立法會 Legislative Council

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Panel on Environmental Affairs

Meeting on 28 January 2019

Updated background brief on measures to promote the use of electric vehicles prepared by the Legislative Council Secretariat

Purpose

This paper provides updated background information on the Government's measures to promote the use of electric vehicles ("EVs") in Hong Kong. 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 ("LegCo").

Background

2. Vehicle tailpipe emissions are the key roadside air pollution source. To improve roadside air quality, the Government has been promoting the replacement of conventional vehicles by EVs, which do not have tailpipe emissions and are more energy efficient. Since commercial vehicles ("CVs") account for 95% of the vehicular emissions of respirable suspended particulates and nitrogen oxides, which are major air pollutants, CVs have all along been a major target of the Government's measures to improve roadside air quality.

Electric commercial vehicles

3. As technologies for electric CVs ("e-CVs") are still under development, with their prices generally higher than their conventional counterparts, the Government currently focuses on promoting e-CVs through the following measures:

- (a) the first registration tax ("FRT") of e-CVs has been waived since 1994 until 31 March 2021 to encourage owners to purchase e-CVs and promote the development of e-CVs;¹
- (b) since 2010, enterprises which procure environment-friendly vehicles including EVs are allowed full profits tax deduction for the capital expenditures on the vehicles in the first year of procurement;
- (c) a \$300 million Pilot Green Transport Fund ("PGTF") has been put in place since March 2011 to encourage the public transport sectors, goods vehicle operators and non-profit-making organizations to test out green innovative transport technologies, including e-CVs. As at the end of October 2018, PGTF has approved 135 trials with a total subsidy of about \$138 million, involving e-CVs, hybrid CVs, etc.; ² and
- (d) \$180 million was set aside to fully subsidize the franchised bus companies ("FBCs") to purchase 36 single-deck electric buses (including 28 battery-electric buses and eight supercapacitor buses and their charging facilities) for trial on a number of routes. At present, 26 battery-electric buses and four supercapacitor buses have commenced operation. The remaining two battery-electric buses are under re-tendering process, and are expected to commence operation by the end of 2019 at the earliest. Besides,

- FRT rates of CVs (except van-type light goods vehicles ("LGVs") not exceeding 1.9 tonnes permitted gross vehicle weight) are 3.7% to 17% of their taxable values depending on their vehicle classes, and motor cycles and motor tricycles at 35%.
- FRT rates of van-type LGVs not exceeding 1.9 tonnes permitted gross vehicle weight are 35% on the first \$150,000 of vehicle taxable value, 65% on the next \$150,000 and 85% on the remainder.
- ² As at the end of October 2018, a total of 67 trials have been completed for 42 electric LGVs ("e-LGVs") (van type), eight single-deck electric buses, three electric taxis, among other types of green vehicles. Results of the trials have reflected that high production cost, limited service life, long charging time and low energy density of batteries are the key constraints for e-CVs to become popular. In comparison, e-LGVs (van type) are more likely to gain popularity and are suitable for operators who require relatively lower daily mileage and payload because the batteries of these vehicles can be topped up outside operation hours. However, e-LGVs might not be suitable for transport trades requiring higher mileage and payload.

¹ The FRT of a conventional vehicle is derived from the taxable value of the vehicle times the appropriate tax rate. The tax rates for different vehicle classes are shown below:

⁻ FRT rates of private cars are 40% on the first \$150,000 of vehicle taxable value, 75% on the next \$150,000, 100% on the next \$200,000 and 115% on the remainder.

four more supercapacitor buses will commence operation in the first quarter and the second quarter of 2019 respectively.

Electric private cars

4. For electric private cars ("e-PCs"), the Government's standing policy is to encourage the public to use public transport as far as possible, and should they need to acquire private cars ("PCs"), choose e-PCs. The Government's main supporting measures include offering financial incentives such as tax concessions and lower annual vehicle licence fees, and facilitating the development and improvement of charging networks for e-PCs. As at October 2018, there were 10 940 registered e-PCs, representing around 1.8% of all registered PCs in Hong Kong.

