LCQ20: Promoting popularisation of electric vehicles

Following is a question by Dr Hon Elizabeth Quat and a written reply by the Secretary for the Environment, Mr Wong Kam-sing, in the Legislative Council today (February 27):

Question:

Road transport is a major emission source of air pollutants such as nitrogen oxides, volatile organic compounds and carbon monoxide, and exhaust emissions from fuel-engined vehicles are the major source of roadside air pollutants. It is learnt that promoting the popularisation of electric vehicles (EVs) is conducive to improving air quality, and slowing down global warming by reducing carbon emissions. In this connection, will the Government inform this Council:

(1) whether it will consider afresh increasing the concessions on the first registration tax for electric private cars and hybrid electric vehicles; if so, of the details; if not, the reasons for that;

(2) whether site searches were conducted last year for providing new public charging facilities for EVs; if so, of the details; if not, the reasons for that;

(3) whether it took the initiative, in the past five years, to contact the property management companies and owners' corporations of private buildings for gaining an understanding of their concerns regarding the installation of charging facilities for EVs in their buildings; if so, of the details (including the number of meetings concerned); if not, the reasons for that;

(4) whether it will consider providing one-off subsidies for retrofitting charging facilities for EVs in existing private car parks; if so, of the details; if not, the reasons for that;

(5) whether it will consider installing public charging facilities for EVs in locations such as on-street parking spaces, petrol filling stations as well as idle spaces underneath flyovers and idle sites in industrial areas; if so, of the details; if not, the reasons for that;

(6) whether it will consider setting up an inter-departmental working group to provide central co-ordination for the installation of charging facilities for EVs; if so, of the details; if not, the reasons for that;

(7) whether it will unify the charging standards for all EVs in Hong Kong; if so, of the details; if not, the reasons for that;

(8) whether it will raise the subsidy caps for local research and development

(R&D) projects concerning electric commercial vehicles (e-CVs) under the Pilot Green Transport Fund (PGTF), and provide additional subsidies for successful R&D projects; if so, of the details; if not, the reasons for that;

(9) whether the current review of PGTF covers the following areas: (i) shortening the testing time required for subsidised EV technologies, (ii) shortening the time needed for vetting and approving applications, (iii) expanding the funding scope to include commercial private cars, (iv) relaxing the eligibility criteria for applicants so that new operators who have been carrying out business in the relevant transport service for less than one year may apply for the subsidies under PGTF, and (v) assisting the trade in obtaining passenger service licences needed for electric tourist coaches under trial; if so, of the details; if not, the reasons for that;

(10) whether it has put in place new measures to step up the training for personnel who are tasked with testing, repairing and maintenance of EVs; if so, of the details; if not, the reasons for that;

(11) whether it will introduce legislation to prohibit non-EVs from occupying parking spaces installed with public charging facilities for EVs; if so, of the details; if not, the reasons for that;

(12) as the Government plans to set up a smart system for the Government's public EV charging network, the features of which include providing instant electronic information such as the utilisation status of the charging facilities, of the timetable for developing this system and whether the features of the system will include making reservations for using charging facilities; if so, of the details; if not, the reasons for that;

(13) whether it will relax the current restrictions on gross weight applicable to e-CVs to facilitate the trade to introduce EVs that best suit their uses; if so, of the details; if not, the reasons for that;

(14) of the latest progress of the Government's work on promoting the recycling of waste EV batteries; and

(15) whether it has put in place new measures to support the transport trade in making a large-scale switch to e-CVs; if so, of the details, if not, the reasons for that?

Reply:

President,

Commercial vehicles (CVs) account for 95 per cent of the vehicular emissions of respirable suspended particulates and nitrogen oxides, both of which are major air pollutants. CVs have thus been a major target of the Government's measures to improve roadside air quality. As electric vehicles (EVs) have no tailpipe emissions, replacing conventional vehicles, especially CVs, with EVs can help improve roadside air quality.

The Government has all along been committed to promoting the use of electric CVs (e-CVs). Measures taken include waiving the first registration tax (FRT) of e-CVs in full since 1994; putting in place since March 2011 a $300 million Pilot Green Transport Fund (PGTF) to support the transport sector to try out green innovative transport technologies (including e-CVs); and subsidising franchised bus companies to test out electric buses.

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, they are encouraged to choose e-PCs. The Government promotes the use of e-PCs in Hong Kong mainly through offering financial incentives such as tax concession and lower annual vehicle licence fee, and facilitating the development and enhancement of charging networks for e-PCs.

