

New Energy Transport Fund

Final Report

On

Trial of Electric Light Goods Vehicle for

Gas Engineering Industry

(Scientific Gas Engineering Company Limited)

(16 October 2025)

PREPARED BY:

Dr. Rick MO

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.

List of Monitoring and Evaluation Team Members

Dr. Rick MO (Team Leader)

Smart City Division
Hong Kong Productivity Council

Ms. Rachel CHAN

Smart City Division
Hong Kong Productivity Council

Mr. Miracle SUN

Smart City Division
Hong Kong Productivity Council

Mr. Sam SHAN

Smart City Division
Hong Kong Productivity Council

**New Energy Transport Fund
Trial of Electric Light Goods Vehicle for Gas Engineering Industry
(Scientific Gas Engineering Company Limited)**

**Final Report
(Reporting Period: 1 October 2023 – 30 September 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. Scientific Gas Engineering Company Limited (Scientific Gas) was approved under the Fund for trial of one electric light goods vehicle for gas engineering industry. Scientific Gas, through the tendering procedures stipulated in the Agreement entered into with the Government, procured a Mercedes Benz eVito 129 L 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. Scientific Gas assigned a Nissan NV350 Urvan 2.5L Diesel A/T Half Panel Van (LGV) Lux 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, Mercedes Benz eVito 129 L electric light goods vehicle, has a gross vehicle weight (GVW) of 3,500 kg, capable of carrying a driver with four passengers and goods. It has a 100 kWh lithium-ion battery pack. According to its manufacturer, it has a driving range of 378 km under WLTP¹ conditions.

2.2 The DV, Nissan NV350 Urvan 2.5L Diesel A/T Half Panel Van (LGV) Lux diesel light goods vehicle, with a GVW of 3,300 kg and a cylinder capacity of 2,488 c.c. was assigned for the comparison with the EV in this trial. Both the EV and the DV were used for delivering tools and materials to different sites in Hong Kong. There is a designated driver assigned to drive the EV and the DV. Since one vehicle would be sufficient for the operation, only the operation data of the EV were collected during this 12-month trial period. Hence, the historical data of the DV were used for comparison.

2.3 Scientific Gas has installed a 7.4 kW single-phase AC charger at its own cost at the reserved parking space in Mountainville Court, Fo Tan for charging the EV. The EV is

¹ The Worldwide Harmonised Light vehicles Test Procedure (WLTP) is a global standard for determining the range of electric vehicles.

normally charged overnight or when it is not in use. 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.

3. Trial Information

3.1 The trial commenced on 1 October 2023 and lasted for 12 months. Scientific Gas 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 Scientific Gas 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\$2.19/km (about 83%) 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\$2.51/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 October 2023 – 30 September 2024)

		EV	DV (historical data) ^[1]
Total distance travelled (km)		27,652	38,125
Average daily mileage (km/working day)		112	158
Average fuel economy	(km/kWh)	3.29	-
	(km/litre)	-	8.97
	(km/MJ)	0.91	0.25 ^[2]
Average fuel cost (HK\$/km)		0.45 ^[3]	2.64 ^[4]
Average total operating cost (HK\$/km) ^[5]		0.45	2.96
Downtime (working day) ^{[5][6]}		0	4

^[1] Based on the historical data from 1 January 2022 to 31 December 2022.

^[2] Assuming lower heating value of 36.13 MJ/litre for diesel fuel.

^[3] The electricity cost was calculated using average electricity tariff rates of HK\$1.459/kWh (October 2023); 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) and HK\$1.495/kWh (September 2024) as reported by CLP.

^[4] The market fuel prices from 1 October 2023 to 30 September 2024 were used for calculation.

^[5] Maintenance due to incident not related to the performance of the vehicle was not included for comparing the performance.

^[6] Downtime refers to the working days that the vehicle is not in operation due to charging or maintenance, 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. In the 12 months of the trial period, the EV had one scheduled maintenance and the DV had four scheduled maintenances. Neither the EV nor the DV had unscheduled maintenance. The scheduled maintenance of the

EV included service for government annual vehicle inspection, while that of the DV included oil change, battery replacement, alternator replacement, parts and accessories replacement and vehicle body alignment.

4.3 In the 12 months of the trial period, the EV had no downtime while the DV had 4 days of downtime. Hence, the utilisation rates of the EV and the DV were 100% and 98.4%, respectively. Based on the above, the average daily driving distances of the EV and the DV were 112 km and 158 km, respectively.

4.4 The drivers of the EV liked driving the EV and had no operation difficulties in driving the EV. They agreed that the air is cleaner inside the EV and the EV is quieter than the DV. Overall, they were satisfied with the performance of the EV. Scientific Gas was satisfied with the EV since the EV could meet the operational requirements and save the operation cost. Given the opportunity, Scientific Gas 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 100 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 3,218 kg and 8,551 kg respectively. Hence, there was a 5,333 kg (about 62%) 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\$2.19/km (about 83%) 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\$2.51/km (about 85%) lower than that of the DV. The utilisation rates of the EV and the DV were 100% and 98.4%. There was a 5,333 kg (about 62%) 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 100 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 drivers of the EV had no operation difficulties in driving the EV and liked driving the EV. Overall, they were satisfied with the performance of the EV. Scientific Gas was satisfied with the EV since the EV could meet the operational requirements and save the operation cost. Given the opportunity, Scientific Gas 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:	FA2221
Make:	Mercedes Benz
Model:	eVito 129 L
Class:	Light goods vehicle
Gross vehicle weight:	3,500 kg
Payload:	800 kg
Seating capacity:	Driver + 4 passengers
Rated power:	70 kW
Driving range:	378 km (under WLTP conditions)
Battery material:	Lithium-ion
Battery capacity:	100 kWh
Year of manufacture:	2022

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

Make:	BMW
Model:	EIAW-E22KTBE5B01
Power:	7.4 kW, 220V AC / max 32A
Charging standard:	IEC 62196-2 Type 2

2. DV Used for Comparison

Registration mark:	CH287
Make:	Nissan
Model:	NV350 Urvan 2.5L Diesel A/T Half Panel Van (LGV) Lux
Class:	Light goods vehicle
Gross vehicle weight:	3,300 kg
Payload:	1,340 kg
Seating capacity:	Driver + 5 passengers
Cylinder capacity:	2,488 c.c.
Year of manufacture:	2015

Appendix 2: Photos of Vehicles and Charging Facility

1. Trial EV (FA2221) and Charging Facility

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

2. DV (CH287) Used for Comparison



Front view of DV



Rear view of DV



Left side view of DV



Right side view of DV