

**Pilot Green Transport Fund**

**Interim Report**

**On**

**Trial of Electric Light Goods Vehicle**

**for Eggs Wholesale Industry**

**(Yee Hing Eggs Wholesale Company Limited)**

(1 September 2021)

PREPARED BY:  
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The Monitoring and Evaluation Team's views expressed in this report do not necessarily reflect the views of the Environmental Protection Department, HKSAR.

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**Pilot Green Transport Fund**  
**Trial of Electric Light Goods Vehicle for Eggs Wholesale Industry**  
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**Interim Report**  
**(Reporting Period: 1 June 2020 – 31 May 2021)**

**Executive Summary**

**1. Introduction**

1.1 The Pilot Green Transport Fund (the Fund) is set up to encourage transport operators to try out green innovative transport technologies, contributing to better air quality and public health for Hong Kong. Yee Hing Eggs Wholesale Company Limited (Yee Hing) was approved under the Fund for trial of one electric light goods vehicle for eggs delivery. Yee Hing, through the tendering procedures stipulated in the Agreement entered into with the Government, procured a Joylong EW5 electric light goods vehicle (EV) for trial. According to the manufacturer, the EV has a travel range of 330 km with its battery fully charged and air-conditioning off.

1.2 PolyU Technology and Consultancy Company Limited has been engaged by the Environmental Protection Department as an independent third party assessor (the Assessor) to monitor the trial and evaluate the performance of the trial vehicle. Yee Hing assigned a Ford diesel light goods vehicle (DV) with a GVW of 3,330 kg and 2,198 c.c. engine and providing similar service as the conventional counterpart for comparison.

1.3 This Interim Report summarizes the performance of the EV in the first twelve months of the trial as compared with its conventional counterpart, i.e. the DV.

**2. Trial and Conventional Vehicles**

2.1 Key features of the EV, the charging facility and the DV are in Appendix 1 and photos of the vehicles and the charging facility are in Appendix 2. The EV and the DV were used for the delivery of eggs in the Kowloon region.

2.2 Yee Hing installed a 30 kW DC charging facility inside a garage on Shun Ning Road, Cheung Sha Wan for charging and recording the amount of electricity charged. The EV was charged when it was not in use. Yee Hing also installed another 30 kW DC charging facility at its own cost inside the Egg Market, Cheung Sha Wan Wholesale Food Market for charging the EV.

### 3. Trial Information

3.1 The trial commenced on 1 June 2020 and would last for 24 months. Yee Hing was required to collect and provide trial information including the EV's mileage reading before charging, amount of electricity consumed and time used in each charging, and operation downtime due to charging, cost and downtime associated with scheduled and unscheduled maintenances of the EV and the charging facility. Similar data of the DV were also required. In addition to the cost information, reports on maintenance work, operational difficulties and opinions of the driver and Yee Hing were collected to reflect any problems of the EV.

### 4. Findings of Trial

4.1 The following table summarizes the statistical data of the EV and the DV. The average fuel cost of the EV was HK\$1.64/km (78%) lower than that of the DV. The average total operating cost of the EV was HK\$2.41/km (80%) lower than that of the DV taking the maintenance cost into account.

Table 1: Key operation statistics of each vehicle (1 June 2020 – 31 May 2021)

		EV	DV
Total distance travelled (km)		37,409	30,302
Average daily mileage (km/working day)		115	93
Average fuel economy	(km/kWh)	2.68	-
	(km/litre)	-	7.21
	(km/MJ)	0.74	0.20 <sup>[1]</sup>
Average fuel cost (HK\$/km)		0.45 <sup>[2]</sup>	2.09 <sup>[3]</sup>
Average total operating cost (HK\$/km) <sup>[4]</sup>		0.61	3.02
Downtime (working day) <sup>[4][5]</sup>		2	2

<sup>[1]</sup> Assuming lower heating value of 36.13 MJ/litre for diesel fuel

<sup>[2]</sup> Electricity cost is based on HK\$1.218/kWh

<sup>[3]</sup> Based on market fuel price.

<sup>[4]</sup> Maintenance due to incident not related to the performance of the vehicle was not included for comparing the performance.