Financial incentives

5. The FRT for e-PCs was waived in full from 1994 to 31 March 2017. Having considered various factors (including the enhanced performance of e-PCs to meet drivers' general needs, availability of more affordable models of e-PCs with greater varieties in local market, and the Government's established public transport-oriented policy, etc.), the Government had capped the FRT concessions for e-PCs at \$97,500 from 1 April 2017 to 31 March 2018, which was subsequently extended by three years to 31 March 2021 as announced in the 2018-2019 Budget.

6. In February 2018, the Government launched a "One-for-One Replacement" Scheme to allow PC owners who arrange to scrap and deregister their own eligible old PC (PC with an internal combustion engine or e-PC) and then first register a new e-PC to enjoy a higher FRT concession of up to \$250,000.

7. E-PCs also enjoy a lower annual vehicle licence fee under the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374E).³ The annual vehicle licence fees for e-PCs range from about \$600 to \$1,100, which are significantly lower than those for conventional PCs ranging from \$3,815 (for petrol PCs with engine cylinder capacity not exceeding 1 500 cc) to \$12,675 (for diesel PCs with engine cylinder capacity exceeding 4 500 cc).

³ Annual vehicle licence for e-PC is charged based on the unladen weight of the vehicle, at a fee of \$440 for the first tonne and \$95 for each additional 250 kg or part thereof. Annual vehicle licence for conventional PC is charged based on the cylinder capacity of the engine ranging from \$3,815 (for petrol PCs with engine cylinder capacity not exceeding 1 500 cc) to \$12,675 (for diesel PCs with engine cylinder capacity exceeding 4 500 cc).

Promoting the development and enhancement of charging networks

8. Regarding the charging arrangements for e-PCs, the Government's policy direction is that e-PC owners should perform daily charging of their e-PCs by using charging facilities at their home, workplace or other suitable places (including charging facilities provided by e-PC suppliers). Public charging facilities in Hong Kong are supplementary in nature, set up for EVs to top up their batteries at times of occasional needs. They do not serve as daily charging facilities or their alternatives.

9. To facilitate the installation of charging facilities in private premises, the Government has tightened the granting of concession on gross floor area for private car parks in new buildings from April 2011 to encourage developers to provide the EV charging-enabling infrastructure, including provision of sufficient power supply, cabling and conduits for all parking spaces in the buildings concerned. In 2011, the Hong Kong Planning Standards and Guidelines was amended to recommend 30% of private parking spaces in new buildings to be installed with charging facilities for e-PCs.

10. For existing private premises, as there are constraints in installing charging facilities in their car parks, the Environmental Protection Department ("EPD") established in 2011 a dedicated team and a hotline to provide information and technical support as necessary. Besides, EPD has appealed to owners' corporations for their support to installing EV chargers at their premises upon request by EV users, and has shared successful experience with the property management sector. The two power companies also provide technical advice to EV owners and render service to connect power supply for car parking spaces at their homes. In recent years, several private companies have been providing EV owners, housing estates or business establishments with one-stop EV charging services, including installation of charging facilities at EV owners' parking spaces and provision of charging services at other specified locations.

11. Information on public chargers, including their locations, types and numbers, is currently available on EPD webpages. Equipment is being installed in public chargers in government car parks for trial on sending instant electronic information of public chargers' utilization to government electronic platforms for public reference. Certain EV charging service providers and EV suppliers are providing mobile applications by which EV owners can check instant information of chargers available and make reservations.

Ombudsman's direct investigation

12. There have been criticizms that the provision of public EV chargers has not kept pace with the growth in the number of e-PCs in recent years. As this

may impede the wider use of EVs in Hong Kong, the Ombudsman initiated in September 2017 a direct investigation to explore in depth whether the Government's planning and arrangements for ancillary facilities are in line with its policy on promoting the use of EVs.⁴

Major views and concerns expressed by Members

13. The Panel on Environmental Affairs ("EA Panel") discussed issues relating to the promotion of EVs at various meetings in recent years. Related issues were also raised when EA Panel discussed the Government's measures to improve roadside air quality. Members' major views and concerns raised at these meetings are summarized in the ensuing paragraphs.

