# Pilot Green Transport Fund

# Interim Report On
# Trial of Electric Van for Catering Service
# (Gate Gourmet)

(20 March 2017)

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**Pilot Green Transport Fund**
**Trial of Electric Van for Catering Service**
**(Gate Gourmet)**

**Interim Report**
**(Trial Period: 1 July 2014 – 30 June 2015)**

## 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. Gate Gourmet Hong Kong Limited (Gate Gourmet) was approved under the Fund for trial of one electric van and one quick charging facility for catering service.

1.2 Hong Kong Institute of Vocational Education (Tsing Yi) 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 vehicles.

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

2. Trial Vehicles

2.1 Through the tendering procedures stipulated in the Agreement, Gate Gourmet procured one Mitsubishi Minicab MiEV electric van (EV) for trial. One Diesel Van (DV) serving the same purpose was assigned as the conventional vehicle for comparing with the EV.

2.2 Key features of the EV and DV are in Appendix 1 and photos of the vehicles are in Appendix 2. The vehicles were used for transporting staff for catering service around Hong Kong International Airport.

3. Trial Information

3.1 The trial started on 1 July 2014 and would last 24 months. Gate Gourmet was required to collect and provide trial information including the EV mileage reading before charging, amount of electricity consumed and time used in each charging, downtime due to charging, cost and operation downtime associated with scheduled and unscheduled maintenance of the EV and the charging facilities. Similar data from the DV was also required. In addition to the cost information, reports on maintenance work, operational difficulties and opinions of the EV drivers and Gate Gourmet were collected to reflect any operational problems of the EV.

3.2 The following table summarizes the statistical data of the EV and the DV. The average fuel cost of the EV is $1.82/km (89.7%) lower than the DV.

Table 1: Key Operation Statistics of Each Vehicle (July 2014 – June 2015)

| | | **Electric Van** | **Diesel Van** |
|---|---|---|---|
| | | **EV** | **DV** |
| Total mileage / km | | 17,320 | 25,598 |
| Average fuel economy | (km/kWh) | 5.50 | - |
| | (km/litre) | - | 5.79 |
| | (km/MJ) | 1.53 | 0.16 [1] |
| Average fuel cost /($/km) [2] | | 0.21 | 2.03 |
| Average total operating cost / ($/km) [3] | | 0.21 | 2.10 |
| Downtime [4] [5]/ day | | 3 | 4 |

[1] Assuming lower heating value of 36.13 MJ/liter for diesel fuel

[2] The market fuel price was used for calculation

[3] Maintenance items unrelated to the performance of the vehicle were not included for comparison. The concerned information is listed for reference only.

[4] Downtime refers to the equivalent number of working days in which the vehicle is not in operation due to charging, and the period 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.

[5] For incidents with operation downtime less than 1 hour, the no. of working days for the vehicle out of service would be counted as 0.

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. No other indirect costs were found in the calculation of total operating cost for these vehicles.

3.4 As the EV was mainly charged overnight after work, and only required quick charging in daytime when the battery level was low, there was only 1 day downtime due to charging in this reporting period.

3.5 Utilization rate was 99.2% for the EV and 98.9% for the DV.

4. Summary

4.1 The average fuel cost of the EV was 89.7% ($1.82/km) lower than the DV. For the average total operating cost, the EV was 90.0% ($1.89/km) lower than the DV.

4.2 The EV driver was satisfied with the performance of the vehicle. He found no problem in operating the EV and felt the EV was quiet and environmental friendly.

4.3 Gate Gourmet agreed that using electric vehicle was good because it provided a greener and quieter environment compared with the diesel vehicle. However, they reflected that the driving range of the EV was insufficient to support their work outside the Airport zone. The service scopes of the EV were hence restricted. Besides, they were that the high maintenance cost for EV might be very high after expiry of the service warranty since there was no alternative service provider for the EV at the market.

4.4 The charging frequency as well as average fuel economy of the EV did not indicate any deterioration in the battery performance.

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

## 1. Trial EV

| | |
|---|---|
| **Registration Mark** | **SS 3257** |
| Make: | MITSUBISHI |
| Model: | Minicab MiEV |
| Class: | Light goods vehicle |
| Gross vehicle weight: | 1,660 kg |
| Payload: | 350 kg |
| Seating capacity: | driver + 1 passenger |
| Rated power: | 25 kW |
| Travel range: | 150 km (air conditioning off) |
| Maximum speed: | 130 km/h |
| Battery material: | Lithium ion |
| Batteries capacity: | 16 kWh |
| Charging time: | 7 hours (Max. current 13A) |
| Year of manufacture: | 2013 |

## 2. DV used for comparison

| | |
|---|---|
| **Registration Mark** | **RV 1140** |
| Make: | NISSAN |
| Model: | NV 350 |
| Class: | Light goods vehicle |
| Seating capacity: | driver + 5 passengers |
| Gross vehicle weight: | 3.3 tonnes |
| Payload: | 400 kg |
| Engine capacity: | 2488 c.c. |
| Year of manufacture: | 2012 |

## Appendix 2: Photos of Vehicles and Charging Facilities

### 1. Trial EV and Charging Facilities

| | |
|---|---|
|   |   |
| Front view of EV | Rear view of EV |
|   |   |
| Left side view of EV | Right side view of EV |
|   | |
| Quick charging facility | |

## 2. DV for Comparison

| | |
|---|---|
|   |   |
| Front view of DV | Rear view of DV |
|   |   |
| Left side view of DV | Right side view of DV |