Pilot Green Transport Fund

Interim Report On
Trial of Single-deck Hybrid Bus for
Coach Rental Service
(Wah Kwok Transportation Company Limited)

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(Wah Kwok Transportation Company Limited)

Interim Report
(Trial Period: 1 February 2018 – 31 July 2018)

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. Wah Kwok Transportation Company Limited (Wah Kwok) was approved under the Fund for trial of one single-deck hybrid bus (hereafter called HV) for coach rental service. Through the tendering procedures stipulated in the Subsidy Agreement, Wah Kwok procured one SAIC single-deck hybrid bus for trial.

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 vehicle. One Volvo single-deck diesel bus (DV) providing the same service was assigned as the conventional vehicle for comparing with the HV.

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

2. Trial Vehicles

2.1 The HV has a gross vehicle weight (GVW) of 17,500 kg and a seating capacity of 65 passengers. The DV has a GVW of 16,000 kg and a seating capacity of 65 passengers. Both the HV and the DV serve the same circular route between Hong Kong Garden and Tsuen Wan Station.

2.2 Key features of the HV and the DV are in Appendix 1 and photos of the vehicles are in Appendix 2.

3. Trial Information

3.1 The trial started on 1 February 2018 and would last for 24 months. Wah Kwok was required to collect and provide trial information including the HV odometer reading, the date of refueling, the refueled amount, cost and operation downtime associated with scheduled and unscheduled maintenance of the HV. Similar data from the DV was also required. In addition to the cost

information, reports on maintenance work, operational difficulties and opinions of the drivers were also collected to reflect any problems of the HV.

3.2 Table 1 summarizes the statistical data of the HV and the DV. The average fuel cost of the HV was HK$0.51/km (10.2%) lower than that of the DV and the average total operating cost of the HV was HK$0.49/km (9.7%) lower than that of the DV.

Table 1: Key Operation Statistics of Each Vehicle (February 2018 - July 2018)

		HV	**DV**
Total mileage	(km)	37,389	32,403
Average fuel economy	(km/litre)	2.96	2.64
Average fuel cost ($/km) [1]		4.51	5.02
Average total operating cost/ ($/km) [2]		4.55	5.04
Downtime/ working day [3]		3	1

[1] Market rate was adopted for calculation.

[2] Maintenance due to incidents unrelated to the performance of the vehicle was not included for comparison.

[3] Downtime refers to the equivalent number of working days in which the vehicle was not in operation due to maintenance, counting from the first day it stopped operation till the day it was returned to the operator.

3.3 During the first six months of the trial, the HV had one scheduled maintenance resulting a downtime of 2 working days. There was no scheduled maintenance for the DV.

3.4 Also, the HV had one unscheduled maintenance resulting downtime for 1 working day. The DV had 2 unscheduled maintenances resulting a downtime of 1 working day.

3.5 The utilization rates of the HV and the DV were 98.3% and 99.4% respectively.

4. Summary

4.1 During the first six months of the trial, the average daily mileage of the HV was 210 km, while that of the DV was 180 km. The HV incurred a lower fuel cost which was HK$0.51/km (10.2%) lower than that of the DV and the average total operating cost of the HV is HK$0.49/km (9.7%) lower than that of the DV. Utilization rates of the HV and DV were 98.3% and 99.4% respectively.

4.2 The feedbacks from the passengers were in general on the positive side, they felt that the HV was quieter and the air was cleaner inside the HV. They liked the HV and supported on replacing the existing diesel vehicles by hybrid vehicles.

4.3 The HV driver shared the view that the HV ran quieter than the DV when travelling on flat roads and it produced less air pollutants.

4.4 In general, Wah Kwok and the driver were satisfied with the performance of the HV disregarding the insufficient power for climbing uphill.

4.5 The findings only reflect the performance of the HV in the first six months of the trial. More time is needed to test the performance and reliability of the HV.

Appendix 1: Key Features of Vehicles

1. Trial HV

Registration Mark	**FG9698**
Make:	SAIC
Model:	SK6110H
Class:	Single deck public bus
Gross vehicle weight:	17,500 kg
Seating capacity:	Driver + 65 passengers
Cylinder capacity:	6,692 c.c.
Maximum Output(ps/rpm):	245/2,300
Battery Type:	Lithium Manganese Oxide battery
Year of manufacture:	2016

2. DV for comparison

Registration Mark	**DD3331**
Make:	Volvo
Model:	B7R MKIII EEV
Class:	Single deck public bus
Gross vehicle weight:	16,000 kg
Seating capacity:	Driver + 65 passengers
Cylinder capacity:	7,146 c.c.
Year of manufacture:	2014

Appendix 2: Photos of Vehicles

1. Trial HV

	
Front view of HV	Rear view of HV
	
Left Side view of HV	Right Side view of HV

2. DV for comparison

	
Front view of DV	Rear view of DV
	
Left Side view of DV	Right Side view of DV