

# **Pilot Green Transport Fund**

## **Interim Report On Trial of Electric Light Goods Vehicle for Food Products Delivery (Four Season Restaurant)**

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The Monitoring and Evaluation Team's views expressed in this report do not necessarily reflect the views of the Environmental and Ecology Bureau, HKSAR.

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**Pilot Green Transport Fund  
Trial of Electric Light Goods Vehicle for Food Products Delivery  
(Four Season Restaurant)**

**Interim Report  
(Reporting Period: 1 December 2021 – 30 November 2022)**

**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. Four Season Restaurant (Four Season) was approved under the Fund for trial of an electric light goods vehicle for delivery of food products. Four Season, through the tendering procedures stipulated in the Agreement entered into with the Government, procured a Joylong EW5 electric light goods vehicle (EV) for trial.

1.2 PolyU Technology and Consultancy Company Limited 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 vehicle. Four Season assigned a Toyota diesel light goods vehicle (DV) providing the same service as the conventional counterpart for comparing with the EV, which was replaced by a Hyundai H1 diesel light goods vehicle since November 2022.

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 The trial EV – Joylong EW5 electric light goods vehicle – has a gross vehicle weight (GVW) of 4,300 kg, capable of carrying a driver with 4 passengers and goods. It has a 73.4 kWh lithium-ion battery pack with a travel range of 330 km with its battery fully charged and air-conditioning off. The DV used for comparison in this trial is a TOYOTA KDH201RSPNY diesel light goods vehicle with a GVW of 2,800 kg and an engine with a cylinder capacity of 2,982 c.c.. Starting from November 2022, another DV, a Hyundai diesel light goods vehicle with a GVW of 3,230 kg and an engine with a cylinder capacity of 2,497 c.c., was assigned as the conventional vehicle for comparison. The EV and DV were used for the delivery of food products in the New Territories region.

2.2 Four Season installed a designated 30 kW DC charger for charging the EV and recording the amount of electricity charged. The EV was charged on a daily basis.

2.3 Key features of the EV, the charging facility and the DVs are in Appendix 1 and their photos are in Appendix 2.

### 3. Trial Information

3.1 The trial commenced on 1 December 2021 and would last for 24 months. Four Season 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 Four Season were collected to reflect any problems of the EV.

### 4. Findings of Trial

4.1 Table 1 summarizes the statistical data of the EV and the DV.

Table 1: Key operation statistics of each vehicle (1 December 2021 – 30 November 2022)

		EV	DV
Total distance travelled (km)		47,996	14,103
Average daily mileage (km per working day)		131	39
Average fuel economy	(km/kWh)	4.19	-
	(km/litre)	-	6.73
	(km/MJ)	1.16	0.19 <sup>[1]</sup>
Average fuel cost (HK\$/km)		0.311 <sup>[2]</sup>	2.97 <sup>[3]</sup>
Average total operating cost (HK\$/km)		0.39	2.97
Downtime (working day) <sup>[4]</sup>		0	1

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

<sup>[2]</sup> Electricity cost was based on HK\$1.218/kWh for 2021, HK\$1.289/kWh for January to October 2022 and HK\$1.451/kWh for November 2022

<sup>[3]</sup> The market fuel price was used for calculation.

<sup>[4]</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 During the first 12 months of the trial, there were 365 working days. The total distance travelled and the average daily distance travelled of the EV were 47,996 km and 131 km, respectively, while those of the DV were 14,103 km and 39 km, respectively. The average fuel cost of the EV was HK\$2.66/km (about 90%) lower than that of the DV. The average total operating cost of the EV was HK\$2.58/km (about 87%) lower than that of the DV.

4.3 Apart from the fuel cost, maintenance cost and other indirect costs which may include parking fee, towing fee, vehicle replacement fee, etc., are also included in the average total operating cost in Table 1. There was one scheduled and one unscheduled maintenance for the EV and one scheduled maintenance for the DV, in the first twelve months of the trial. The scheduled maintenances for the EV and the DV were for annual examination and related maintenance. The unscheduled maintenance of the EV was for the repair of side view glass.

4.4 As the EV did not have any downtime while the DV had one day of downtime, the utilization rates were therefore 100% for the EV and 99.7% for the DV.

4.5 The driver had no problem in operating the EV and was satisfied with its performance. Overall, Four Season 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.

## **5. Summary**

5.1 In the first twelve months of the trial, the average daily mileage of the EV was 131 km while that of the DV was 39 km.

5.2 The average fuel cost of the EV was HK\$2.66/km (90%) less than that of the DV. The average total operating cost of the EV was HK\$2.58/km (87%) lower than that of the DV. The utilization rates were 100% for the EV and 99.7% for the DV. In the first twelve months of the trial, there was no indication on the deterioration of the EV performance.

5.3 The driver had no problem in operating the EV and was satisfied with its performance. Four Season 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.

5.4 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 the Vehicles and EV Charging Facility

### 1. Trial EV and Charging Facility

#### EV

<b>Registration mark</b>	<b>XG6115</b>
Make:	Joylong
Model:	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

#### Charging Facility

Make:	Hangzhou AoNeng Power Supply Equipment Co. Ltd
Model:	ANDC5-500V/60A-1
Power:	30 kW, DC (max 500V / 60A)
Charging Standard:	GB mode

### 2. DV Used for Comparison (TY908 from Dec/2021, TR9172 since Nov/2022)

<b>Registration mark</b>	<b>TY908</b>	<b>TR9172</b>
Make:	Toyota	Hyundai
Model:	KDH201RSPNY	H1 Van AT Euro 5
Class:	Light goods vehicle	Light goods vehicle
Seating capacity:	Driver + 4 passengers	Driver + 5 passengers
Gross vehicle weight:	2,800 kg	3,230 kg
Cylinder capacity:	2,982 cc	2,497 cc
Year of manufacture:	2011	2015

## Appendix 2: Photos of Vehicles and Charging Facility

### 1. Trial EV and EV Charging Facility

	
EV – Front view	EV – Rear view
	
EV – Right side view	EV – Left side view
	
30 kW DC charging facility	

**2. Diesel Vehicle (DV) for Comparison (TY908 from Dec/2021, TR9172 since Nov/2022)**

**DV (TY908)**



DV – Front view



DV – Rear view



DV – Right side view



DV – Left side view



**DV(TR9172)**



DV- Front view



DV- Rear view