Pilot Green Transport Fund

Interim Report On
Trial of Electric Light Goods Vehicle for Courier Service II (DHL Express (Hong Kong) Limited)

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Pilot Green Transport Fund
Trial of Electric Light Goods Vehicle for Courier Service II
(DHL Express (Hong Kong) Limited)

Interim Report
(Trial Period: 1 February 2018 – 31 July 2018)

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. DHL Express (Hong Kong) Limited (DHL) was approved under the Fund for trial of one electric light goods vehicle for courier service. Through the tendering procedures stipulated in the Subsidy Agreement, DHL procured a Nissan e-NV200 light goods vehicle (hereafter called EV) for trial.

1.2 Hong Kong Institute of Vocational Education (Tsing Yi) has been engaged by the Environmental Protection Department as an independent third party assessor to monitor the trial and evaluate the performance of the trial vehicles. DHL assigned a diesel light goods vehicle (DV) providing the same type of service for comparing with the EV.

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

2. Trial Vehicles

2.1 Key features of the EV, DV and charging facilities are in Appendix 1 and photos of the vehicles and charging facilities are in Appendix 2. The vehicles were used for courier service. EV served between Cheung Sha Wan to Sha Tin and DV served between Cheung Sha Wan to Sai Kung. According to the EV's manufacturer, the EV's gross vehicle weight is 2,250 kg and it has a travel range of 165 km.

2.2 DHL has set up one dedicated 55A chargers for EV at its car park in Cheung Sha Wan's office. The EV was charged regularly after work and during lunch time.

3. Trial Information

3.1 The trial commenced on 1 February 2018 and would last for 24 months. DHL was required to collect and provide trial information including the EV mileage reading before charging, amount of electricity consumed in each charging, time taken for charging, operation downtime due to

charging, cost and downtime associated with scheduled and unscheduled maintenance of the EV and the charging facilities. A similar set of data from the DV was also required. In addition to the cost information, reports on maintenance work, operational difficulties and opinions of the drivers and DHL were collected and provided to reflect any problems of the EV.

3.2 Table 1 summarizes the statistical data of the EV and the DV. The average fuel cost saving of EV was HK$1.06/km (79.7%) lower than that of the DV, While the average total operating cost of the EV was HK$1.04/km (78.2%) lower than that of the DV.

Table 1: Key operation statistics of each vehicle (February 2018 to July 2018)

		EV	**DV**
Total mileage (km)		4,354	20,612
Average fuel economy	(km/kWh)	4.36	-
	(km/litre)	-	9.99
	(km/MJ) [1]	1.21	0.28
Average fuel cost (HK$/km) [2]		0.27	1.33
Average total operating cost (HK$/km)		0.29	1.33
Downtime (working day) [3]		0	0

[1] Assuming lower heating value of 36.13 MJ/liter for diesel fuel
[2] The market fuel price was used for calculation
[3] Downtime refers to the period the vehicle was not in operation, which counted from the first day it stopped operation till it was returned to the operator

3.3 During the first six months of the trial, one scheduled maintenance was recorded for the EV but no downtime was resulted, and no scheduled maintenance was recorded for the DV.

3.4 The EV and the DV each had two unscheduled maintenances, but they were not included for the comparison as they were unrelated to the vehicle performance.

3.5 The utilization rates of the EV and the DV were both 100% in this reporting period.

4. Summary

4.1 In the first six months of the trial, the average daily mileages of the EV was 40 km, while that of the DV was 144 km. The EV incurred a lower average fuel cost per km which was HK$1.06/km (79.7%) less than that of the DV. The average operating cost of the EV was $1.04/km (78.2%) lower than that of the DV. The average utilization rates of the EV and the DV were both 100%.

4.2 The EV driver had no problem in operating the EV and felt the EV was quieter and more environmentally friendly compared with the DV. In general, DHL and the driver were satisfied with the performance of the EV.

