

**Pilot Green Transport Fund**

**Final Report**

**On**

**Trial of Electric Light Goods Vehicle for**

**Retailing Industry**

**(The Net-A-Porter Group Asia Pacific Limited)**

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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, HKSAR.

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**Pilot Green Transport Fund  
Trial of Electric Light Goods Vehicle for Retailing Industry  
(The Net-A-Porter Group Asia Pacific Limited)**

**Final Report  
(Reporting Period: 1 April 2021 – 31 March 2023)**

**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<sup>1</sup> as an independent third-party assessor to monitor the trial and evaluate the performance of the trial vehicle. Net-A-Porter assigned a Hyundai H1 diesel light goods vehicle (DV) providing the same services as the conventional counterpart for comparison.

1.3 This Final Report summarizes the performance of the EV in the 24 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-NV20 electric light goods vehicle has a gross vehicle weight (GVW) of 2,250 kg, capable of carrying a driver with one passenger and goods. It has a 40 kWh lithium-ion battery pack. According to the manufacturer, the EV has a travel range of 317 km with its battery fully charged and air-conditioning off.

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<sup>1</sup> The Administration of the New Energy Transport Fund was migrated to the Environment Branch of the Environment and Ecology Bureau [EEB (Environment Branch)] since 1 January 2023 after internal re-organisation of EEB (Environment Branch) and EPD.

2.2 Net-A-Porter assigned the DV, Hyundai H1 diesel light goods vehicle, with a GVW of 3,230 kg, capable of carrying a driver with two passenger and goods and 2,497 c.c. engine for comparison 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.

2.3 The vehicles are mainly used for the delivery of retail goods from the company to Hong Kong Island and Kowloon. The services are conducted all year round (except the first two days of the Chinese Lunar New Year). The operating hours are from 12:00 to 21:00.

2.4 The EV was normally parked at night inside the car-park of the Goodman Interlink Building, Tsing Yi Island. Net-A-Porter installed a 7 kW 32-ampere AC charging facility inside that car-park for charging and recording the amount of electricity charged. The EV was charged on a daily basis. Key features of the EV, the charging facility and the DV are in Appendix 1 and photos of the vehicles and the charging facility are in Appendix 2.

### **3. Trial Information**

3.1 The trial commenced on 1 April 2021 and lasted 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.

Table 1: Key operation statistics of each vehicle (1 April 2021 – 31 March 2023)

	EV	DV (historical data) <sup>[1]</sup>
Total distance travelled (km)	59,692	54,630
Average daily mileage (km per working day)	93	80
Average fuel economy	(km/kWh)	4.45
	(km/litre)	-
	(km/MJ)	1.24
Average fuel cost (HK\$/km)	0.30 <sup>[3]</sup>	2.81 <sup>[4]</sup>
Average total operating cost (HK\$/km) <sup>[5]</sup>	0.718	3.98
Downtime (working day) <sup>[5][6]</sup>	19.5	42

<sup>[1]</sup> Based on the historical data of corresponding period in 1 April 2019 to 31 February 2021.

<sup>[2]</sup> Assuming lower heating value of 36.13 MJ/litre for diesel fuel

<sup>[3]</sup> Electricity cost was based on HK\$1.218/kWh for 2021, HK\$1.289/kWh for January to October 2022, HK\$1.451/kWh for November to December 2022, HK\$1.544/kWh for January to February 2023 and HK\$1.552/kWh for March 2023

<sup>[4]</sup> The market fuel prices of 1 April 2021 to 28 February 2023 were used for calculation.

<sup>[5]</sup> Maintenances due to incidents unrelated to the performance of the vehicle were not included for comparison.

<sup>[6]</sup> 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 During the 24 months of the trial, there were 726 working days. The EV had 85 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 42 days of downtime. The utilization rates were therefore 97% for the EV and 94% for the DV.

4.3 During the 24 months of the trial, the total mileage and the average daily mileage of the EV were 59,692 km and 93 km/day, respectively while those of the DV were 54,630 km and 80 km/day, respectively. The average fuel cost of the EV was HK\$2.51/km (i.e., about 89%) lower than that of the DV. The average total operating cost of the EV was HK\$3.26/km (i.e., about 82%) lower than that of the DV.

4.4 To remove the effect of seasonal fluctuations, the 12-month moving average were used to evaluate the trend of the EV's fuel economy. The 12-month moving average fuel economy of the EV varied narrowly between 4.38 kWh to 4.5 kWh in the 24-month trial period, indicating that there was no deterioration of the fuel economy in the trial period. There was also no deterioration in the battery capacity of the EV.

4.5 Based on the total mileage of the EV and the fuel economy of the DV, the equivalent carbon dioxide (CO<sub>2e</sub>) emission from the DV could be estimated for comparison purpose. The CO<sub>2e</sub> emission from the EV and DV were 5,230 kg and 24,137 kg, respectively and hence the EV emitted 18,908 kg CO<sub>2e</sub> (about 78%) less than the DV in this trial.

4.6 There was no designated driver 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 In this trial, the average daily mileage of the EV was 93 km/day while that of the DV was 80 km/day. The average fuel cost of the EV was HK\$2.51/km (i.e., about 89%) lower than that of the DV. The average total operating cost of the EV was HK\$3.26/km (i.e., about 82%) lower than that of the DV.

5.2 The utilization rates were 97% for the EV and 94% for the DV. In the trial period, there was no deterioration in the fuel economy of the EV in the 24-month trial. Also, there was no deterioration in the battery charge capacity in the trial period.

5.3 Compared with the DV, there was about 78% CO<sub>2e</sub> emission reduction by using the EV.

5.4 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.

5.5 The findings showed electric light goods vehicles are becoming more affordable and feasible to the transport trade for saving operating cost and reducing CO<sub>2e</sub> 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**

#### **EV**

<b>Registration mark</b>	<b>XC3503</b>
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**

<b>Registration mark</b>	<b>NAP 1</b>
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

	
<p>EV – front view</p>	<p>EV – rear view</p>
	
<p>EV – right side view</p>	<p>EV – left side view</p>



## 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