Annex

Motion 1: The Government should amend the commencement dates as stipulated under the relevant ordinance to the effect that the commencement dates for private cars and taxis be postponed to 1 January 2018.

The Air Pollution Control (Vehicle Design Standards) (Emission) (Amendment) Regulation 2017 (the Amendment Regulation) requires the tightening of the emission standards for newly registered petrol private cars and taxis from **Euro 5 to Euro 6** and newly registered diesel private cars from **California LEV II to LEV III**, with effect from 1 July 2017. When setting the implementation timetable, we have taken duly into account all the relevant factors. The explanation is in the ensuing paragraphs.

Petrol Private Cars and Taxis

2. The emission limits for petrol private cars and taxis under the Euro 6 standard are the same as those under the Euro 5 standard, except that the Euro 6 standard contains a particle number (PN) limit for cars equipped with direct injection engines, as in the case of their diesel counterparts. All major vehicle suppliers[1] have affirmed that they could comply with the commencement date of the Euro 6 standard stipulated in the Amendment Regulation. That is why the Motor Traders Association, which represents all major vehicle suppliers on the local market, raised no objection to the proposed commencement date for the new emission standard in its submission to the special meeting of the EA Panel on 24 February 2017 (CB(1)563/16-17(02)).

Diesel Private Cars

3. Since 1998, the Government has adopted the California LEV standards as the statutory limits in the Air Pollution Control (Vehicle Design Standards) (Emission) Regulations (the Regulation) for diesel private cars to discourage their first registration **because of their much higher particulate**

[1] The consultation involved the Motor Traders Association of Hong Kong (MTA), whose members are local representatives of all major motor vehicle manufacturers active on the local market, particularly European and Japanese vehicle manufacturers; the Automotive Council of European Chamber of Commerce in Hong Kong (EuroCham), whose members are European vehicle manufacturers; and the Right Hand Drive Motor Association (Hong Kong) Limited (RHDA), which represents parallel importers.

matter (PM) and nitrogen oxides (NOx) emissions over those of petrol private cars. We tightened the standard from LEV I to LEV II in 2006. The U.S. State of California further upgraded the standard from LEV II to LEV III in 2015. We have thus proposed to make the same tightening under the Amendment Regulation, starting from 1 July 2017.

4. The California standard has been effective in discouraging the first registration of diesel private cars. In 2009, however, the Motor Traders Association argued for allowing the first registration of diesel private cars that could meet the statutory emission test for petrol private cars (i.e. Euro 5) even though they could not meet the statutory California LEV standards. In the absence of evidence that the Euro test for petrol private cars is inadequate for diesel private cars, we agreed to it by exercising the exemption provision in Regulation 3[2] of the Regulation. The diesel private car fleet has hence increased three-fold after 2009 from 2 066 cars to 7 278 in November 2016, much faster than the 35% growth of petrol private cars over the same period.

5. In recent years, there is growing concern in the international community on the high emissions of diesel private cars that have passed the emission test of EU when in real-world driving, even though they do not have defeat devices for passing the emission certification tests. A number of reputable organisations have found that Euro 3 to Euro 6 diesel cars that could meet the respective prescribed emission certification standards in a test laboratory emit substantially above the regulated limit in real-world driving[3]. Below are some of the findings:

i. the Netherlands Organisation for Applied Scientific Research (TNO) sponsored by the Dutch Ministry of Infrastructure and the Environment[4] found, after testing the on-road NOx emission of 16 Euro 6 diesel cars, that their emissions were on average five to six times higher than the regulated limit;

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[2] The Authority may exempt any motor vehicle or class of motor vehicle from the provisions of these regulations or any part thereof if it considers that it would be in the public interest to do so.

