

Pilot Green Transport Fund

Interim Report On

Trial of Electric Van for Environmental Service
(Waste & Environmental Technologies Limited)

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The Monitoring and Evaluation Team's views expressed in this report do not necessarily reflect the views of the Environmental Protection Department, HKSAR.

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**Pilot Green Transport Fund
Trial of Electric Van for Environmental Service
(Waste & Environmental Technologies Limited)**

**Interim Report
(Trial Period: 1 March – 31 August, 2016)**

Executive Summary

1. Introduction

1.1 The Pilot Green Transport Fund (the Fund) is set up to encourage transport operators to try out green and innovative transport technologies, contributing to better air quality and public health for Hong Kong. Waste & Environmental Technologies Limited (WET) was approved under the Fund for trial. Through the tendering procedures stipulated in the Subsidy Agreement WET entered into with the Government, WET procured one Nissan e-NV200 light goods vehicle (EV) for trial.

1.2 PolyU Technology and Consultancy Company Limited have been engaged by the Environmental Protection Department as an independent third party assessor to monitor the trial and evaluate the performance of the trial vehicles. WET assigned one diesel vehicle (DV) providing similar services as the conventional counterpart for comparing with the EV.

1.3 This Interim Report summarizes the performance of the EV in the first six months of the trial as compared with its conventional diesel counterpart.

2. Trial Vehicles

2.1 Key features of the EV and DV are in Appendix 1 and photos of the vehicles are in Appendix 2. The vehicles were used mainly for providing service between the Science Park office and the Yuen Long office of WET. Typical daily journey is less than 100 km. According to the EV's manufacturer, the model's maximum payload is not less than 620 kg and it has a travel range of 165 km, with its battery fully charged and air-conditioning off.

2.2 WET used the public charging facilities at the Science Park car park, Shui Pin Wai Estate, Yuen Long and Choi Yuen Plaza, Sheung Shui to charge the EV. The EV was charged every day when its service was required.

3. Trial Information

3.1 The trial started on 1 March 2016 and would last for 24 months. WET was required to collect and provide trial information including the EV mileage reading before charging, amount electricity consumed in each charging, charging time and operation downtime due to charging, cost and downtime associated with scheduled and unscheduled maintenance of the EV. Similar data from the DV were also required. In addition to the cost information, reports on maintenance work, operational difficulties and opinions of the driver were collected to reflect any problems of the EV.

3.2 The following table summarizes the statistical data of the EV and DV. The fuel cost of EV was \$0.529/km (69%) lower than DV.

Table 1: Key operation statistics of each vehicle, March – August, 2016

		EV	DV
Total mileage/km		10,043	16,775
Average fuel economy/	(km/kWh)	4.72	
	(km/litre)		13.85
	(km/MJ)	1.31	0.38 ^[1]
Average fuel cost ^[2] (\$/km)		0.240	0.769
Average total operating cost /(\$/km)		0.240	0.769
Downtime ^[3] /day		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 period the vehicle is not in operation, which counted from the first day it stops operation till the day it is discharged from the vehicle supplier to the operator

3.3 Apart from the maintenance cost, other indirect costs may include towing fee, vehicle replacement fee and cost of operation downtime due to charging and maintenance of the EV. The EV and the DV each had one scheduled maintenance and one-day down time in the first six months of the trial period.

3.4 Utilization rates were 99% for both the EV and the DV out of the 184 working days in the first six months.

4. Summary

4.1 The average fuel cost of the EV was 69% (\$0.529/km) less than the DV. The average total operating cost of the EV was also 69% (\$0.529/km) less than the DV. Utilization rates were 99% for both the EV and the DV.

4.2 The driver of the EV had no problem in operating the EV and was satisfied with its performance.

4.3 Charging frequency and monthly average fuel economy did not indicate any deterioration in performance of the EV or its battery.

Appendix 1: Key Features of the Vehicles Involved in the Trial

1. Trial EV





Registration mark	TY7702
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:	165 km (air conditioning off)
Maximum speed:	over 120 km/h
Battery material:	lithium-ion
Battery capacity:	24 kWh
Payload:	620 kg
Year of manufacture:	2014

2. DV Used for Comparison

Registration mark	TR3949
Make:	Isuzu
Model:	TFS86JD-V-AT
Class:	Light Goods Vehicle
Gross vehicle weight:	3.00 Tonnes
Seating Capacity:	driver + 4 passengers
Cylinder capacity:	2,499 cc
Year of manufacture:	2014

Appendix 2: Photos of Vehicles

1. Trial EV

	
EV – front view	EV – end view
	
EV – side view 1	EV – side view 2

2. Diesel Vehicle for Comparison

	
DV	