4.3 In this reporting period, the average fuel economy as well as charging frequencies of the EV did not indicate any deterioration in the performances of the EV and its battery. However, more time is needed to test the performance of the battery and reliability of the EV.

Appendix 1: Key Features of Vehicles and Charging Facility Involved in the Trial

1. Trial EV

Registration Mark	**VE1251**
Make:	Nissan
Model:	e-NV200
Class:	Light Goods Vehicle
Gross vehicle weight:	2,250 kg
Seating capacity:	Driver + 1 passenger
Rated Power:	80 kW
Travel range:	165 km
Maximum speed:	over 120 km/h
Battery Type:	Lithium ion
Year of manufacture:	2017

2. Charging Facility

Charging Standard:	CCS DC Combo 2 Standard
Charging Mode:	350-460V / 55A, DC

3. DV for comparison

Registration Mark	**VC7776**
Make:	Mercedes Benz
Model:	114BT L
Class:	Light Goods Vehicle
Gross vehicle weight:	3,000 kg
Seating capacity:	Driver + 2 passengers
Engine capacity:	2,143 c.c.
Year of manufacture:	2017

Appendix 2: Photos of Vehicles and Charging Facilities

1. EV

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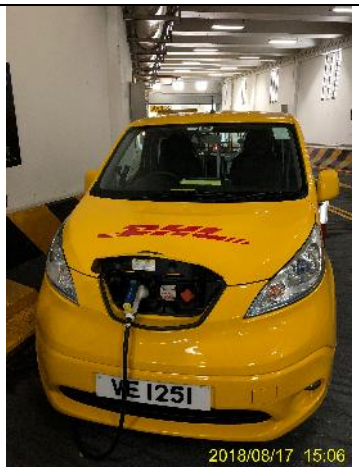
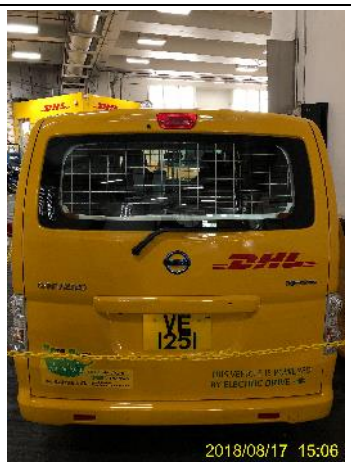
<tr><td> 
</td><td> 
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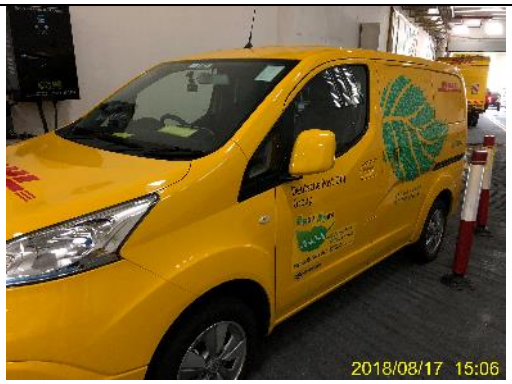
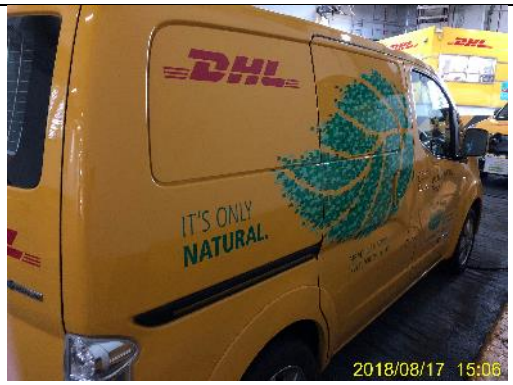
<tr><td>Front view of EV</td><td>Rear view of EV</td></tr>
<tr><td> 
</td><td> 
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<tr><td>Left Side view of EV</td><td>Right Side view of EV</td></tr>
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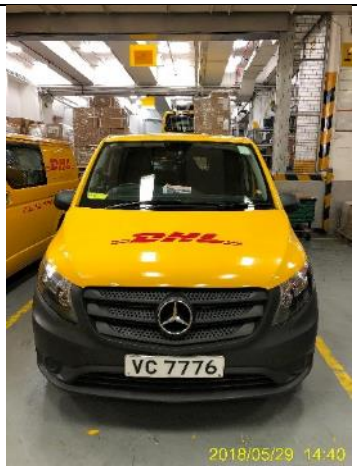
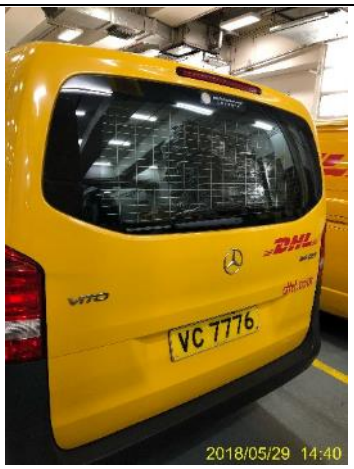
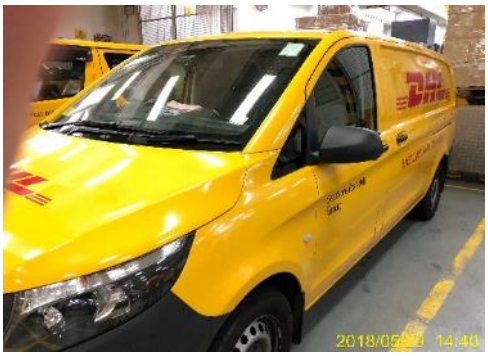
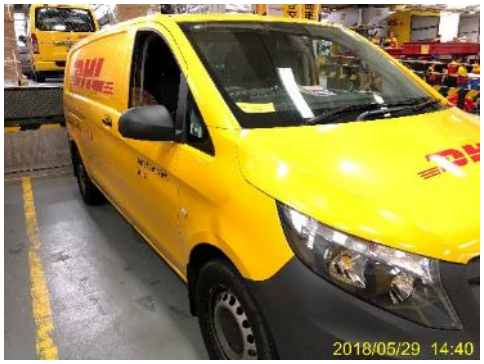
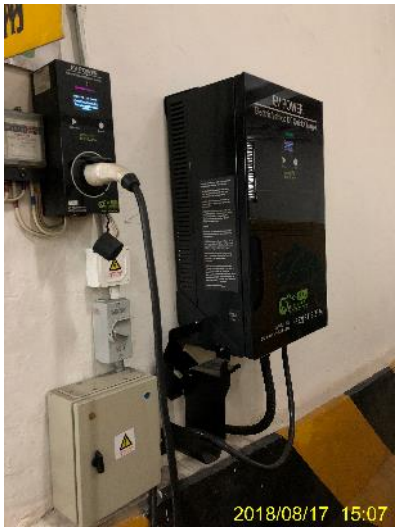
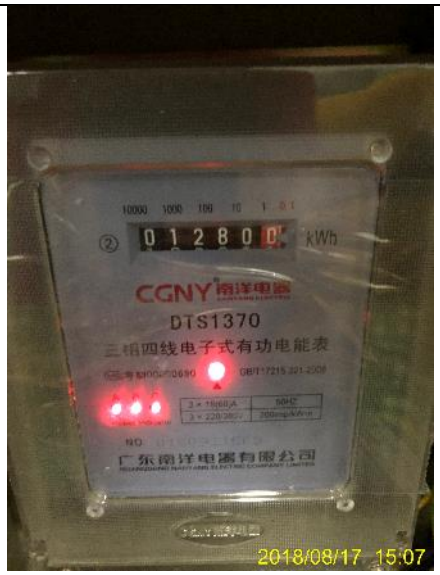
2. DV for comparison

	
Front view of DV	Rear view of DV
	
Left Side view of DV	Right Side view of DV

3. Charging Facilities

	
Charging Facility for EV	Electricity Meter