[3] Jens Gieseke, Gerben-Jan Gerbrandy , "DRAFT REPORT on the inquiry into emission measurements in the automotive sector (2016/2215(INI))", 5 December 2016, Committee of Inquiry into Emission Measurements in the Automotive Sector of the European Parliament, pp. 4

[4] Gerrit Kadijk, Pim van Mensch, and Jordy Spreen, "Detailed investigations and real-world emission performance of Euro 6 diesel passenger cars" The Netherlands Organisation for applied scientific research, 18 May 2015, pp. 50

ii. the Department for Transport of United Kingdom[5], after testing the on-road NOx emission of 19 Euro 6 diesel cars, found that their emissions were on average over six times higher than the regulated limit;

iii. the International Council on Clean Transportation, an independent non-profit organisation, whose efforts helped reveal the Volkswagen defeat device incident, found that the average on-road NOx emission of Euro 6 diesel cars could even breach the emission limit of Euro 3[6].

6. In light of these latest findings, we informed diesel private car vendors in October 2016 of our intention to cease exercising the exemption provision (see paragraph 4 above) to allow diesel private cars passing the Euro test for petrol private cars to first-register, starting from 1 July 2017. In other words, they will have to comply with the statutory standards set out in the Regulation (i.e. California emission standard, be it LEV II or LEV III), from that date. While ceasing to exercise the exemption provision could be done ahead of, and separately from, tightening of the statutory limit from California LEV II to LEV III, **we did not do so to allow time for diesel private cars vendors to get prepared for the change.**

7. It is also noteworthy that out of their concerns about the air pollution caused by diesel cars, Mayors of Paris, Mexico City, Madrid and Athens[7] signed at the C40[8] Mayors Summit held in Mexico City in December 2016 an Air Quality Declaration, committing to removing all diesel vehicles from their cities by 2025 to tackle air pollution. C40 has also called for the support across the world to join their campaign to reduce urban air pollution by signing a global petition[9], demanding among others vehicle manufacturers to stop producing diesel vehicles by 2025.

8. Below are our responses to the suggestions that have been brought to the special meeting of the Panel on 24 February 2017 for allowing six more

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5 The Department for Transport of United Kingdom. "Vehicle Emissions Testing Programme", April 2016, pp. 23

6 Dr. Peter Mock. "European Vehicle Market Statistics Pocketbook 2014" The International Council on Clean Transportation, 2014, pp. 74

7 Anne Hidalgo, Miguel Ángel Mancera, Manuela Carmena and Giorgos Kaminis. "C40 MAYORS AIR QUALITY COMMITMENT", 1 December 2016

8 C40 is a network of the world's megacities committed to addressing climate change.

9 https://www.change.org/p/car-companies-time-to-end-diesel

months for diesel private car vendors to sell diesel private cars that can only pass the emission test prescribed by the EU for petrol private cars **but not** the statutory California LEV standard –

i. <u>The emissions of diesel private cars should be evaluated holistically because they have an edge over petrol ones for emissions except higher NOx emissions. The relatively small population of diesel private cars is unlikely to create as much adverse impact to roadside air quality as diesel commercial vehicles.</u>

In Hong Kong, high roadside levels of PM (including PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2), which comes mainly from the NOx emissions of vehicles, are our major air pollution challenges. As compared with 1999, we have, as at the end of 2016, reduced the roadside PM_{10} and $PM_{2.5}$ concentrations by about 58% and 52% respectively via a host of vehicle emission control measures[10]. However, the level of NO_2 has only been reduced by 17% with its level being 2.5 times the corresponding limit in the Air Quality Objectives. We are facing a huge challenge to further reduce the roadside NO_2 level.

The high level of NOx emissions of diesel private cars during real-world driving will continue to pose significant risk to roadside air quality, particularly the NO_2 levels, unless the growth of the diesel car fleet is reined in. As mentioned earlier, the number of registered diesel private cars tripled in the period from December 2009 to November 2016, much faster than the corresponding 35% growth of petrol private cars. Diesel, the dominant fuel for commercial vehicles, is not subject to fuel duty; and this could be a key reason leading to considerable growth of the diesel private cars in Hong Kong. If we do not take action to stop from first registration these more polluting diesel private cars, **which cannot comply with the statutory California LEV standard**, the number of diesel private

[10] The main initiatives to tackle particulates and NO_2 problems include :
- i) adaptation of tighter fuel and vehicle emission standards when there is an adequate supply of compliant fuels and vehicles;
- ii) Introduction of liquefied petroleum gas (LPG) vehicles for taxis and light buses;
- iii) retrofitting Euro II and III franchised buses with selective catalytic reduction devices;
- iv) launching of a remote sensing programme for detecting gross emitters among LPG /petrol vehicles ; and
- v) phasing out pre-Euro IV diesel commercial vehicles.

cars will continue to grow at a pace much faster than petrol private cars in the local market as in the past few years, thereby creating more serious roadside air pollution.

