

## **ITEM FOR FINANCE COMMITTEE**

### **HEAD 44 - ENVIRONMENTAL PROTECTION DEPARTMENT**

#### **Subhead 700 General other non-recurrent**

#### **New Item “One-off grant to assist owners of pre-Euro diesel heavy vehicles to retrofit their vehicles with particulate removal devices”**

Members are invited to approve the creation of a new commitment of \$600 million for providing a one-off grant to assist owners to retrofit their pre-Euro diesel heavy vehicles with particulate removal devices.

### **PROBLEM**

Diesel vehicles are the dominant source of air pollution at the street-level. It is necessary to adopt practical measures to reduce emissions from the existing diesel heavy vehicle fleet.

### **PROPOSAL**

2. The Director of Environmental Protection, with the support of the Secretary for the Environment and Food, proposes to create a new commitment of \$600 million for providing a one-off grant to assist owners of pre-Euro diesel vehicles (i.e. those registered before April 1995) of weight over four tonnes to retrofit their vehicles with particulate removal devices.

### **JUSTIFICATIONS**

3. Diesel vehicles are a major source of air pollution in Hong Kong at the street level. About 95% of the particulate emissions and 75% of the nitrogen oxides emissions from the vehicle fleet are due to diesel vehicles. Controlling emissions from diesel vehicles is therefore crucial to improving the roadside air quality in Hong Kong.

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4. In 1995, we required all newly registered vehicles to comply with the Euro I emission standards of the European Union. Subsequently, we have been following the European Union in tightening the local emission standards for newly registered vehicles. We implemented the Euro II standards in 1997 and have introduced the Euro III standards since January 2001. Nowadays, a Euro III diesel vehicle emits close to 90% less particulates and over 40% less nitrogen oxides than its pre-Euro predecessor. For those pre-Euro diesel vehicles which have yet to be retired, our plan is to provide financial assistance to the vehicle owners to retrofit their vehicles with particulate removal devices. With Finance Committee's funding approval in May 2000, we have completed a programme to retrofit pre-Euro diesel light vehicles (i.e. those less than four tonnes) with particulate traps or catalysts. Over 80% of the eligible vehicles have participated in the retrofit programme. We now propose to extend the retrofit programme to pre-Euro diesel heavy vehicles.

5. Pre-Euro diesel heavy vehicles are mainly goods vehicles and buses of over four tonnes in weight registered before April 1995. At present, there are about 47 600 such vehicles, including 2 600 franchised buses and 45 000 private heavy goods vehicles and buses. Franchised bus companies have already taken the initiative to retrofit their pre-Euro buses with catalysts. So far, about 90% of such buses have been retrofitted with catalysts while the remaining ones will be replaced with Euro III buses by the end of this year.

6. The Environmental Protection Department (EPD) has carried out a trial to retrofit pre-Euro diesel heavy vehicles with catalysts. The trial was monitored by a monitoring committee comprising representatives of the transport trades (including the Motor Traders Association), academics and other relevant government departments. It is found that the use of catalysts are effective in reducing the emission of particulates, carbon monoxide, hydrocarbons and smoke of pre-Euro diesel heavy vehicles. The key findings of the trial are summarised as follows -

- (a) the use of catalysts can effectively reduce the emission of particulates, a major pollutant in the air, by more than 35%;
- (b) the benefit of using catalysts is most obvious when the vehicles are going uphill, i.e. when they emit the largest amount of exhaust. When the vehicle is heavily loaded, the use of catalyst can also reduce smoke by about 40%;
- (c) the effectiveness of the use of catalysts in reducing carbon monoxide and hydrocarbons is comparable to and sometimes better than that in reducing particulates and smoke;

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- (d) there are negligible adverse effects on the performance of vehicle engines such as engine power and fuel consumption with the use of catalysts; and
- (e) suitable catalysts are available in the market for use on vehicles that are used to travel into the Mainland and be filled up with motor diesel that has a higher sulphur content than that in Hong Kong.

7. In addition to catalysts, there may be different types of particulate removal devices available in the market. We therefore plan to seek contractors for the supply and installation of suitable devices. Eligible vehicle owners can approach authorised contractors for the installation of devices. The Government will reimburse the contractors up to the limit of each grant for the installation of such device in a vehicle. We also plan to make the installation of particulate removal devices a pre-requisite for the renewal of licences for these vehicles after the proposed retrofitting programme has been completed.

