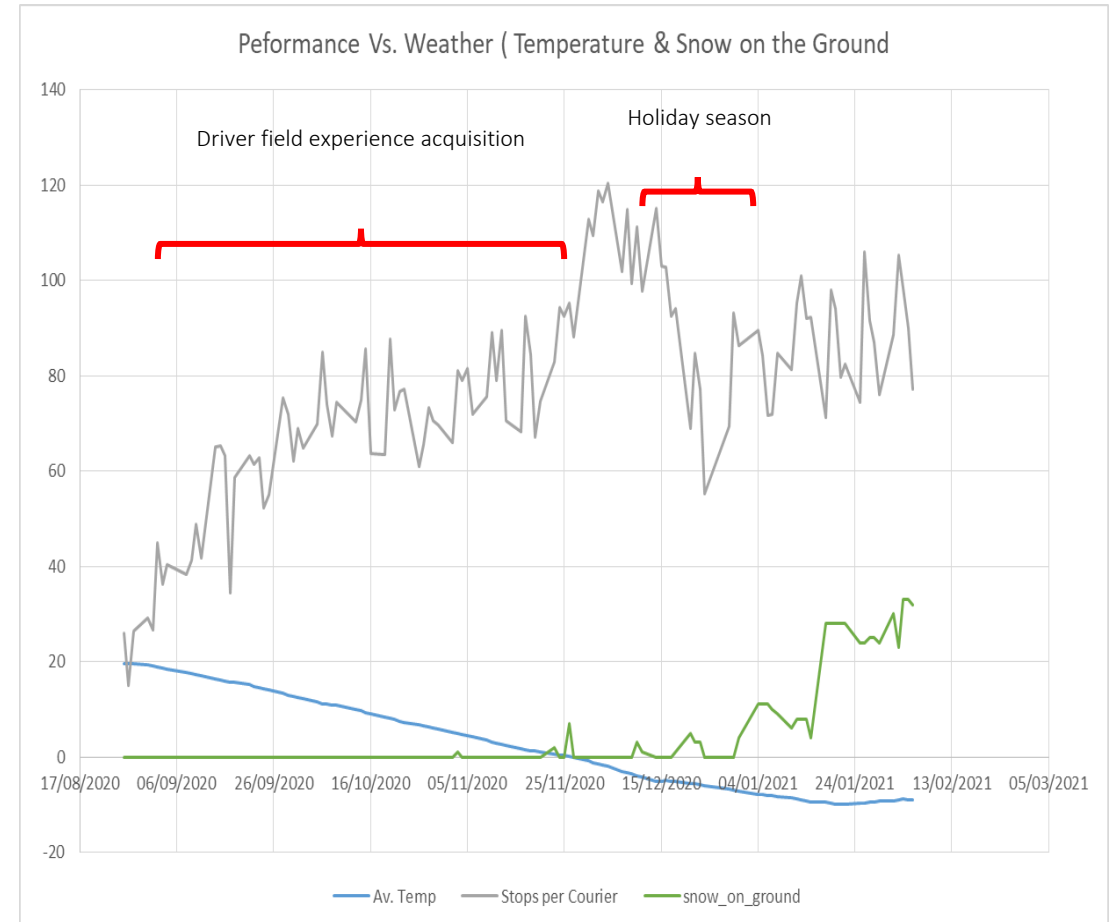


# Weather impact results on e-bike delivery

SPH vs. temperature and snow on ground

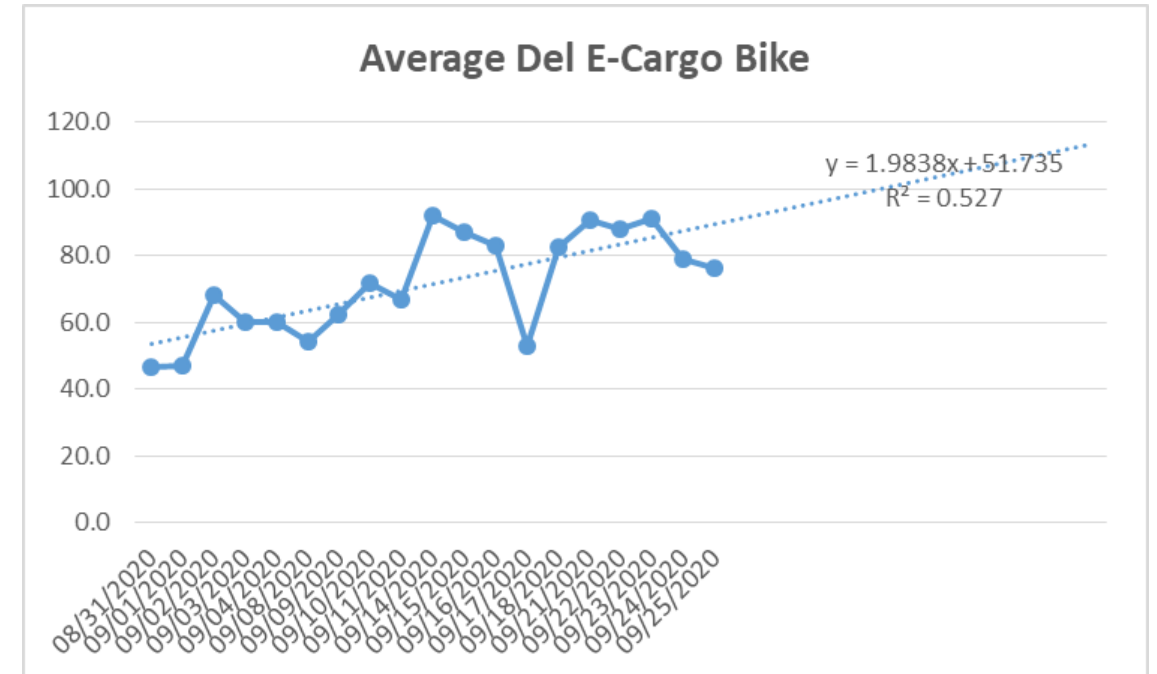
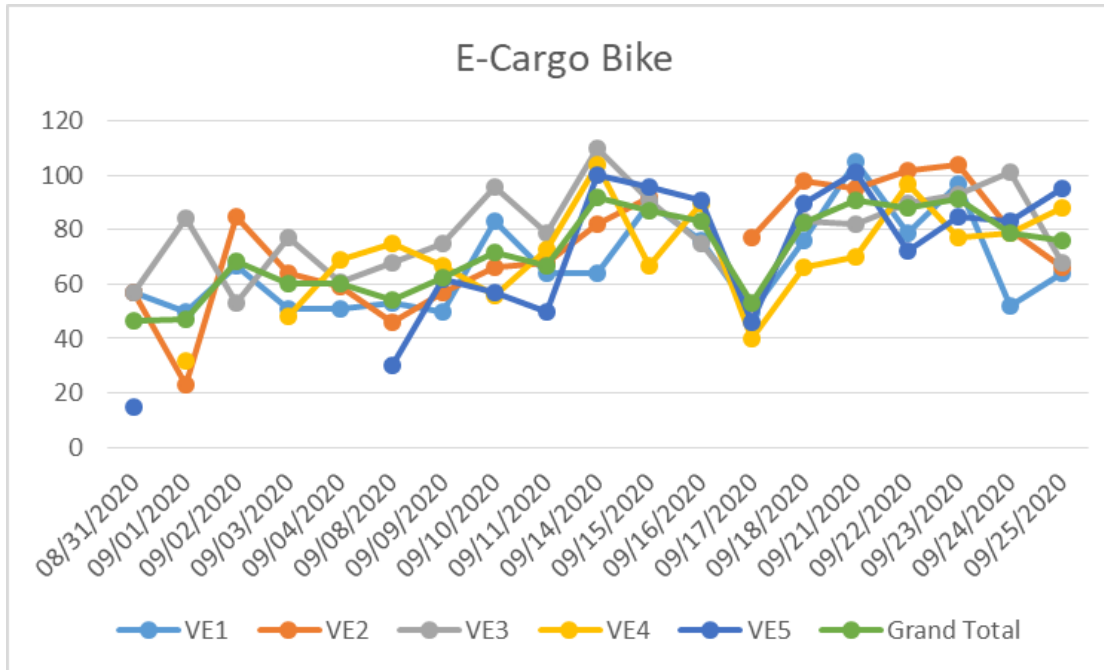


Stop per courier vs. temperature and snow on ground



**NOTE:** Street quality and payload weight are major contributors to mechanical breakdowns and delivery capacity daily fluctuation.

