

New Energy Transport Fund

Final Report

On

Trial of Electric Light Goods Vehicles for

Concrete Production Services

(Concrete Services Limited)

(21 October 2025)

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 Environment and Ecology Bureau (Environment Branch), HKSAR.

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**New Energy Transport Fund
Trial of Electric Light Goods Vehicles for Concrete Production Services
(Concrete Services Limited)**

**Final Report
(Reporting Period: 1 November 2023 – 31 October 2024)**

Executive Summary

1. Introduction

1.1 The New Energy 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. Concrete Services Limited (Concrete Services) was approved under the Fund for trial of two electric light goods vehicles for concrete services. Concrete Services, through the tendering procedures stipulated in the Agreement entered into with the Government, procured two Joylong EW4 electric light goods vehicles (EVs) for trial.

1.2 Hong Kong Productivity Council has been commissioned by the Environment and Ecology Bureau (Environment Branch) (EEB) as an independent third-party assessor (the Assessor) to monitor the trial and evaluate the performance of the trial vehicles. Concrete Services assigned two Hyundai H-1 A/T Euro 6 Facelift diesel light goods vehicles (DVs) providing same services as the conventional counterparts for comparison.

1.3 This Final Report summarises the performance of the EVs in the 12 months of the trial as compared with their conventional counterparts, i.e. the DVs.

2. Trial and Conventional Vehicles

2.1 The trial EVs, Joylong EW4 electric light goods vehicles, have a gross vehicle weight (GVW) of 3,700 kg and have a 73 kWh lithium-ion battery pack. It is capable of carrying a driver with five passengers and goods. According to its manufacturer, it has a driving range of 300 km with air conditioning off.

2.2 The DVs, Hyundai H-1 A/T Euro 6 Facelift diesel light goods vehicles with a GVW of 3,250 kg and a cylinder capacity of 2,497 c.c. were assigned for the comparison with the EVs in this trial. Both the EVs and the DVs were used for delivering tools and materials for testing concrete construction bricks to the construction sites in Hong Kong. There is a designated driver assigned to drive each EV, and another two designated drivers were assigned to drive the DVs respectively.

2.3 Concrete Services has installed a 60 kW DC charger at the concrete factory on Tsing Tim Street, Tsing Yi for charging the EVs. The EV charger has two charging cables which can simultaneously charge the EVs. The EVs are normally charged when they are not in use. Key features of the EVs, the charging facility and the DVs are detailed in Appendix 1 and photos of the vehicles and the charging facility are shown in Appendix 2.

3. Trial Information

3.1 The trial commenced on 1 November 2023 and lasted for 12 months. Concrete Services was required to collect and provide trial information including the EVs' mileage reading before charging, amount of electricity consumed and time used in each charging, operation downtime due to charging, and cost and downtime associated with scheduled and unscheduled maintenances of the EVs and the charging facility. Similar data of the DVs were also required. In addition to the cost information, reports on maintenance work, operational difficulties and opinions of the drivers and Concrete Services were collected to reflect any problems of the EVs.

4. Findings of Trial

4.1 The following table summarises the statistical data of the EVs and the DVs. The fleet average fuel cost of the EVs was HK\$2.55/km (about 84%) lower than that of the DVs. Taking the maintenance fee and other costs into account, the fleet average total operating cost of the EVs was HK\$2.49/km (about 79%) lower than that of the DVs in the 12 months of the trial.

Table 1: Key operation statistics of each vehicle (1 November 2023 – 31 October 2024)

		EVs		DVs	
		EV-1	EV-2	DV-1	DV-2
Total distance travelled (km)		33,583	23,280	19,396	27,107
Average daily mileage (km/working day)		114	83	66	92
Average fuel economy	(km/kWh)	3.20	3.20	-	-
	(km/litre)	-	-	6.66	9.69
	(km/MJ)	0.89	0.89	0.18 ^[1]	0.27 ^[1]
Average fuel cost (HK\$/km)		0.47 ^[2]	0.47 ^[2]	3.57 ^[3]	2.46 ^[3]
Fleet average fuel cost (HK\$/km)		0.47		3.02	
Average total operating cost (HK\$/km) ^[4]		0.62	0.69	3.73	2.57
Fleet average total operating cost per km (HK\$/km)		0.66		3.15	
Downtime (working day) ^{[4][5]}		2.5	15	1	1

^[1] Assuming lower heating value of 36.13 MJ/litre for diesel fuel.

^[2] The electricity cost was calculated using average electricity tariff rates of HK\$1.442/kWh (November 2023); HK\$1.431/kWh (December 2023); HK\$1.523/kWh (January 2024 – February 2024); HK\$1.513/kWh (March 2024); HK\$1.507/kWh (April 2024); HK\$1.499/kWh (May 2024); HK\$1.500/kWh (June 2024); HK\$1.496/kWh (July 2024 – August 2024); HK\$1.495/kWh (September 2024) and HK\$1.494/kWh (October 2024) as reported by CLP.

