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Panel on Environmental Affairs

Meeting on 19 December 2016

**Updated background brief on tightening of emission standards
of newly registered motor vehicles
prepared by the Legislative Council Secretariat**

Purpose

This paper provides updated background information on the tightening of the emission standards of newly registered motor vehicles. It also gives a brief account of the views and concerns expressed by Members when related issues were discussed by the relevant committees of the Legislative Council.

Background

Emission control on motor vehicles in Hong Kong

2. Motor vehicles are the major source of roadside air pollution. To improve roadside air quality, the Administration has been tightening motor vehicle fuel and emission standards with reference to international developments and when the relevant compliant motor fuels and vehicles can be made available to Hong Kong. Tightening of vehicle emission standards is effected by amending the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (Cap. 311J) ("the Regulations").¹ The Regulations provide, among other matters, that motor vehicles in Hong Kong must be so constructed that the emissions from them conform to the emission standards specified in the various schedules to the Regulations.

¹ The Regulations are made by the Secretary for the Environment under section 43(1)(rg) of the Air Pollution Control Ordinance (Cap. 311).

Current emission standards for newly registered motor vehicles

3. In Hong Kong, the vehicle emission standards have been tightened to Euro V for newly registered motor vehicles (except diesel private cars) from 2012, and Euro III for motor cycles and tricycles from January 2007. As diesel private cars generally emit more pollutants than petrol cars, the Administration has adopted a more stringent vehicle emission standard, i.e. the emission standard of California, for these vehicles since 1998, and California LEV II has been in force in Hong Kong since 1 January 2006.

International developments in vehicle emission standards

4. The European Union ("EU") has tightened its emission standards to Euro VI for newly registered heavy duty vehicles (i.e. vehicles with design weight over 3.5 tonnes) from December 2013, light duty vehicles (passenger cars) from September 2015, and light duty vehicles (goods vehicles) from September 2016. For motor cycles and tricycles, EU will implement Euro IV emission standards in January 2017. California has also tightened its vehicle emission standards to LEV III since 2015.

5. According to the Administration, compared with the Euro V counterparts, Euro VI heavy duty diesel vehicles emit about 80% less nitrogen oxides ("NO_x") and 50% less respirable suspended particulates, while Euro VI light duty diesel vehicles emit about 55% less NO_x. All petrol vehicles on Hong Kong's market, which are light duty vehicles, are subject to the same emission limits under Euro V and Euro VI, except for those equipped with direct injection engines. The California LEV III standard for private cars increases the durability requirement for emission control systems by about 25% compared to the LEV II standard.

Proposal to tighten vehicle emission standards to Euro VI

6. In the light of the latest international standards and vehicle supply situation, the Administration has since late 2015 consulted the relevant trades (including the transport and vehicle maintenance trades) and the Panel on Environmental Affairs ("the Panel") on its initial proposal to adopt the Euro VI emission standards for newly registered motor vehicles (except motor cycles and tricycles) in phases starting from September 2016. According to the Administration, it will report to the Panel its findings after consultation with the Advisory Council on the Environment and the stakeholders, before taking forward the legislative process.

Major views and concerns expressed by Members

7. The Administration briefed the Panel on its initial proposal to tighten the emission standards of newly registered motor vehicles to Euro VI at the meeting on 27 November 2015. Related issues were brought up during the Panel's discussion on the interim findings of the trial of hybrid franchised buses on 30 March 2016, as well as during examination of the Estimates of Expenditure 2016-2017. The major views and concerns expressed by Members are summarized in the ensuing paragraphs.

Implementation schedule

8. Noting that the proposed implementation dates for tightening the vehicle emission standards to Euro VI in Hong Kong lagged behind EU's corresponding schedule, some Members asked whether it was feasible to advance Hong Kong's implementation schedule with a view to improving roadside air quality more expeditiously. Some other Members, however, opined that implementation of the Euro VI emission standard should be premised on an adequate supply of compliant vehicles in the local market.

9. The Administration advised that apart from making reference to EU's implementation schedule, it reckoned the need to ensure a reasonable supply of compliant vehicles in the local market by the respective implementation dates in Hong Kong. In this regard, the Administration had consulted the vehicle suppliers and taken into account the local supply situation of the relevant classes of Euro VI vehicles in the coming years when drawing up the implementation schedule.

Support for the vehicle maintenance trade

10. Members relayed the concern of the vehicle maintenance trade about the skills gap of vehicle mechanics for Euro VI vehicles. They considered that the Administration should step up its support to the trade to tie in with the tightening of statutory vehicle emission standards, and ensure a sufficient local supply of spare parts for Euro VI vehicles.