Financial incentives for private car owners to switch to electric vehicles

14. Some Members criticized that the Administration had not set any targets and long-term plan for promoting wider adoption of EVs, and considered that the current financial incentives for PC owners to switch to e-PCs remained insufficient. They called on the Administration to restore the full waiver of FRT for e-PCs, or offer other financial incentives to attract vehicle owners to switch to EVs, such as ex-gratia payments to owners of fuel-engined vehicles replacing such vehicles with EVs.

15. The Administration advised that for e-PCs, the Government's standing policy was to encourage the public to use public transport as far as possible, and should they need to acquire PCs, choose e-PCs. The main supporting measures included offering financial incentives such as tax concession and lower annual vehicle licence fee, as well as facilitating the development and improvement of charging networks for e-PCs. Taking into account factors such as the technological development and market situation of EVs, as well as road traffic conditions and views of stakeholders, the Administration considered it necessary to balance the control of the overall growth of PCs to avoid causing traffic congestion and aggravating roadside air pollution, and encouraging vehicle owners to go for EVs when purchasing PCs. Therefore, apart from continuing with the current FRT concession up to \$97,500 for e-PCs, the Administration had introduced the "One-for-One Replacement" Scheme in the same period to allow eligible existing vehicle owners who bought a new e-PC and scrapped their own eligible old PC to enjoy a higher FRT concession of up The Administration considered that this arrangement already to \$250,000. provided suitable financial incentives for eligible existing PC owners to purchase e-PCs when replacing their cars. The Administration would review

⁴ According to the website of the Ombudsman as at 18 January 2019, the case is still under investigation.

the existing FRT arrangements for EVs before their expiry in 2021, and had no plan to revise the established arrangements at this stage.

16. Members opined that the application criteria of the One-for-One Replacement Scheme were overly stringent. To be eligible for the Scheme, the old PC must have been first registered in Hong Kong for at least six years, the vehicle owner must have been the registered owner of the old PC for three years or more without interruption, and the old PC must have been licensed for at least 20 months within the 24 months immediately before its de-registration. Members suggested that the Government should review the effectiveness of the Scheme and relax the application criteria.

17. The Administration advised that the objective of the said application criteria was to prevent people from gathering a large number of old PCs from overseas or second-hand markets to participate in the One-for-One Replacement Scheme for profit making. Data showed that, by the time the Scheme ended on 31 March 2021, the total number of PCs meeting the two criteria of old PC having been first registered for six years or more and its owner having owned the PC for three years or more without interruption would be around 470 000, accounting for about three-fourth of the total number of PCs, which was not a small number. At this stage, the Administration had no plan to revise the application criteria.

Development of charging facilities

18. Members called on the Administration to further facilitate the installation of EV charging facilities on private premises and expand the public EV charging network expeditiously, as well as setting targets and timeframe for implementation in this regard.

19. The Administration responded that the policy direction was that the daily charging of e-PCs should be performed with charging facilities at e-PC owners' homes or workplaces or other suitable places (including charging facilities provided by e-PC suppliers). Therefore, the Administration's priority was to facilitate and encourage the installation of charging facilities on private premises when planning for the development of EV charging facilities. In the light of the rapid changes in the usage of EVs, the Government was reviewing the various policies and measures on promoting the use of EVs, including exploring ways to encourage installation of charging facilities to tie in with the usage of EVs, retrofitting existing car parks with charging facilities and updating the relevant guidelines and planning standards as necessary.

20. At its meeting on 26 November 2018, EA Panel agreed to set up a subcommittee to review and study Hong Kong's policies on EVs, including

policy implementation, target setting, support measures and other related matters.⁵

Adoption of electric vehicles by transport trades

Effectiveness of the Pilot Green Transport Fund

21. Members expressed disappointment about the slow growth in the number of licensed e-CVs, and questioned on the effectiveness of PGTF in promoting the use of EVs by the transport trades.

22. The Administration advised that commercial adoption of EVs was still constrained by factors including the long charging time, low energy density, heavy weight and high cost of EV batteries, as well as limited choices of e-CV models on the market. As light goods vehicles ("LGVs") generally did not operate round the clock and might have a lower daily mileage and lighter payload, the Administration had made electric LGVs a key focus of promotion of PGTF. Regarding replacement of conventional vehicles, the Administration advised that, in line with the practice of many other places, the current priority was to replace the most polluting diesel vehicles. The Administration would continue to explore further measures to encourage the replacement of conventional PCs with electric ones.

