New Energy Transport Fund

Final Report
On
Trial of Electric Light Goods Vehicle for Construction Industry
(1 Sam Ho Engineering Limited)

(3 December 2025)

PREPARED BY:

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(Reporting Period: 1 June 2024 – 31 May 2025)

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. 1 Sam Ho Engineering Limited (1 Sam Ho) was approved under the Fund for trial of one electric light goods vehicle for construction industry. 1 Sam Ho, through the tendering procedures stipulated in the Agreement entered into with the Government, procured a BYD T3 5-seat electric light goods vehicle (EV) 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 vehicle. 1 Sam Ho assigned an Isuzu TFS87JD-VI-AT-D diesel light goods vehicle (DV) providing same services as the conventional counterpart for comparison.

1.3 This Final Report summarises the performance of the EV in the 12 months of the trial as compared with its conventional counterpart, i.e. the DV.

2. Trial and Conventional Vehicles

2.1 The trial EV, BYD T3 5-seat electric light goods vehicle, has a gross vehicle weight of 2,420 kg capable of carrying a driver with four passengers and goods. It has a 44.9 kWh lithium iron phosphate battery pack and a driving range of 300 km under NEDC[1] conditions.

2.2 The DV, Isuzu TFS87JD-VI-AT-D diesel light goods vehicle with a gross vehicle weight of 3,000 kg and a diesel engine with a cylinder capacity of 1,898 c.c., was used as the conventional counterpart for comparison in this trial. Both the EV and the DV were used for delivering tools and parts to construction sites in New Territories.

2.3 1 Sam Ho has installed a 7 kW single-phase AC charger at its own cost in Ting Kok for charging the EV. Key features of the EV, the charging facility and the DV are detailed in Appendix 1 and photos of the vehicles and the charging facility are shown in Appendix 2.

[1] The New European Driving Cycle (NEDC) is a standardized test used to assess the fuel economy and emissions of vehicles, including electric vehicles.

3. Trial Information

3.1 The trial commenced on 1 June 2024 and lasted for 12 months. 1 Sam Ho 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, operation downtime due to charging, and cost and downtime associated with scheduled and unscheduled maintenances of the EV. 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 1 Sam Ho were collected to reflect any problems of the EV.

4. Findings of Trial

4.1 The following table summarises the statistical data of the EV and the DV. The average fuel cost of the EV was HK$1.77/km (about 86%) lower than that of the DV. Taking the maintenance fee and other costs into account, the average total operating cost of the EV was HK$1.75/km (about 85%) lower than that of the DV in the 12 months of the trial.

Table 1: Key operation statistics of each vehicle (1 June 2024 – 31 May 2025)

		EV	**DV**
Total distance travelled (km)		18,694	44,580
Average daily mileage (km/working day)		63	151
Average fuel economy	(km/kWh)	5.24	-
	(km/litre)	-	12.19
	(km/MJ)	1.46	0.34 [1]
Average fuel cost (HK$/km)		0.29 [2]	2.06 [3]
Average total operating cost (HK$/km) [4]		0.32	2.07
Downtime (working day) [4][5]		0.5	0.5

[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$1.500/kWh (June 2024); HK$1.496/kWh (July 2024 – August 2024); HK$1.495/kWh (September 2024); HK$1.494/kWh (October 2024); HK$1.493/kWh (November 2024); HK$1.500/kWh (December 2024); HK$1.537/kWh (January 2025 – February 2025); HK$1.533/kWh (March 2025); HK$1.528/kWh (April 2025) and HK$1.518/kWh (May 2025) 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 EV are also included in Table 1. In the 12 months of the trial period, both the EV and the DV had one scheduled maintenance but no unscheduled maintenance. The scheduled maintenance of both the EV and the DV included service for government annual vehicle inspection.

4.3 In the 12 months of the trial period, the EV and the DV had 0.5 days of downtime each. Hence, the utilisation rates of the EV and the DV were 99.8%. Based on the above, the average daily driving distances of the EV and the DV were 63 km and 151 km, respectively.

4.4 The driver of the EV had no operation difficulties in driving the EV and liked driving the EV. Overall, he was satisfied with the performance of the EV. 1 Sam Ho was satisfied with the EV since the EV could meet the operational requirements and save the operation cost. Given the opportunity, 1 Sam Ho 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 44.9 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 EV and the fuel economy of the DV, the equivalent carbon dioxide (CO_2e) emission from the DV could be estimated for comparison purpose. In the 12-month trial period, the CO_2e emission from the EV and the DV were 1,355 kg and 4,251 kg, respectively. Hence, there was a 2,896 kg (about 68%) reduction of CO_2e, with the replacement of the DV by the EV in the trial.

5. Summary

5.1 The average fuel cost of the EV was HK$1.77/km (about 86%) lower than that of the DV. And the average total operating cost of the EV was HK$1.75/km (about 85%) lower than that of the DV. The utilisation rates of the EV and the DV were 99.8%. There was a 2,896 kg (about 68%) reduction of CO_2e, with the replacement of the DV by the EV in the trial.

5.2 It is observed that the amount of electricity stored in the battery after a full charging operation could be maintained at the level of 44.9 kWh after the 12-month trial period. Thus, the deterioration in battery capacity within the 12-month trial period was insignificant, if any.

5.3 The driver of the EV had no operation difficulties in driving the EV and liked driving the EV. Overall, he was satisfied with the performance of the EV. 1 Sam Ho was satisfied with the EV since the EV could meet the operational requirements and save the operation cost. Given the opportunity, 1 Sam Ho would encourage other transport operators to try the EVs.

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 EV and Charging Facility

(a) Trial EV

Registration mark:	**YY2698**
Make:	BYD
Model:	T3
Class:	Light goods vehicle
Gross vehicle weight:	2,420 kg
Payload:	711 kg
Seating capacity:	Driver + 4 passengers
Rated power:	35 kW
Travel range:	300 km (under NEDC conditions)
Battery material:	Lithium iron phosphate
Battery capacity:	44.9 kWh
Year of manufacture:	2023

(b) EV Charging Facility (at Recipient's own cost)

Make:	Qiaoyi
Model:	EV mode 2 intelligent charger
Power:	7 kW Mode 3 AC, 32A single-phase
Charging standard:	IEC 62196-2 Type 2

2. DV Used for Comparison

Registration mark:	**TS556**
Make:	Isuzu
Model:	TFS87JD-VI-AT-D
Class:	Light goods vehicle
Gross vehicle weight:	3,000 kg
Payload:	1,000 kg
Seating capacity:	Driver + 4 passengers
Cylinder capacity:	1,898 cc
Year of manufacture:	2018

Appendix 2: Photos of Vehicles and Charging Facility

1. Trial EV and Charging Facility

	
Front view of EV	Rear view of EV
	
Left side view of EV	Right side view of EV
	
7 kW single-phase AC charger (at Recipient's own cost)	

2. DV Used for Comparison

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