11. The Administration explained that vehicle mechanics should be familiar with the emission control technologies to be used in Euro VI diesel vehicles (such as exhaust gas recirculation, selective catalytic reduction, and diesel particulate filter) as those technologies had already been used in Euro IV and V diesel vehicles. To help vehicle mechanics keep abreast of the latest skills in maintaining diesel vehicles, the Vocational Training Council ("VTC") had been offering regular training courses since 2012 when Euro V became the statutory

emission standards for vehicles newly registered in Hong Kong. The Environmental Protection Department had been organizing seminars in collaboration with VTC, vehicle manufacturers, industry organizations and other bodies to disseminate the latest vehicle maintenance information. Moreover, it was a requirement of Euro VI emission standards for vehicle manufacturers concerned to make available vehicle maintenance information to the public at a reasonable cost. The Administration intended to incorporate this requirement into the Regulations.

Testing of vehicle emission performance

12. In view of the incident that a German vehicle manufacturer was found cheating at emission tests by installing illegal software in its diesel private cars, Members urged the Administration to review and enhance the mechanism for processing vehicle registrations, and put in place effective measures to ensure compliance of newly registered motor vehicles with the statutory emission standards.

13. The Administration advised that the defeat devices involved in the incident enabled the vehicles to pass the emission tests in the laboratory but their on-road emissions exceeded the emission standards. To ensure consistency of the emission performance of vehicles when running on roads and tested in laboratories, EU had progressively incorporated Real Driving Emissions ("RDE") tests into Euro VI. The Administration would adopt the RDE test requirement such that when Euro VI emission standards were in force, only vehicles that passed the emission test in a certification laboratory as well as the RDE test would be allowed first registration in Hong Kong.

Controlling vehicle emission of fine particles

14. Noting that petrol vehicles equipped with direct injection engines would emit a substantial amount of fine particulates (i.e. PM2.5), Members asked whether there was a reliable and practicable way to measure roadside emission of PM2.5 for regulatory purposes.

15. The Administration responded that tailpipe emissions of PM2.5 from vehicles could be measured effectively in terms of both particle weight and number with existing devices. To control PM2.5 emissions from diesel private cars, Euro V emission standards required these cars to comply with a Particle Number ("PN") limit. A PN limit would be introduced in the Euro VI standard for petrol vehicles equipped with direct injection engines. It was envisaged that with this PN limit and the RDE requirement, petrol vehicles should remain an insignificant emission source of PM2.5.

Council questions

16. At the Council meetings of 25 March 2015, 14 October 2015 and 17 February 2016, Hon CHAN Hak-kan, Hon Frederick FUNG and Hon Frankie YICK raised questions relating to vehicle emission control. Issues covered in the questions include provision of skills training for vehicle mechanics, review of the system for regulating vehicle emissions, and supporting measures to promote adoption of environment-friendly commercial vehicles in Hong Kong. The questions and the Administration's replies are hyperlinked in the **Appendix**.

Latest development

17. The Administration will brief the Panel on the legislative proposal to tighten emission standards of newly registered motor vehicles and the updated implementation schedule at the meeting on 19 December 2016.

Relevant papers

18. A list of relevant papers is set out in the **Appendix**.

Council Business Division 1
Legislative Council Secretariat
13 December 2016

Tightening emission standards of newly registered motor vehicles

List of relevant papers

Date	Event	Paper
27 November 2015	Meeting of the Panel on Environmental Affairs	Administration's paper on "Proposals to Tighten Emission Standards of Newly Registered Vehicles" (LC Paper No. CB(1)180/15-16(03)) Minutes of meeting (LC Paper No. CB(1)495/15-16) Administration's follow-up paper (LC Paper No. CB(1)389/15-16(02))
30 March 2016	Meeting of the Panel on Environmental Affairs	Administration's paper on "Interim Findings of the Trial of Hybrid Franchised Buses" (LC Paper No. CB(1)705/15-16(05)) Minutes of meeting (LC Paper No. CB(1)969/15-16)
6 April 2016	Special meeting of the Finance Committee for examination of Estimates of Expenditure 2016-2017	Written question raised by a Member and the Administration's reply (Reply serial numbers: ENB337)

Hyperlinks to relevant Council Question:

Date	Council Question
25 March 2015	Press release on Council question (written) raised by Hon CHAN Hak-kan
14 October 2015	Press release on Council question (written) raised by Hon Frederick FUNG
17 February 2016	Press release on Council question (written) raised by Hon Frankie YICK