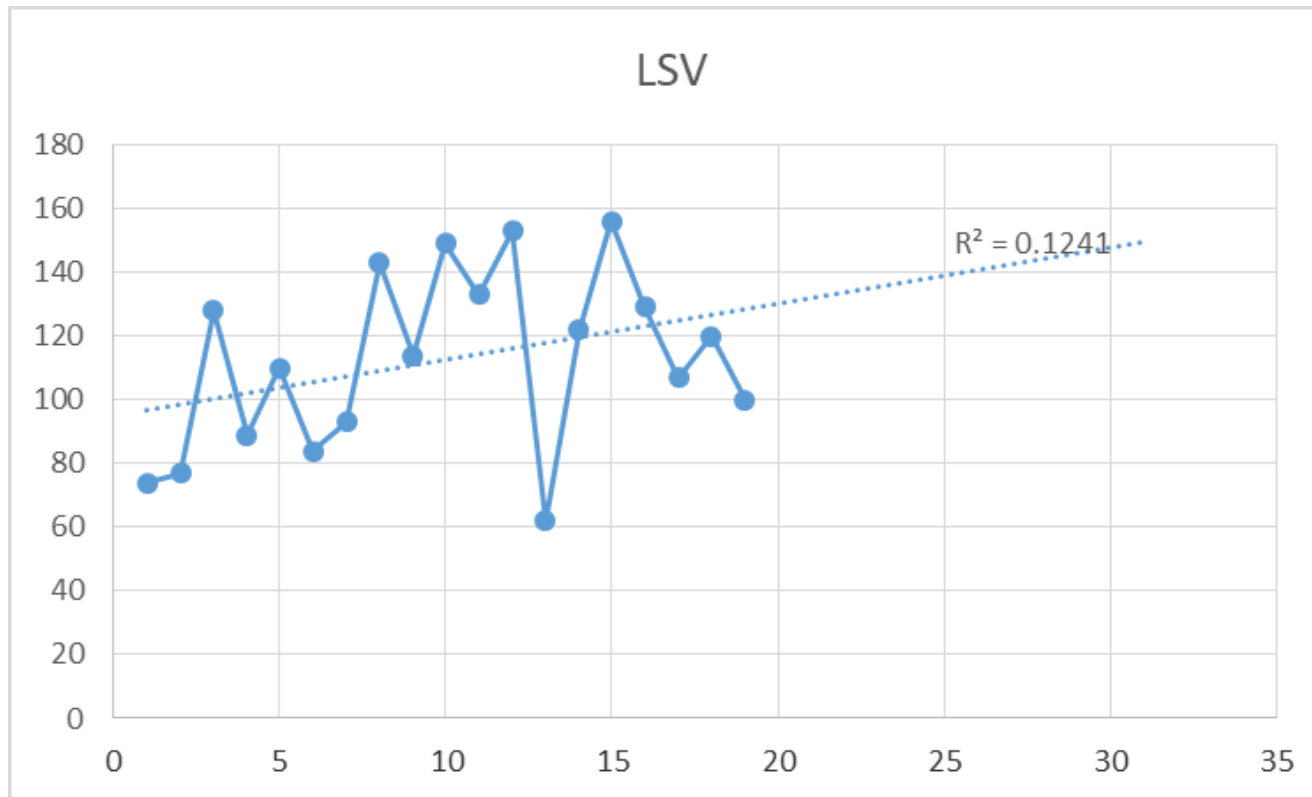
# Delivery pieces- e-cargo bike (2019 -2020)



Number of pieces per day was growing day after day for the start of the pilot. This number is also expecting to grow for the next 12 days due to the increase of areas covered by e-cargo bike ( adding VSP) with a potential of exceeding 110 pieces per day.



# Delivery pieces- low speed vehicle (LSV) – KARGO Model ( 2019- 2020)



Similar to e-cargo bike, number of pieces per day was growing day after day and for the next 12 days due to the increase of areas covered By LSV with a potential of exceeding 150 pieces per day.

# Technology comparison : Technical specifications



**P&D Truck**

14,000 lbs GVWR / 176" Wheelbase  
Payload 2,000 lbs ( 1000 Kg)  
Ford E450 Econoline Stripped Chassis  
6.2Liter V8 raptor proven gasoline 55  
gallon fuel tank  
Conditioning / cab entry way grab handle  
60" Roll Up Todco Weathertite rear door  
Consumption 40 l / 100 Km



**E-Bike**

Payload of 180 kg. or 30 to 40 Pcs  
Starting aid up to 6km/h and electric  
power assist.  
Battery life for a whole day.  
Cab cover protects driver from rain and  
harsh weather conditions.  
Comfortable and safe for driver with  
ergonomic seating position.  
Flexible for different products deliveries  
**P&D Ratio: 1 to 1.5 E-Bike for 1 P&D Truck**



**LSV**

Over 5 miles per kWh of energy  
Max range of 160 miles per charge. 3 to 4-  
hour charge time on a level II EVSE  
Well-equipped cab. Crash zone, air bag, ABS  
brakes and AC. Available telematics,  
Autonomous CAN  
125 cubic foot cargo box or 80 parcels  
Street Legal at 25, 35 or 45 mph  
**P&D Ratio: 1 LSV for 1 P&D Truck**



# Questions?

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