Trial of electric buses

23. Members expressed concern about the lack of progress in taking forward the use of electric buses in Hong Kong even though the trial of such buses had commenced for some years since end of 2015, in contrast to the wider adoption of e-CVs (such as electric buses and taxis) in neighbouring cities like Shenzhen. They urged the Administration to set targets and timeframe for promoting wider use of electric buses. Noting that the preliminary trial results of battery-electric buses showed that these buses in operation encountered problem of limited driving range, i.e. the driving range could only reach 190 km on average which fell far short of the 250 km claimed by the manufacturer, some Members queried whether the manufacturer had provided false description of the performance of the electric buses under trial.

24. The Administration explained that the preliminary trial results showed that the electricity consumption per kilometre under the operational mode of hilly terrains in Hong Kong and high demand on air-conditioning was higher than that in other places and the situation was even worse in hot and humid summer. EPD together with FBCs and manufacturer were exploring the

⁵ The subcommittee is awaiting activation according to the order of subcommittees on policy issues on the waiting list in the Sixth LegCo.

possibility of increasing the battery efficiency and identifying suitable routes with their operational conditions which could cope with the limited driving range. The Administration also pointed out that for the supercapacitor buses, the operation of the first batch of two had been satisfactory but there was unstable operation of supercapacitors under high temperature in summer. The FBC concerned was working with the bus supplier on the performance of supercapacitor buses to ensure that the buses were in stable operation.

Recovery and reuse of EV batteries

25. In light of the successive replacement of batteries of registered EVs, Members requested the Administration to formulate expeditiously a policy for the recovery and reuse of EV batteries, so as to prevent such batteries containing toxic substances from being dumped at landfills, seriously polluting the environment and damaging the ecology.

26. The Administration advised that at present, the age of most EVs in Hong Kong was still relatively low and there were few retired EV batteries. In anticipation of the growth and wider adoption of EVs in the future, apart from regulating the disposal of waste batteries according to the Waste Disposal Ordinance (Cap. 354), EPD had started discussion with EV suppliers for the promotion of proper collection and handling of waste EV batteries and the long-term arrangements. According to the Administration, various EV suppliers had arranged for recovery of batteries from EVs supplied by them.

Council motion and questions

27. At the meeting of 11 April 2018, LegCo passed a motion with 13 suggestions on "Promoting the Popularization of Electric Vehicles". The wording of the motion is attached in **Appendix I** and the hyperlink to the progress report provided by the Administration is in **Appendix II**.

28. In the Sixth LegCo, Hon Frankie YICK, Hon HUI Chi-fung, Hon CHAN Hak-kan, Hon Kenneth LEUNG and Hon Charles Peter MOK raised questions related to the Government's measures to promote the use of EVs. The questions and the Administration's replies are hyperlinked in **Appendix II**.

Recent development

29. At the EA Panel meeting on 28 January 2019, the Administration will brief members on the progress of EV promotion in Hong Kong and possible measures and initiatives for the development and enhancement of the charging network for e-PCs.

Relevant papers

30. A list of relevant papers is set out in **Appendix II**.

Council Business Division 1 Legislative Council Secretariat 22 January 2019

(Translation)

Motion on "Promoting the popularization of electric vehicles" moved by Hon Frankie YICK at the Council meeting of 11 April 2018

Motion as amended by Hon Kenneth LEUNG, Hon Charles Peter MOK, Ir Dr Hon LO Wai-kwok, Hon YUNG Hoi-yan, Hon CHAN Hak-kan and Hon Tanya CHAN

