Pilot Green Transport Fund

Interim Report
On
Trial of Electric Light Goods Vehicle for Cleaning Services
(New Method Cleaning Services Limited)

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Interim Report
(Trial Period: 1 February 2020 – 31 January 2021)

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. New Method Cleaning Services Limited (New Method Cleaning) was approved under the Fund for trial of one electric light goods vehicle. Through the tendering procedures stipulated in the Subsidy Agreement entered into with the Government, New Method Cleaning procured one Nissan e-NV200, electric light goods vehicle (EV) for trial.

1.2 PolyU Technology and Consultancy Company Limited has been engaged by the Environmental Protection Department (EPD) as an independent third party assessor to monitor the trial and evaluate the performance of the trial vehicle. New Method Cleaning assigned a diesel light goods vehicle (DV) providing same services as the conventional counterpart for comparison.

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.

2. Trial and Conventional Vehicles

2.1 The trial EV, Nissan e-NV200 electric light goods vehicle, has a gross vehicle weight (GVW) of 2,250 kg capable of carrying a driver with four passengers and goods. It has a 40 kWh lithium-ion battery pack and the driving range is 317 km with air-conditioning off. No designated driver used the EV. The DV, Toyota KDH201RSSMDY. diesel light goods vehicle with a GVW of 2,800kg and a cylinder capacity of 2,982 c.c., was used as the conventional counterpart for comparison in this trial. The vehicles were used mainly for providing cleaning services in the New Territories, Kowloon and occasionally on Hong Kong Island.

2.2 New Method Cleaning has installed a 4 kW, single phase AC charger at its own cost for charging the EV. Key features of the EV and the DV as well as the EV charging facility are presented in Appendix 1, and photos of vehicles and the EV charging facility are shown in Appendix 2.

3. Trial Information

3.1 The trial commenced on 1 February 2020 and would last for 24 months. New Method Cleaning 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 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 drivers and New Method Cleaning were collected and provided to reflect any problems of the EV.

4. Findings of Trial

4.1 The following table summarizes the statistical data of the EV and the DV.

Table 1: Key operation statistics of each vehicle (1 February 2020 – 31 January 2021)

		EV	**DV**
Total distance travelled (km)		29,461	25,588
Average daily distance travelled (km/day)		99	86
Average fuel economy	(km/kWh)	8.72	-
	(km/litre)	-	9.78
	(km/MJ)	2.42	0.27 [1]
Average fuel cost (HK$/km) [2]		0.14	1.46
Average total operating cost (HK$/km)		0.14	1.46
Downtime (working day) [3]		1	1

[1] Assuming lower heating value of 36.13 MJ/litre for diesel fuel.
[2] The market fuel price was used for calculation.
[3] Downtime refers to the working days that the vehicle is not in operation due to maintenance, counting from the first day it stops operation till the day it is returned to the operator.

4.2. During the 12 months of the trial, there were 299 working days. The total distance traveled and the average daily distance traveled of the EV were 29,461 km and 99 km/day, respectively while those of the DV were 25,588 km and 86 km/day, respectively. The average fuel cost of the EV was HK$1.32/km (i.e. about 90%) lower than that of the DV. Taking maintenance fee for both the EV and the DV into account, the average total operating cost of the EV was also HK$1.32/km (i.e. about 90%) lower than that of the DV.

4.3 Both EV and DV had undergone a 1-day scheduled maintenance (excluding non-performance related maintenance) and their utilization rate were therefore both 99.7%.

5. Summary

5.1 In the first twelve months of the trial, the average daily mileage of the EV was 99 km, while that of the DV was 86 km.

5.2 Both the average fuel cost and the average total operating cost of the EV were HK$1.32/km (i.e. about 90%) lower than those of the DV.

5.3 Both EV and DV had undergone a 1-day scheduled maintenance and their utilization rate were therefore both 99.7%. In the first twelve months of the trial, there was no indication on deterioration of the EV.

5.4 The drivers of the EV had no problem in operating the vehicle. The recipient, New Method Cleaning, was satisfied with the performance of EV.

5.5 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 Vehicles Involving in the Trial and EV Charging Facility

Trial EV and the EV Charging Facility

(a) EV

Registration mark:	**SU2629**
Make:	Nissan
Model:	e-NV200
Class:	Light goods vehicle
Gross vehicle weight:	2,250 kg
Seating capacity:	Driver + 4 passengers
Rated power:	80 kW
Travel range:	317 km (air conditioning off)
Maximum speed:	120 km/h
Battery material:	Lithium-ion
Battery capacity:	40 kWh
Year of manufacture:	2019

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

Make:	EV Power
Charging standard:	IEC62196 Type 2
Charging mode:	220V / 20A, AC

DV Used for Comparison

Registration mark	**TN2629**
Make:	Toyota
Model:	KDH201RSSMDY
Class:	Light goods vehicle
Gross vehicle weight:	2,800 kg
Seating capacity:	Driver + 5 passengers
Cylinder capacity:	2,982 cc
Year of manutfacture:	2009

Appendix 2: Photos of Vehicles and EV Charging Facility

1. Trial EV and EV Charging Facility

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<tr><td>Front view of EV</td><td>Rear view of EV</td></tr>
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<tr><td>Left side view of EV</td><td>Right side view of EV</td></tr>
<tr><td> 
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<tr><td>4 kW, single phase AC charger
(At Recipient’s own cost)</td><td></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