

**New Energy Transport Fund**

**Interim Report**

**On**

**Trial of Electric Light Goods Vehicle for**

**Electrical Engineering Industry**

**(N-Power Investment Company 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 (Environment Branch), HKSAR.

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**New Energy Transport Fund  
Trial of Electric Light Goods Vehicle for Electrical Engineering Industry  
(N-Power Investment Company Limited)**

**Interim Report  
(Trial Period: 1 October 2022 – 31 March 2023)**

**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. N-Power Investment Company Limited (N-Power) 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, N-Power procured a Joylong EW5 electric light goods vehicle (EV) for trial.

1.2 Hong Kong Productivity Council has been engaged by the Environmental Protection Department (EPD)<sup>1</sup> as an independent third-party assessor to monitor the trial and evaluate the performance of the trial vehicle. N-Power assigned a diesel light goods vehicle (DV) providing same services as the conventional counterpart for comparison.

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

**2. Trial and Conventional Vehicles**

2.1 The trial EV, Joylong EW5 electric light goods vehicle, has a gross vehicle weight (GVW) of 4,300 kg capable of carrying a driver with 4 passengers and goods. It has a 73.4 kWh Lithium-ion battery pack and the driving range is 330 km with air-conditioning off. The DV, Nissan NV350 Urvan 2.5L Diesel A/T Half Panel Van Lux diesel light goods vehicle with a GVW of 3,300 kg and a cylinder capacity of 2,488 c.c., was used as the conventional counterpart for comparison in this trial. There is a designated driver assigned to drive the EV and the DV. Both the EV and the DV provide the same services for delivering materials to different construction sites in Hong Kong.

2.2 N-Power has installed a designated 30 kW DC charging facility for charging the EV. Key features of the EV and the DV as well as the EV charging facility are presented in Appendix 1. The photos of vehicles and the EV charging facility are shown in Appendix 2.

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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.

### 3. Trial Information

3.1 The trial commenced on 1 October 2022 and would last for 12 months. N-Power was required to collect and provide trial information including the EV's 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 were collected and provided to reflect any problems of the EV.

### 4. Findings of Trial

4.1 Table 1 summarises the statistical data of the EV and the DV in the first six months of the trial period.

Table 1: Key operation statistics of each vehicle (1 October 2022 – 31 March 2023)

	EV	DV
Total distance travelled (km)	20,682	4,199
Average daily distance travelled (km/working day)	140	28
Average fuel economy	(km/kWh)	3.23
	(km/litre)	-
	(km/MJ)	0.90
Average fuel cost (HK\$/km)	0.45 <sup>[2]</sup>	2.47 <sup>[3]</sup>
Average total operating cost (HK\$/km)	0.45	2.47
Downtime (working day) <sup>[4]</sup>	0	0

<sup>[1]</sup> Assuming lower heating value of 36.13 MJ/litre for diesel fuel.

<sup>[2]</sup> The electricity cost was calculated using average electricity tariff rates of HK\$1.289/kWh (October 2022); HK\$1.451/kWh (November 2022 – December 2022); HK\$1.544/kWh (January 2023 – February 2023) and; HK\$1.552/kWh (March 2023) as claimed by CLP.

<sup>[3]</sup> The market fuel price was used for calculation.

<sup>[4]</sup> Downtime refers to the working days that the vehicle is not in operation due to charging or maintenance, counting from the first day it stops operation till the day it is returned to the operator.

4.2. During the six months of the trial, there were 148 working days. The total distance travelled and the average daily distance travelled of the EV were 20,682 km and 140 km/day, respectively while those of the DV were 4,199 km and 28 km/day, respectively. The average fuel cost of the EV was HK\$2.02/km (about 82%) lower than that of the DV. Taking the maintenance fee for both the EV and the DV into account, the average total operating cost of the EV was the same as the average fuel cost.

4.3 In the first six months of the trial period, the EV did not have any maintenance while the DV had a scheduled maintenance for the government annual vehicle inspection. The scheduled maintenance of the DV did not induce downtime. Therefore, the utilisation rates of both the EV and the DV were 100%.

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

## **5. Summary**

5.1 In the first six months of the trial, the average daily distance travelled of the EV was 140 km, while that of the DV was 28 km.

5.2 Both the average fuel cost and the average total operating cost of the EV were HK\$2.02/km (about 82%) lower than those of the DV.

5.3 The utilisation rates of both the EV and the DV were 100%.

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

5.3 The findings only reflect the performance of the EV in the first 6 months of the trial. The performance and reliability of the EV will be continuously monitored in the 12 months of the trial.

## **Appendix 1: Key Features of Vehicles and Charging Facility**

### **1. Trial EV and Charging Facility**

#### **(a) EV**

<b>Registration mark:</b>	<b>HJ2386</b>
Make:	Joylong
Model:	EW5
Class:	Light goods vehicle
Gross vehicle weight:	4,300 kg
Payload:	1,300 kg
Seating capacity:	Driver + 4 passengers
Rated power:	100 kW
Travel range:	330 km (air conditioning off)
Battery material:	Lithium-ion
Battery capacity:	73.4 kWh
Year of manufacture:	2022

#### **(b) EV Charging Facility**

Make:	Only Power Supply
Model:	ANDC5-500V/60A-1
Power:	30 kW, 500V DC / max. 60A
Charging standard:	GB mode

### **2. DV Used for Comparison**

<b>Registration mark:</b>	<b>RK2260</b>
Make:	Nissan
Model:	NV350 Urvan 2.5L Diesel A/T Half Panel Van 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:	2017

## Appendix 2: Photos of Vehicles and Charging Facility

### 1. Trial EV and Charging Facility

	
<p>Front view of EV</p>	<p>Rear view of EV</p>
	
<p>Left side view of EV</p>	<p>Right side view of EV</p>
	
<p>Charging facility – 30 kW DC charger</p>	

**2. DV Used for Comparison**



Front view of DV



Rear view of DV



Left side view of DV



Right side view of DV