As to the suggestion that a wider use of diesel private cars could reduce greenhouse gas (GHG) emissions, we have to point out that the Government has been taking a multi-pronged approach to reduce our carbon footprint. A key component of the approach is to reduce the GHG emissions from the power generation sector, which accounts for about 70% of our carbon emissions, by increasing the use of natural gas in the fuel mix. The fuel mix target for 2020 is to increase the proportion of natural gas for power generation from around 27% in 2015 to around 50% in 2020. For the transportation sector, which accounts for about 17% of the carbon emissions, the Government would continue to adopt better urban planning, ensure the public transport would remain as the preferred choice for daily commute, expand the railway system, and promote low and zero carbon choices such as walking and cycling to reduce the sector's carbon footprint.

ii. <u>The proposed legislation changes for diesel private cars was given in short notice that was insufficient for the manufacturers to react.</u>

From time to time, vehicle vendors have urged us to inform them of the finalized plan for tightening the statutory emission standards for newly registered vehicles not later than October 2016 such that they could decide on their sales plan for the following year. We thus in October 2016 informed them of our intention to cease the acceptance for first registration of diesel private cars that could only pass the Euro test for petrol private cars but not the statutory California LEV standard, and to tighten the statutory limits from California LEV II to LEV III, starting from 1 July 2017. Given the lead time, diesel private car vendors should have sufficient time to adjust their sales plan. This is supported by a letter of a local automotive distributor to the Chairman of the EA Panel dated 21 February 2017 (**Appendix 1)**.

iii. <u>The California LEV III standard is a domestic United States' standard which is not internationally recognized.</u>

The issue is not whether a domestic or international emission standard should be applied to diesel private cars but the need to have an

emission standard stringent enough to effectively reduce the on-road NOx emission of diesel private cars in light of the high roadside NOx pollution that we are facing in Hong Kong.

As a matter of fact, some European cities (such as London and Paris) that are facing the challenge to meet the ambient NO_2 limit recommended by the World Health Organization is blaming the problem on the large presence of diesel private cars in their cities as well. As mentioned in paragraph 7 above, Mayors of Paris, Mexico City, Madrid and Athens have been committed to removing all diesel vehicles from their cities by 2025 to tackle air pollution. Besides, the City of London Corporation, which is the municipal governing body of the City of London, has decreed that it would stop acquiring or hiring diesel light vehicles including private cars. Beijing has also banned the use of diesel private cars since 2013.

We have not adopted such a prohibition approach but consider that only diesel private car models that have been certified to meet the California LEV III standard could be allowed for first registration in Hong Kong so as to contain their negative impact on our roadside air quality.

iv. <u>Diesel private car is more suitable for local traffic conditions, implementing the California LEV III standards on newly registered diesel private car would limit the choice of the consumers.</u>

We are not aware of any complaints about petrol private cars failing to cope with local traffic conditions, not even in the period between 1999 and 2009, when no diesel private cars were first registered. Consumers would continue to have many choices when acquiring private cars, including petrol and electric cars.

v. <u>The Government should accept diesel private cars complying with Euro 6 Real Driving Emission (RDE) requirements, which will substantially reduce their on road NOx emission.</u>

Diesel private cars complying with Euro 6 RDE requirements could still emit NOx much higher than the corresponding regulated limit, particularly in the early phases of the introduction of the RDE test because of the following reasons –

(a) the RDE test of EU for diesel private cars does not fully reflect "real-world driving" because the test will be undertaken under prescribed conditions such as restricting vehicle accelerations and decelerations within a certain range, which is unlikely practised in real-world driving; and

(b) the RDE requirement will start with a monitoring phase in September 2017. In this phase, the RDE test result bears no relevance to the approval of a diesel private car for registration for road use. In other words, diesel private cars could still emit substantially above the regulated limit in real-world driving. It is only from September 2019 that the RDE test result will matter but even so, the RDE test limit will be 2.1 times the corresponding regulated limit. The test limit will be tightened to 1.5 times the regulated limit only from September 2021.