That, climate change and air pollution have become increasingly serious worldwide; since emission from fuel-engined vehicles is one of the main sources of roadside air pollution, the governments of various countries, including China, Norway, Germany and the United Kingdom, have announced the prohibition of sale of fuel-engined vehicles successively after 2025; meanwhile, the biggest vehicle manufacturer in the world has indicated that it will completely cease the production of fuel-engined vehicles in 2050, and various vehicle manufacturers have also indicated that they will inject more resources into the research and development of new-generation zero-emission electric vehicles ('EVs'), thus evident that the production of EVs has become the general direction of the development of the automobile industry worldwide; the SAR Government has waived the first registration tax for EVs for more than 20 years since 1994, but as at end of August 2017, the result has been unsatisfactory with only 11 033 EVs in Hong Kong, accounting for 1.3% of the total number of registered vehicles in the territory; meanwhile, the SAR Government has since 1 April 2017 abolished the full waiver of first registration tax for electric private cars and instead capped their first registration tax concession at \$97,500, thus impeding the pace of promoting the popularization of electric private cars; to further promote the popularization of EVs, this Council urges the SAR Government to:

- comprehensively review the policy on the promotion of EVs and set phased targets for such promotion, such as setting a target proportion of EVs (including electric private cars and electric commercial vehicles) among registered vehicles in Hong Kong;
- (2) amend the relevant provisions of the Buildings Ordinance to mandate that a specified percentage of parking spaces in all newly constructed commercial and residential buildings must be equipped with charging facilities for EVs, and provide incentives and technical support to encourage owners of old buildings to install the relevant facilities;

- (3) review the provision of ancillary facilities for charging EVs, including conducting a study on retrofitting the existing car parks in government properties and public housing estates, on-street parking spaces and public car parks with charging facilities for EVs, gradually raise the charging speed of standard EV chargers to medium or quick level, and legislate on the regulation of occupation of EV parking spaces by non-EVs;
- (4) in light of the successive replacement of batteries of registered EVs, formulate expeditiously a policy for the recovery and reuse of EV batteries, so as to prevent such batteries containing toxic substances from being dumped at landfills, seriously polluting the environment and damaging the ecology;
- (5) provide funding support for tertiary institutions to offer programmes on the design, scientific research, maintenance, etc. of EVs for nurturing talents for the EV industry, so as to assist Hong Kong in developing the industry of EVs or EV parts; and
- (6) restore the full waiver of first registration tax for electric private cars to incentivize members of the public to use electric private cars instead of fuel-engined private cars of higher emission; and
- (7) conduct a study on using the revenue from EV registration tax to finance environmental protection work and develop charging facilities, and enhance public education in relation to EVs;
- (8) examine the development strategy for environment-friendly vehicles in Hong Kong; and
- (9) corresponding to its vigorous promotion of the development of scientific research and innovation and technology, support the industry to develop EV batteries and explore the possibility of interoperability among chargers of various standards, so as to further facilitate the use of EVs; and
- (10) review the mode of subsidization and effectiveness of the Pilot Green Transport Fund, with a view to expediting the promotion of the switch of public transport and commercial vehicles to EVs;
- (11) launch an official mobile application for EVs to provide drivers with information about EVs, including real-time information on the availability of charging-equipped parking spaces across the territory and the latest official information in relation to EVs; and

- (12) offer financial incentives to attract vehicle owners to switch to EVs, including conducting a study on offering ex gratia payments to owners of fuel-engined vehicles replacing such vehicles with EVs; and
- (13) allocate resources to enhance publicity and promotion to encourage property owners to install more charging facilities in the car parks of private housing estates, so as to perfect the charging network in the community.

Appendix II

Measures to promote the use of electric vehicles

List of relevant papers

Date	Event	Paper
March 2014	Subcommittee on Proposed Resolution under Section 5(4) of the Motor Vehicles (First Registration Tax) Ordinance	Report of the Subcommittee (LC Paper No. <u>CB(1)1078/13-14</u>)
24 March 2014	Meeting of Panel on Environmental Affairs ("EA Panel")	Administration's paper on "Progress of the Pilot Green Transport Fund" (LC Paper No. <u>CB(1)1104/13-14(06)</u>) Minutes of meeting (LC Paper No. <u>CB(1)1654/13-14</u>)
26 January 2015	Policy briefing cum meeting of EA Panel	Administration's paper on "2015 Policy Address – Policy initiatives of Environment Bureau: Environmental protection" (LC Paper No. <u>CB(1)436/14-15(01)</u>) Minutes of meeting (LC Paper No. <u>CB(1)674/14-15</u>)
23 March 2015	EA Panel meeting	Administration's paper on "2015-16 Budget- related initiatives of Environmental Protection" (LC Paper No. $CB(1)652/14-15(03)$) Minutes of meeting (LC Paper No. $CB(1)847/14-15$)
21 July 2015	EA Panel meeting	Administration's paper on "Progress report on the Pilot Green Transport Fund" (LC Paper No. <u>CB(1)1113/14-15(01)</u>) Minutes of meeting (LC Paper No. <u>CB(1)1270/14-15</u>)

