Pilot Green Transport Fund

Interim Report
On
Trial of Electric Light Goods Vehicle for Retailing Industry
(The Net-A-Porter Group Asia Pacific Limited)

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(Reporting Period: 1 April 2021 – 31 March 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. The Net-A-Porter Group Asia Pacific Limited (Net-A-Porter) was approved under the Fund for trial of an electric light goods vehicle for retailing industry. Net-A-Porter, through the tendering procedures stipulated in the Agreement entered into with the Government, procured a 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 as an independent third party assessor to monitor the trial and evaluate the performance of the trial vehicle.

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, Nissan e-NV200 electric light goods vehicle, has a gross vehicle weight of 2,250 kg capable of carrying a driver with one passenger and goods. It has a 40 kWh lithium-ion battery pack and the driving range is 317 km with its battery fully charged and air-conditioning off. No designated driver is assigned for driving the EV.

2.2 Net-A-Porter installed a 7 kW 32-ampere AC charging facility inside the car-park of the Goodman Interlink Building for charging and recording the amount of electricity charged. The EV was charged on a daily basis.

2.3 Net-A-Porter assigned a Hyundai diesel light goods vehicle (DV) providing the same service as the conventional counterpart for comparing with the EV. Since the start of operation of the EV, the duty of the DV was replaced by the EV. Hence, historical data of the DV were used for comparison in this report.

2.4 The EV and the DV were used for the delivery of retail goods from the company to Hong Kong Island and Kowloon. Key features of the EV, the charging facility and the DV are in Appendix 1 and their photos are in Appendix 2.

3. Trial Information

3.1 The trial commenced on 1 April 2021 and would last for 24 months. Net-A-Porter 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 Net-A-Porter were collected 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. The average fuel cost of the EV was HK$2.22/km (i.e., about 89%) lower than that of the DV. The average total operating cost of the EV was HK$3.51/km (i.e., about 82%) lower than that of the DV.

Table 1: Key operation statistics of each vehicle (1 April 2021 – 31 March 2022)

		EV	**DV (historical data)** [1]
Total distance travelled (km)		25,955	28,171
Average daily mileage (km per working day)		90	84
Average fuel economy	(km/kWh)	4.39	-
	(km/litre)	-	6.90
	(km/MJ)	1.22	0.191 [2]
Average fuel cost (HK$/km)		0.282 [3]	2.50 [4]
Average total operating cost (HK$/km) [5]		0.768	4.28
Downtime (working day) [5] [6]		8	27

[1] Based on the historical data of corresponding period in 1 April 2019 to 31 March 2020.
[2] Assuming lower heating value of 36.13 MJ/litre for diesel fuel
[3] Electricity cost was based on HK$1.218/kWh for 2021 and HK$1.289/kWh for 2022
[4] The market fuel prices of 1 April 2021 to 31 March 2022 were used for calculation.
[5] Maintenances due to incidents unrelated to the performance of the vehicle were not included for comparison.
[6] 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 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 were one scheduled and four unscheduled

maintenances for the EV in the first twelve months of the trial. According to historical data, there were three scheduled and five unscheduled maintenances for the DV from April 2019 to 31 March 2020. The EV had a scheduled maintenance for packaged maintenance and annual examination. The unscheduled maintenances of the EV were for replacement of a damaged side view mirror, repair of car body after car crash and replacement of tyres, but they were not related to the performance of the EV. The scheduled maintenance of the DV was for routine maintenance of the air conditioning system, replacement of battery, filter and engine oil, and an annual examination. The unscheduled maintenances were mainly concerned with the cooling system of the engine and the replacement of tyres.

4.3 There were 363 working days in the reporting period. The EV had 73.5 days of downtime for maintenance but for part of which (65.5 days) the cost/downtime were not related to the performance of the EV. The DV had 27 days of downtime. The utilization rates were therefore 98% for the EV and 93% for the DV. Based on the above, the average daily mileages of the EV and the DV were 90 km/day and 84 km/day respectively.

4.4 No designated driver was assigned for the EV. The drivers had no problem in operating the EV and were satisfied with its performance. Net-A-Porter 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. Net-A-Porter also considered that the performance of the EV might have deteriorated. However, there is no evidence from the submitted data that the performance of the EV had deteriorated.

5. Summary

5.1 The average fuel cost of the EV was HK$2.22/km (i.e., about 89%) less than that of the DV. The average total operating cost of the EV was HK$3.51/km (i.e., about 82%) lower than that of the DV. The utilization rates were 98% for the EV and 93% for the DV. In the first twelve months of the trial, there was no indication on the deterioration of the EV's performance.

5.2 The drivers had no problem in operating the EV and were satisfied with its performance. Net-A-Porter 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.

5.3 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 and Charging Facility

1. Trial EV and Charging Facility

EV

Registration mark	**XC3503**
Make:	Nissan
Model:	e-NV200
Class:	Light goods vehicle
Gross vehicle weight:	2,250 kg
Seating capacity:	Driver + 1 passenger
Rated power:	80 kW
Travel range:	317 km (air conditioning off)
Battery material:	lithium-ion
Battery capacity:	40 kWh
Year of manufacture:	2019

Charging Facility

Supplier:	Shun Hing Technology Co., Ltd.
Model:	DH-AC0070XG57-Y
Power:	7 kW, single-phase AC (220V / 32 A)
Charging Standard:	GB

2. DV Used for Comparison

Registration mark	**NAP 1**
Make:	HYUNDAI
Model:	H1 VAN AT (3-seat) Euro 5
Class:	Light goods vehicle
Seating capacity:	Driver + 2 passengers
Gross vehicle weight:	3,230 kg
Cylinder capacity:	2,497 cc
Year of manufacture:	2013

Appendix 2: Photos of Vehicles and Charging Facility

1. Trial EV and Charging Facility

EV

	
EV – front view	EV – rear view
	
EV – right side view	EV – left side view

Charging Facility

	
EV – charger	EV – watt-hour meter

2. DV for Comparison

	
DV- front view	DV- rear view
	
DV – right side view	DV – left side view