

For information on
25 September 2001

Legislative Council
Panel on Environmental Affairs
Panel on Transport

Alternative Fuel Light Buses

Introduction

This paper provides the information requested by Members relating to alternative fuel light buses.

Background

2. We reported to the LegCo Panel on Environmental Affairs the findings of the trial of alternative fuel light buses on 3 July 2001. The Administration attended a LegCo case conference regarding alternative fuel light buses on 31 August 2001. At the case conference, Members requested the Administration to provide the following information -

- (a) the implementation details of the existing plan to encourage the switch from diesel to LPG taxis;
- (b) the relevant legislation governing the suitability for use in Hong Kong, safety and emission standard of LPG light buses; and
- (c) the Administration's latest position on its proposal to introduce alternative fuel light buses in Hong Kong.

LPG Taxi Scheme

3. The trial of LPG taxis was launched in November 1997 and completed in November 1998. After the trial, about 190 diesel taxi owners replaced their vehicles with LPG ones before the Administration announced in the 1999 Policy Address its intention to provide an incentive in the form of a

one-off grant to encourage early replacement of diesel taxis with LPG ones. Following the announcement, the Administration consulted the taxi trade and the other parties concerned on the incentive scheme. The following funding proposal was made to and approved by the Finance Committee on 16 June 2000-

- (a) a one-off grant of \$40,000 should be made available to owners of diesel taxis if they replace their vehicles with LPG ones. To encourage earlier replacement of older taxis, owners of diesel taxis aged 7 years or above should be eligible for the grant until 31 December 2001;
- (b) in 2002 and 2003, the same grant should be offered to owners of diesel taxis of six years old or younger at the time when they choose to replace their vehicles with LPG ones;
- (c) on the disbursement of the grant, the first registered owners of LPG taxis which were registered on or before the announcement of the LPG taxi incentive scheme in the 1999 Policy Address on 6 October 1999 should be eligible for 50% of the grant, i.e. \$20,000, while the current registered owners of these LPG taxis should be eligible for the remaining portion of the grant¹; and
- (d) the first registered owners of LPG taxis registered after 6 October 1999 should be eligible for the full grant of \$40,000.

4. The Transport Department started to accept applications for the grant in August 2000. Taxi owners are required to provide information with supporting documents on the scrapped diesel taxi and the replacement LPG taxi. For straightforward cases which fulfill the eligibility criteria, Transport Department will arrange for payment of grant within one days. For doubtful or prima facie ineligible cases, the applicant will be requested to provide further information to substantiate his claims and the case will be submitted to an inter-departmental vetting committee (IDVC) comprising representatives from Environment and Food Bureau, Transport Bureau, Transport Department

¹ The first registered owner refers to the first registered owner of the LPG taxi stated in the Vehicle Registration Document issued by the Transport Department in respect of the LPG taxi whilst the current registered owner refers to the registered owner of the LPG taxi in accordance with the record as at the close of business of the Licensing Division of the Transport Department on 7 August 2000.

and Environmental Protection Department for consideration. If an applicant is aggrieved by the IDVC's decision on his application for the LPG taxi grant, he could lodge an appeal with the Appeal Committee comprising independent non-officials. The Appeal Committee's decision on the appeal is final and binding on the Government.

5. As at 14 September 2001, a total of about 12 200 diesel taxis have been replaced by LPG ones.

6. At the meeting of the LegCo Panel on Environmental Affairs on 4 July 2001, we briefed Members on our review on whether the deadline of 31 December 2001 mentioned in paragraph 3(a) for application by owners of diesel taxis aged 7 or above by the end of this year should be extended. As the first LPG filling point on Lantau Island became operational only in March 2001, it was agreed that the deadline for such Lantau diesel taxis should be extended by six months to 30 June 2002. The deadline of 31 December 2001 for owners of 7 years old or above urban and New Territories taxis should remain unchanged because any extension would run counter to the objective of the incentive scheme, which is to encourage early replacement, particularly of the older and more polluting diesel taxis. We informed the taxi trade of the results of the review thereafter.

Relevant Legislation Governing LPG Light Buses

LPG Safety

7. The Administration has set up a mechanism for assessing applications for vehicles to be used in Hong Kong. In the case of LPG light buses, importers must seek approval from the Gas Authority (i.e. the Director of Electrical and Mechanical Services) for type approval of LPG cylinder and fuel system used on their vehicles in accordance with the Gas Safety (Gas Supply) Regulation (Cap 51). The Gas Authority will assess the safe use of LPG on the light buses concerned according to the information submitted on the design standard, the associated test certificates of the LPG cylinder, the technical details of LPG fuel system, etc. The information required for applying for type approval is at Annex A.

Emission Standard

8. A vehicle seeking first registration will have to meet the emission requirements stipulated in the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap 311J)(APCR). There is currently no emission standard set for LPG light buses under APCR. Taking reference from overseas emission standards of comparable LPG vehicles, the Environmental Protection Department (EPD) has prepared draft emission standards for LPG light buses used during the alternative fuel light bus trial scheme. A copy of the draft standards is at Annex B.