Motion 2: The Government should amend the commencement dates as stipulated under the relevant ordinance to the effect that the commencement dates of relevant emission standards for buses and goods vehicles should be finalized when the following conditions are met:

(a) Sufficient choices of brands (including Japanese or Chinese ones) are available in the market; and

(b) Relevant technologies (including softwares for emission testing) adopted by car manufacturers are made public.

The Amendment Regulation requires the tightening of the emission standards for newly registered buses (except bus with design weight not more than 9 tonnes) and goods vehicles from Euro V to Euro VI with effect from 1 January 2018. **The commencement date has already been deferred by one year at the request of the transport trades (including the non-franchised bus trade and the goods vehicle trade) during the consultation.** Our proposed timetable for tightening the emission standard lags behind that of South Korea and is the same as that of Singapore.

2. Our responses to the two conditions are as follows –

Condition (a): Sufficient choices of brands (including Japanese or Chinese ones) are available in the market

3. In its letter to the special meeting of the Panel on 24 February 2017 (CB(1)563/16-17(02)), the Motor Traders Association, which represents all major European and Japanese goods vehicle and bus suppliers on the local market, affirmed that it has no objection to the proposed timetable for tightening the emission standard for such newly registered vehicles to Euro VI level, starting from 1 January 2018. In our meeting with the Motor Traders Association, its members have also assured us that the introduction of the Euro VI emission standard will not disrupt the supply of vehicles on the local market and the vehicle supply will remain adequate.

4. **We appreciate that some operators of non-franchised buses or heavy duty crane lorries, which could take up to 12 months to complete their body building, might worry that their new Euro V vehicles might not be able to complete the body building before the commencement of the Euro VI emission standard.** To cater for these Euro V vehicles, we have a standing arrangement that as long as they arrive before the commencement of the new emission standard, we will allow them to first-register even their body building work is completed after new standard is in force.

5. Regarding Mainland vehicle suppliers, they mainly supply non-franchised buses to the local market. Mainland buses manufacturers mainly procure their engines from European or American engine suppliers, who have no problem supplying Euro VI engines. If bus buyers have interest in their Euro VI buses, these bus suppliers have no problem in delivering Euro VI buses. So far, two brands have already type-approved their Euro VI buses in response to buyers' interest.

6. At the special meeting on 24 February 2017, concerns were also raised on the vehicle cost and reliability of Euro VI vehicles. Below are our responses –

<u>Vehicle Cost</u>

7. Vehicle prices are determined by the market with dominating factors including economic conditions, currency rates, sales strategies, competition in the market, etc. The most effective way to keep vehicle prices at a reasonable level in the course of tightening vehicle emission standard is to maintain adequate competition on the local market. That is why adequate

vehicle supply is a key consideration when we set the commencement date of a new emission standard. As explained above, the commencement date in the Amendment Regulation will not jeopardize competition on the local vehicle market because all major vehicle suppliers can readily make available Euro VI vehicles. In fact, Singapore, which also relies on import to meet its vehicle demand, is tightening its vehicle standards to Euro VI from 1 January 2018, same as Hong Kong.

Reliability

8. To meet the Euro VI emission standards, the vehicles will basically rely on emission control technologies which have already been deployed in Euro IV and V vehicles but just to a more comprehensive extent. The EU started introducing Euro VI emission standard in December 2013. As vehicle manufacturers are now more experienced with these emission control technologies, it should benefit the overall development and performance of Euro VI vehicles. We are not aware of any reports concluding that Euro VI vehicles are less reliable than their predecessors.

Condition (b) Relevant technologies (including software for emission testing) adopted by car manufacturers are made public

9. As part of the Euro VI emission standard requirements, vehicle manufacturers are required to make available vehicle maintenance information though a cost may apply. Some of them have also explained to us that it is not in their interest to monopolize the maintenance of their vehicles by restricting vehicle mechanics' access to diagnostic tools and software. In fact, the more vehicle mechanics know how to repair their vehicles, the more likely vehicle buyers will consider opting for their vehicles.