Date	Event	Paper
25 January 2016	Policy briefing cum meeting of EA Panel	Administration's paper on "2016 Policy Address – Policy initiatives of Environment Bureau: Environmental protection" (LC Paper No. <u>CB(1)459/15-16(03)</u>) Minutes of meeting (LC Paper No. <u>CB(1)739/15-16</u>)
		(Le l'uper 10. <u>eb(1)/35/13 10</u>)
23 January 2017	Policy briefing cum meeting of EA Panel	 Policy initiatives of Environment Bureau: Environmental protection" (LC Paper No. <u>CB(1)451/16-17(01)</u>)
		Minutes of meeting (LC Paper No. <u>CB(1)683/16-17</u>)
27 February 2017	EA Panel meeting	Administration's paper on "Promoting the Use of Electric Vehicles" (LC Paper No. <u>CB(1)574/16-17(04)</u>) Minutes of meeting (LC Paper No. <u>CB(1)783/16-17</u>)
		Administration's follow-up papers (LC Paper No. $CB(1)725/16-17(01)$) (LC Paper No. $CB(1)881/16-17(02)$)
22 May 2017	EA Panel meeting	Administration's paper on "Improvement of roadside air quality" (LC Paper No. <u>CB(1)949/16-17(03)</u>)
		Minutes of meeting (LC Paper No. <u>CB(1)1369/16-17</u>)
30 October 2017	Policy briefing cum meeting of EA Panel	 Policy initiatives of Environment Bureau: Environmental protection" (LC Paper No. <u>CB(1)75/17-18(01)</u>) Minutes of meeting
		(LC Paper No. <u>CB(1)399/17-18</u>)

Date	Event	Paper
26 February 2018	EA Panel meeting	Administration's paper on "Promoting the Use of Electric Vehicles" (LC Paper No. <u>CB(1)602/17-18(03)</u>) Minutes of meeting (LC Paper No. <u>CB(1)742/17-18</u>)
11 April 2018	Motionon"PromotingthePopularizationofElectricVehicles"passed at the Councilmeeting	Wording of the motion passed Progress report
19 December 2018	EA Panel meeting	Administration's paper on "Progress on Improving Roadside Air Quality" (LC Paper No. <u>CB(1)319/18-19(04)</u>)

Hyperlinks to relevant Council Questions:

Date	Council Question
14 December 2016	Press release on Council question (oral) raised by Hon Frankie YICK
31 May 2017	Press release on Council question (written) raised by Hon HUI Chi-fung
25 October 2017	Press release on Council question (written) raised by Hon CHAN Hak-kan
13 December 2017	Press release on Council question (oral) raised by Hon CHAN Hak-kan
31 January 2018	Press release on Council question (oral) raised by Hon Kenneth LEUNG
7 February 2018	Press release on Council question (oral) raised by Hon Charles Peter MOK

Date	Council Question
24 October 2018	Press release on Council question (written) raised by Hon Tanya CHAN
12 December 2018	Press release on Council question (written) raised by Hon Jeremy TAM
12 December 2018	Press release on Council question (oral) raised by Hon Kenneth LEUNG

Hyperlinks to other documents:

28 September 2017	Press release on "Ombudsman probes Government's planning and arrangements for ancillary facilities for electric private vehicles
February 2018	Information released by the Transport Department on "How to Participate in the One-for-One Replacement Scheme for Higher First Registration Tax Concession for Electric Private Cars (Effective from 28 February 2018 to 31 March 2021)"