9. Importers of LPG light buses are required to submit to EPD emission test results of the vehicle model of the LPG light buses as certified by the vehicle manufacturers. If EPD is satisfied that the emission performance of the imported LPG light buses can meet the draft emission standard, they will exempt these vehicles from the requirement of the APCR on a vehicle model basis. Such an exemption is only a temporary administrative arrangement which will be formalized once we have firmed up the way forward for LPG light buses and after consulting all parties concerned. The same arrangement was made for LPG taxis: when LPG taxis were first introduced to Hong Kong in 1997 at the time of the trial, EPD granted LPG taxis that met the then draft emission standard exemption from APCR so that they could be registered for use on the road. The temporary administrative arrangement was formalized in 2001 when following LegCo's approval the APCR was amended and the draft emission standard for LPG taxis incorporated into the Regulation. The statutory emission standard for LPG taxis came into effect in August 2001.

Roadworthiness

10. Except for the fuel system and emission performance, the general construction of LPG light buses is basically the same as diesel light buses. The "roadworthiness" of LPG light buses will be assessed in accordance with the following legislation -

- (a) Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap 374A);
- (b) Road Traffic (Safety Equipment) Regulations (Cap 374F); and
- (c) Specification of Safety Glass Notices (Cap 374H).

The regulated items include the width, height, length of the vehicles, seatbelts and safety glasses, etc. Detailed regulated items are set out in Annex C.

Latest Position on the Way Forward

11. We are carefully considering the way forward for alternative fuel light buses in the light of the feedback we received from members of the trade and the public as well as all other relevant factors such as the improvement in the network of LPG filling stations, enlargement of the fuel tank by vehicle suppliers and the price of motor-LPG. As the trial was carried out on seven public light bus routes only, the results would not be representative of the entire trade. We are therefore conducting a detailed analysis to examine the impact of the use of LPG on as many light bus routes as possible where operational data are available. In parallel, we have been meeting trade members to gauge their views and concerns on the use of alternative fuel light buses. We hope that we will come up with a proposed way forward on alternative fuel light buses for consultation with the trade and LegCo before the end of this year.

Environment and Food Bureau
September 2001

**Requirements for Type Approval
of LPG Cylinder and Fuel System used on Vehicles
under the Gas Safety Ordinance Cap. 51**

In accordance with Gas Safety (Gas Supply) Regulation 7 (Cap. 51), application for type approval of LPG cylinder and fuel system used on vehicles should include the following information :-

Cylinder

- Design standard and specification of the cylinder.
- Name and address of the cylinder manufacturer.
- Design calculations in respect of the design standard of the cylinder.
- Design drawings showing details of the cylinder.
- The cylinder should be stamped with the following information :-
 - i. Serial number of cylinder
 - ii. Water capacity
 - iii. Symbol of cylinder manufacturer and inspector's official marking
 - iv. Design service pressure
 - v. Hydrostatic test pressure
 - vi. Manufacturer date and test date
- Manufacture/test certificates of the cylinder by a recognised body and the test items should include :-
 - i. Chemical composition
 - ii. Mechanical test
 - iii. Radiographic examination on welding seams
 - iv. Hydrostatic test
 - v. Leakage test

Fuel System

- Design standard, schematic diagram and location drawing of the LPG fuel system.
- Technical details on other components of the fuel system including :-
 - i. Safety relief valve (in particular pressure setting of discharge)
 - ii. Excess flow valve (in particular closing flow rate)
 - iii. Non-return valve
 - iv. Automatic shut-off solenoid valves

- v. Vaporiser/regulator (in particular operating pressures at primary & secondary stages)
 - vi. Carburator
 - vii. Filter
 - viii. Gas pipe and rubber hoses (design standard, pressure, material and size).
- Other relevant information as may be required by the Gas Authority.

Draft Emission Standards for LPG Light Buses*

Emissions (g/kWh)#	Nitrogen Oxides	Particulate	Hydrocarbons	Carbon Monoxide
US	5.36	Not applicable	2.55	49.7
EU	5.0		0.78**	5.45
Japan	4.50		1.80	51.0

* Design weight between 3.5 tonnes to 4 tonnes. An LPG light bus only needs to comply with any one of the three standards listed above.

gram per kilowatt-hour

** Non - Methane Hydrocarbons

Legislation Regulating “Roadworthiness” of LPG Light Buses.

Legislation	Major Regulated Items
Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap. 374A)	The width, height, length of vehicles, the load carried, the diameter of wheels and its width, nature and condition of tyres, the weight, the brakes, the appliances to be fitted, lighting equipment and reflectors, the design and construction (such as doors, entrances and exits etc.) and signs and advertising signs on the vehicles.
Road Traffic (Safety Equipment) Regulations (Cap. 374F)	Seatbelts and means of securing safety belts and fire fighting equipment etc.
Specification of Safety Glass Notices (Cap. 374H)	The type of safety glass or transparent material for all windscreens, windows and partitions.