<sup>[5]</sup> Downtime refers to the working days the vehicle is not in operation, which is counted from the first day it stops operation till the day it is returned to the operator.

4.2 Apart from the fuel cost, maintenance cost and other indirect costs which may include parking fee, towing fee, vehicle replacement fee and cost of operation downtime due to charging and maintenance of the EV are also included in Table 1. Taking account of the maintenances related to the vehicle performance, the EV and the DV each had a total of 2 days of downtime for maintenances. The utilization rates were 99.4% for both the EV and the DV.

4.3 In the first 12 months of the trial, the average daily mileages of the EV and the DV were 115 km/day and 93 km/day respectively. According to the data collected in this period, the EV had no sign of deterioration in performance.

4.4 In general, the driver of the EV had no problem in operating the EV. However, he did not like driving the EV because the driving range of the EV is less than that of the DV after being fully refueled and the EV has to be charged every day. Also, the EV is less powerful than the DV on uphill driving. Overall, Yee Hing considered that using the EV is good because it can provide a greener and quieter environment as well as EV has a lower fuel cost. Despite that Yee Hing operated the EV (115 km per working day) more than the DV (93 km per working day) in their daily operation and the EV had obvious fuel cost and total operating cost saving compared to the DV, Yee Hing did not consider that it was easier and cheaper to maintain the EV and felt that there was deterioration in the performance of the EV. Thus, Yee Hing would not recommend other transport operators to try out this EV model.

## **5. Summary**

5.1 The average fuel cost of the EV was about 78% (HK\$1.64/km) less than that of the DV. The average total operating cost of the EV was also about 80% (HK\$2.41/km) lower than that of the DV. The utilization rates were 99.4% for both the EV and the DV. According to the data collected in the first 12 months of the trial, there was no indication on the deterioration of the EV performance.

5.2 The driver of the EV had no problem in operating the EV, but considered that the driving range and the uphill power of the EV were not as good as those of the DV. Yee Hing considered that using the EV is good because it can provide a greener and quieter environment, but did not consider that it was easier and cheaper to maintain the EV.

5.3 The findings only reflect the performance of the EV in the first twelve months of the trial. The performance and reliability of the EV will be continuously monitored in the 24 months of the trial.

## **Appendix 1: Key Features of Vehicles and Charging Facility**

### **1. Trial EV and Charging Facility**

#### **(a) EV**

<b>Registration mark</b>	<b>WP1809</b>
Make:	Joylong
Model:	HKL5041XXYBEVI (EW5)
Class:	Light goods vehicle
Gross vehicle weight:	4,300 kg
Seating capacity:	Driver + 4 passengers
Rated power:	100 kW
Travel range:	330 km (air conditioning off)
Battery material:	lithium-ion
Battery capacity:	73.4 kWh
Year of manufacture:	2019

#### **(b) Charging Facility**

<b>Make:</b>	<b>Hangzhou AoNeng Power Supply Equipment Co. Ltd.</b>
Model:	ANDC5-500V/60A-1
Type:	3-phase, 380V, movable type
Power:	30 kW, DC (max 500V/60A)
Charging Standard:	GB