^[3] The market fuel price was used for calculation.

^[4] Maintenance due to incident not related to the performance of the vehicle was not included for comparing the performance.

^[5] Downtime refers to the equivalent number of working days in which the vehicle is not in operation due to charging or maintenance, counting 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 EVs are also included in Table 1. In the 12 months of the trial period, there were one scheduled maintenance and one unscheduled maintenance for each EV, while there was one scheduled maintenance for each DV. The scheduled maintenance of

the EVs included replacement of battery, service for government annual vehicle inspection and replacement of windscreen, while that of the DVs included service for annual inspection.

4.3 In the 12 months of the trial period, EV-1 had 2.5 days of downtime and EV-2 had 15 days of downtime, while each DV had 1 day of downtime. Hence, the utilisation rates of EV-1, EV-2, DV-1 and DV-2 were 99.2%, 94.9%, 99.7% and 99.7%, respectively. Based on the above, the average daily driving distances of EV-1 and EV-2 were 114 km and 83 km, respectively, while that of the DV-1 and DV-2 were 66 km and 92 km, respectively.

4.4 The drivers of the EVs had no problem in operating the EVs and liked driving the EVs. Overall, they were satisfied with the performance of the EVs. Concrete Services was satisfied with the EVs since the EVs could meet the operational requirements and save the operation cost. Given the opportunity, Concrete Services would encourage other transport operators to try the EVs.

4.5 It is observed that the amount of electricity stored in the battery after a full charging operation could be maintained at the level of 73 kWh after the 12-month trial period. Thus, the deterioration in battery capacity within the 12-month trial period was insignificant, if any.

4.6 Based on the total mileage of the EVs and the fuel economy of the DVs, the equivalent carbon dioxide (CO_{2e}) emission from the DVs could be estimated for comparison purpose. In the 12-month trial period, the total CO_{2e} emission from the EVs and the DVs were 6,780 kg and 20,645 kg respectively. Hence, there was a 13,865 kg (about 67%) reduction of CO_{2e}, with the replacement of the DVs by the EVs in the trial.

5. Summary

5.1 The fleet average fuel cost of the EVs was HK\$2.55/km (about 84%) lower than that of the DVs. Taking the maintenance fee and other costs into account, the fleet average total operating cost of the EVs was HK\$2.49/km (about 79%) lower than that of the DVs. The utilisation rates of EV-1, EV-2, DV-1 and DV-2 were 99.2%, 94.9%, 99.7% and 99.7%, respectively. There was a 13,865 kg (about 67%) reduction of CO_{2e}, with the replacement of the DVs by the EVs in the trial.

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5.4 The findings showed electric light goods vehicles are becoming more affordable and feasible to the transport trade for saving operating cost and reducing CO_{2e} emissions, provided that the vehicles can get easy access to charging facilities.

Appendix 1: Key Features of Vehicles and Charging Facility

1. Trial EVs and Charging Facility

(a) Trial EVs

Registration mark:	YP5013 (EV-1), YP5185 (EV-2)
Make:	Joylong
Model:	EW4
Class:	Light goods vehicle
Gross vehicle weight:	3,700 kg
Payload:	1,100 kg
Seating capacity:	Driver + 5 passengers
Rated power:	50 kW
Driving range:	300 km (air-conditioning off)
Battery material:	Lithium-ion
Battery capacity:	73 kWh
Year of manufacture:	2023

(b) EV Charging Facility

Make:	StarCharge
Model:	DC0600GB019
Output:	60 kW, 200 – 1000V DC / max 200A
Charging Standard:	GB Mode

2. DVs Used for Comparison

Registration mark:	XJ7161 (DV-1), XJ7412 (DV-2)
Make:	Hyundai
Model:	H-1 A/T Euro 6 Facelift
Class:	Light goods vehicle
Gross vehicle weight:	Driver + 5 passengers
Payload:	3,250 kg
Seating capacity:	1,060 kg
Cylinder capacity:	2,497 c.c.
Year of manufacture:	2021

Appendix 2: Photos of Vehicles and Charging Facility

1. Trial EVs and Charging Facility

(a) Trial EVs

EV-1 (YP5013)

	
Front view of EV-1	Rear view of EV-1
	
Left side view of EV-1	Right side view of EV-1

EV-2 (YP5185)



Front view of EV-2



Rear view of EV-2



Left side view of EV-2



Right side view of EV-2

(b) Charging Facility

	
Charging Facility – 60 kW DC charger	

2. DVs Used for Comparison

DV-1 (XJ7161)

	
Front view of DV-1	Rear view of DV-1
	
Left side view of DV-1	Right side view of DV-1

DV-2 (XJ7412)

	
Front view of DV-2	Rear view of DV-2
	
Left side view of DV-2	Right side view of DV-2