10. To help the vehicle maintenance trade repair commercial vehicles equipped with advanced diesel engines, we, in conjunction with vehicle manufacturers, the Vocational Training Council (VTC) and commercial vehicle repair associations representing medium and small vehicle repair workshops (including Hong Kong Vehicle Repair Merchants Association and Hong Kong Commercial Vehicle Maintenance Association) have been conducting technical seminars on advanced diesel engines. The response has been encouraging. All major European and Japanese vehicle manufacturers have already pledged to participate in these seminars.

Furthermore, suppliers of engine lubricants and diesel injection equipment, which are essential aspects of advanced diesel engines, have also given talks in the technical seminars.

11. Since 2015, about 1 200 vehicle mechanics have attended seven technical seminars. The vehicle maintenance trade found the maintenance seminars useful to help the trade master the skill to repair diesel vehicles of advanced engine design and requested us to hold more seminars. Their submissions to the special meeting of the Panel on 24 February also conveyed the request (CB(1)563/16-17(03) and CB(1)563/16-17(07)).

12. We will continue to cooperate with the VTC, vehicle suppliers, vehicle maintenance trade and other relating bodies in organizing more in depth training. We plan to hold six seminars in 2017. Details of these seminars are in **Appendix 2**. The seminar materials will be uploaded to EPD's website.

13. On Board Diagnostic[11] (OBD) systems for heavy duty vehicles were first introduced in 2005 as part of the Euro IV emission standards. OBD checkers (including software) would be used for the maintenance of such vehicles. Vehicle suppliers will make available such checkers (including software) at a reasonable cost. However, there are also third party-OBD checkers on the market.

[11] Definition of OBD as defined in EU Commission Regulation 582/2011 is "A system on board a vehicle or connected to an engine which has the capability of detecting malfunctions, and, if applicable, of indicating their occurrence by means of an alert system, of identifying the likely area of malfunction by means of information stored in computer memory, and of communicating that information off-board"

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Inchcape

Appendix 1

21 Feb, 2017

Ms. Tanya CHAN,
Chairman of Panel on Environmental Affairs
Legislative Council Secretariat
Legislative Council Complex
1 Legislative Council Road
Central, Hong Kong

Dear Ms. Chan,

Re: Support the Proposal to tighten emission standard of newly registered vehicles by EPD

Inchcape is a leading automotive distributor in Hong Kong for renowned global motor vehicle brands including Toyota, Lexus, Hino, Jaguar, Land Rover, Ford, Maxus and Sunwin by having 31% overall market share. Over the decades, Inchcape has given full support in bringing cleaner and more environmental friendly car models to local market for improving the air quality.

We fully support Environmental Protection Department (EPD) of the proposal to tighten the statutory emission standards for newly registered motor vehicles to Euro VI in phases, and for newly registered diesel private cars to California LEV III, starting from 1 July 2017.

Although some diesel private car vendors argued that EPD's proposed legislation changes for diesel private cars was given in short notice that time was insufficient for the manufacturers to react. In fact, EPD has officially announced the implementation schedule for newly registered diesel private cars to California LEV III in October 2016, which is almost 9 months prior to the actual implementation date. Therefore, in our opinion this is an appropriate timeline providing sufficient time for the manufacturers to react on the proposed legislation changes.

We understand that diesel vehicles emit more NOx when compared with gasoline engine vehicles and the situation will be worse in real driving situations. Importantly, researches from European Parliament and International Council on Clean Transportation (ICCT) had respectively shown that * the current real world NOx emission from diesel passenger cars are 500% higher in average than laboratory testing figures and such figures are even double the emission level of heavy duty diesel trucks and buses.

Since Hong Kong's roadside air quality has been suffering from high NOx levels, which has great impact on the public health and adversely affect life quality of Hong Kong citizens. The most stringent California LEV III should be adopted for newly registered diesel private cars as scheduled on 1 July 2017 to accelerate the process to improve NOx emission levels from diesel cars. To better protect public health, we should no longer delay the implementation of California

LEV III even the Real Driving Emission (RDE) of Euro 6c regulation standards which have been scheduled to commence in September 2019.