8. Subject to Members' approval of the funding proposal, we intend to invite tenders for the proposed installation, complete the evaluation, and award the contracts by around October 2002. This time-table should allow sufficient time for both potential tenderers to prepare comprehensive supporting test data for their bids and the successful tenderers to gear up for the installation work.

9. EPD has engaged an international expert panel comprising four overseas and one local experts to draw up objective technical specification of particulate removal devices for pre-Euro diesel heavy vehicles. The specifications will set out minimum functional requirements for the devices. Any product that can meet the functional requirements will be considered in the tendering exercise. EPD has circulated the requirements to about 300 potential suppliers and local consulates so as to invite as many potential suppliers as possible to participate in the tender exercise with a view to enhancing competition.

## **LONG IDLING VEHICLES**

10. While the use of catalysts are effective in reducing the emissions of all pre-Euro diesel heavy vehicles, the trial has revealed that vehicles which need to keep their engines running while stationary to support their on-board ancillary equipment (such as crane lorries, concrete mixer trucks and signal light vehicles) would emit white smoke occasionally after a catalyst has been installed on them.

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Among the 45 000 pre-Euro diesel heavy vehicles, about 4 000 vehicles belong to the category of long-idling vehicles. In order not to hold up the programme to retrofit the other 41 000 pre-Euro diesel vehicles with particulate removal devices, we will continue the search for suitable devices for the long-idling vehicles or a way to resolve the problem of white smoke. Once we have resolved the problem, we will seek funding separately for retrofitting these long-idling vehicles.

## FINANCIAL IMPLICATIONS

### Non-recurrent Cost

Encl. 11. Excluding the long idling vehicles, there are about 41 000 pre-Euro diesel heavy vehicles. A breakdown of these vehicles by vehicle class is given at the Enclosure. According to market information, the average cost of a suitable particulate removal device including installation is estimated to be around \$ 14,600. The total estimated cost of the proposed retrofit programme therefore amounts to about \$600 million.

12. We propose to invite the international expert panel that has drawn up the functional requirements to evaluate the compliance of the tender submissions with the requirements, so that the evaluation could be done objectively based on the technical competence of the tenders. The cost of acquiring the service of the international expert panel is about \$800,000 and will be included as part of the proposed commitment of \$600 million.

13. According to the target timetable for the letting and award of the tender, the installation work will start around end 2002. We envisage that the proposed scheme will complete by end 2004 when the installation work for the eligible vehicles is expected to complete. The estimated cashflow is as follows -

| <b>2002-03</b>     | <b>2003-04</b>     | <b>2004-05</b>     | <b>Total</b>       |
|--------------------|--------------------|--------------------|--------------------|
| <b>\$' 000,000</b> | <b>\$' 000,000</b> | <b>\$' 000,000</b> | <b>\$' 000,000</b> |
| 100                | 400                | 100                | 600                |

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**Recurrent Cost**

14. The proposal has no additional recurrent financial implications. EPD will oversee the installation programme with its existing staffing resources.

**BACKGROUND INFORMATION**

15. We consulted the LegCo joint Panels on Environmental Affairs and Transport on 15 January 2002. Members generally supported the proposal.

16. Emissions from diesel vehicles can be reduced by a combination of measures. Our strategy is to -

- (a) introduce clean alternatives to diesel vehicles where practicable;
- (b) adopt the most stringent vehicle emission and fuel standards;
- (c) adopt practical technology to reduce emissions from the existing vehicle fleet; and
- (d) ensure proper maintenance of in-use vehicles through a combination of voluntary and regulatory measures.

17. Since 1999, we have provided a one-off grant to encourage diesel taxi owners to replace their vehicles with LPG ones, introduced ultra-low sulphur diesel, increased fixed penalty on smoky vehicles, tightened the emission requirements of newly registered vehicles in line with the requirement in the European Union, and provided a one-off grant to assist owners of pre-Euro diesel light vehicles to install particulate traps or catalysts on their vehicles. The current proposal to assist vehicle owners to retrofit their pre-Euro diesel vehicles over four tonnes with particulate removal devices forms part of the overall strategy to achieve our clean air objective.

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