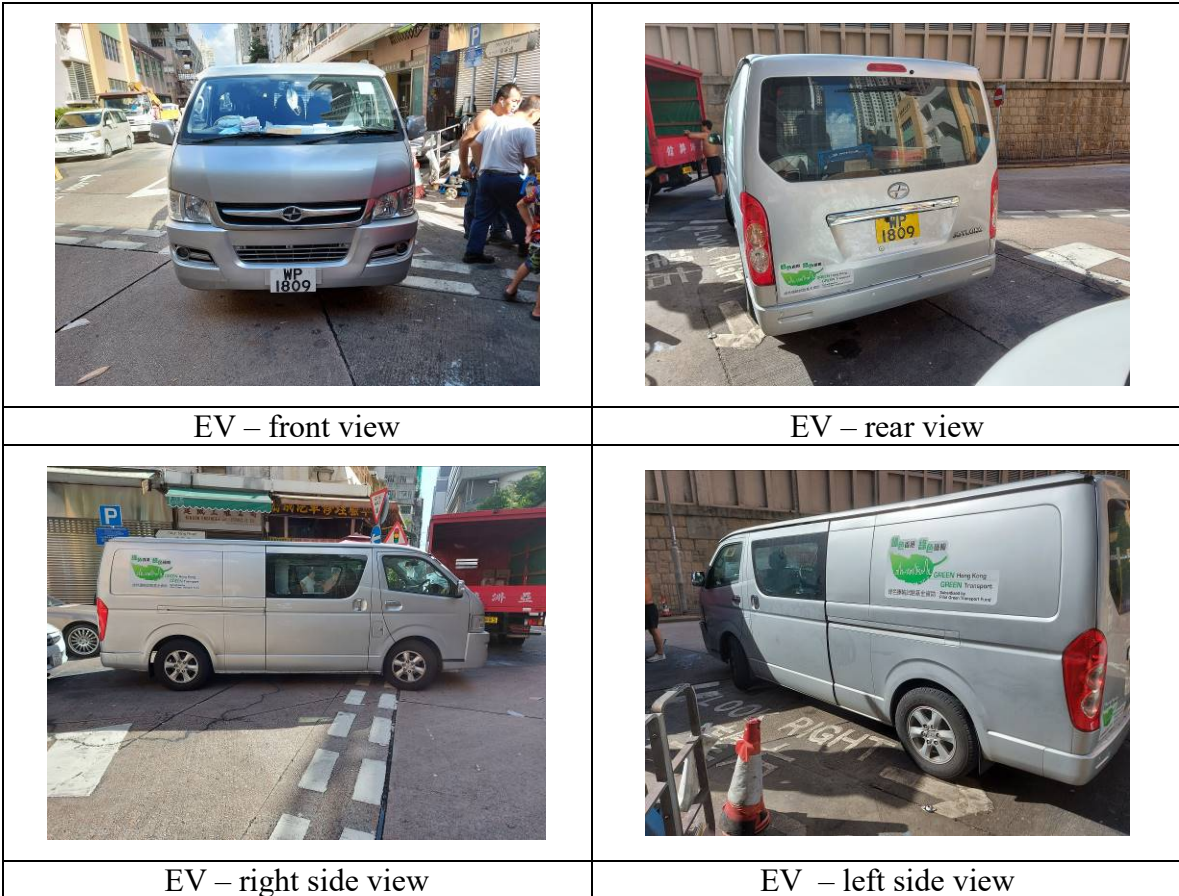
### **2. DV Used for Comparison**

<b>Registration mark</b>	<b>MD6346</b>
Make:	Ford
Model:	Transit 2.2 DL LW LR
Class:	Light goods vehicle
Seating capacity:	Driver + 5 passengers
Gross vehicle weight:	3,330 kg
Cylinder capacity:	2,198 cc
Year of manufacture:	2015

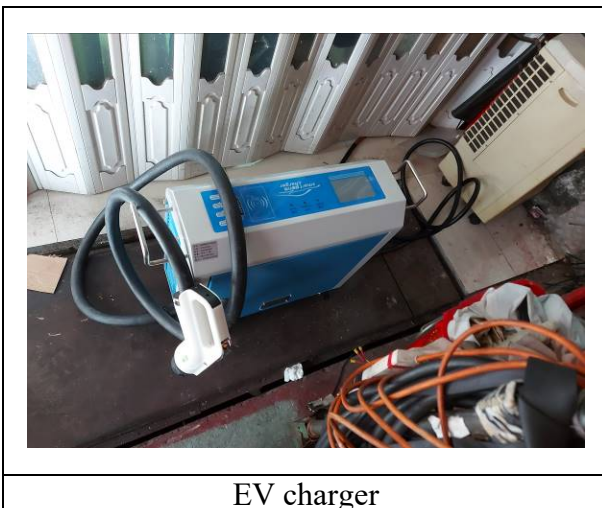
## Appendix 2: Photos of Vehicles and Charging Facility

### 1. Trial EV and Charging Facility

#### (a) EV



#### (b) EV Charging Facility



**2. Diesel Vehicle (DV) used for Comparison**



DV - front view



DV - rear view