In view of the above, we highly concern the public health of Hong Kong and believe that the proposal to tighten the statutory emission standards for newly registered motor vehicles can bring a significant and sustainable improvement of the air quality.

Thank you very much for your kind attention and we will be happy to meet with you and further discuss on this matter. In the meantime, if you have any queries, please feel free to contact me at (852) 2880 1382 on any other details.

Yours sincerely
For and on behalf of
Inchcape HK

Patrick S. Lee
CEO, Inchcape Greater China

References:

* i) Baptiste Chatain (2016), Parliament decides not to veto car emissions test update, The European Parliament (http://www.europarl.europa.eu/news/en/news-room/20160129IPR11905/parliament-decides-not-to-veto-car-emissions-test-update)
ii) James McLaughlin (2017), ICCT: real-world NOx from Euro 6 diesel passenger cars more than 2x Euro VI diesel trucks, Green Car Congress (http://www.greencarcongress.com/about3.html#contact)

CC. Mr. WONG Kam-sing, GBS, JP, Secretary for the Environment and Mr MOK Wai-chuen, JP, Assistant Director (Air Policy) of Environmental Protection Department

Appendix 2

Information on the Seminars and Co-organising Companies/Organisations

Seminars

Date	Topic
30/4/2015	Technical Seminar: Proper Maintenance of Heavy Duty Commercial Vehicles of Euro IV and V Emission Standards (Shell, Scania, Hino)
21/5/2015	Technical Seminar: Proper Maintenance of Heavy Duty Commercial Vehicles of Euro IV and V Emission Standards (Shell, Scania, Hino)
27/11/2015	Technical Seminar on Emission Control System of Diesel Commercial Vehicles of Euro V and VI Emission Standards : Scania, Crown, IVECO, MAN
11/8/2016	Technical Seminar on Proper Maintenance of Common Rail Diesel Injection System for Vehicle Emission Reduction : Bosch
20/10/2016	Technical Seminar: Heavy Duty Vehicle Repair, Maintenance and Free Emission Test (EPD/IVE/HKVRMA/HKCVMA)
22/10/2016	Technical Seminar: Heavy Duty Vehicle Repair, Maintenance and Free Emission Test (EPD/IVE/HKVRMA/HKCVMA)
8/11/2016	Technical Seminar: Heavy Duty Vehicle Repair, Maintenance and Free Emission Test (EPD/IVE/HKVRMA/HKCVMA)
24/02/2017	Technical Seminar on Diesel Commercial Vehicles: Volkswagen
16/03/2017	Technical Seminar on Diesel Commercial Vehicles: Mercedes Benz
20/4/2017	Technical Seminar on Diesel Commercial Vehicles: Mitsubishi Fuso
May/2017	Technical Seminar on Diesel Commercial Vehicles: Hino
June/2017	Technical Seminar on Diesel Commercial Vehicles: MAN
Sept/2017	Technical Seminar on Diesel Commercial Vehicles: IVECO

Co-organising companies and organisations

Vehicle Manufacturers / Dealers	Crown, Hino, IVECO, MAN, Mercedes Benz, Mitsubishi Fuso, Scania, Volkswagen
Fuel/Lubricant Supplier	Shell
Injection Equipment Specialist	Bosch
Repair Trade Associations	Environmental Vehicle Repairers Association Limited (EVRA) Hong Kong Commercial Vehicle Maintenance Association Limited (HKCVMA) Hong Kong Vehicle Repair Merchants Association Limited (HKVRMA)
Professional Organisations	The Hong Kong Institution of Engineers (HKIE) The Institute of The Motor Industry Hong Kong (IMI HK) Society of Operation Engineers (Hong Kong Region) Limited (SOE HK) SAE International (Hong Kong) Limited (SAE-HK)
Training Institution	Vocation Training Council: -Jockey Club Heavy Vehicle Emissions Testing and Research Centre -Pro-Act Training and Development Centre (Automobile)