Reply to the question raised by Dr Hon Elizabeth Quat is as follows:

(1) When drawing up the FRT concessions for e-PCs, the Government on one hand aims to avoid the overall growth of PCs causing traffic congestion and aggravating roadside air pollution; and on the other hand, hopes that the incentives could aptly encourage vehicle buyers to go for EVs as far as possible when there is a need to buy PCs. Taking account of these two factors, the technological development and market situation of EVs, as well as road traffic conditions and views of stakeholders, the Government decided to continue with the FRT concessions of up to $97,500 for e-PCs from February 28, 2018 to March 31, 2021. For the same period, a new "One-for-One Replacement" Scheme (the Scheme) has also been introduced to allow eligible existing vehicle owners who buy a new e-PC and scrap their own eligible old PC to enjoy a higher FRT concession of up to $250,000. In addition to the said FRT concessions, annual vehicle licence fees for e-PCs are far lower than those for conventional PCs, and the electricity tariffs incurred for running e-PCs are also less expensive than the fuel charges incurred for running conventional PCs.

With ongoing technology development in e-PCs, there are currently a number of relatively more affordable e-PC models which are priced between $240,000 and $400,000 (FRT excluded) in the market, with their laboratory-tested driving range reaching 280 kilometers (km) to 400 km, thus fairly meeting Hong Kong drivers' general needs of daily mileage of only a few tens of km. Currently, amongst the eight brands of e-PC available in the local market, seven of them already provide models that can enjoy full waiver of FRT under the Scheme. Besides, after considering the views of stakeholders on the Scheme since its introduction, the Government has relaxed the eligibility criteria of ownership period and licensed period of an old PC under the Scheme starting from January 28, 2019. The number of PCs meeting the relaxed requirements would be increased by 30 per cent to more than 0.25 million.

The Government is of the view that the current arrangements represent a right balance of various relevant factors. The Government will, as scheduled, review the existing FRT arrangements for EVs before their expiry on March 31, 2021, and has no plan to revise the current arrangements at this stage.

Compared to conventional vehicles, hybrid-electric (hybrid) vehicles in general can offer better fuel efficiency, but they still have tailpipe emissions and their fuel saving and environmental performance depend on the driving modes. In comparison, EVs have no tailpipe emissions, and are more effective in improving roadside air quality in a high-density environment in Hong Kong. In the case of PCs, taking into account the Government's standing policy to promote the use of public transport, the Government considers that it is appropriate to grant FRT concession for e-PCs only. The Government currently has no plan to provide FRT concession for hybrid private cars.

As CVs have been a major source of roadside air pollution, the Government has been, apart from waiving e-CV's FRT in full, offering reduction in the FRT of newly registered environment friendly commercial vehicles starting from April 1, 2008. The Environmental Protection Department (EPD) has been reviewing annually the qualifying emission standards for environment friendly commercial vehicles under the scheme in the light of vehicle technological advancement and the prevailing statutory emission standards for newly registered vehicles such that the tax incentive is available only to CVs with an outstanding environmental performance. Currently, vehicles that meet the qualifying emission standards for environment-friendly commercial vehicles already include some hybrid commercial vehicles.

(2), (5) and(6) Regarding the charging arrangements for e-PCs, it has been the Government's standing policy that e-PC owners should perform daily charging of their e-PCs by using charging facilities at their home, workplace or other suitable places. 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. The number of public chargers in Hong Kong which are distributed in 18 districts increased from about 1 000 in 2013 to 2 166 (including 782 owned by the Government) in the end of 2018.

With the increase in the number of e-PCs, the Environment Bureau is co-operating with other relevant government departments to set up an interdepartmental working group to review the policies and measures relating to the ancillary facilities for charging e-PCs. The work includes installing additional charging facilities in existing Government car parks, looking for suitable on-street parking spaces to install charging facilities as a pilot and looking for suitable locations for the pilot scheme on public quick charging stations. The Government will release more information once a detailed plan is prepared.

(3) and (4) The EPD established in 2011 a dedicated team and a hotline to provide information and technical support on installation of charging facilities. Besides, the EPD has appealed to owners' corporations and property managers for their support in installing EV chargers at their premises through seminars and workshops. The Government will continue to step up the communication, publicity, education and technical assistance to building owners, property management companies and owners' corporations in the installation of EV charging facilities.

The Government will explore practicable measures to encourage installation of EV charging-enabling infrastructure or chargers in existing private buildings.

(7) At present, there is no unified international EV charging standard. The International Electrotechnical Commission's Standards is mainly adopted by Europe while the Society of Automotive Engineers standards are mainly adopted by North America and Japan. GuoBiao is a national standard adopted by the Mainland. The Government will closely monitor the situation of the local EV supply and the development of international EV standards to determine whether and, if suitable, how to adopt unified EV charging standard.

(8) The PGTF aims to subsidise the trials of green innovative transport technologies locally, which stand a good chance of coping with the local operational requirements and could be adopted by the relevant transport sectors for wider use upon successful trials, but not the research and development (R&D). On the R&D of e-CVs, EV R&D projects funded by the Automotive Parts and Accessory Systems R&D Centre under the Innovation and Technology Support Programme of the Innovation and Technology Fund (ITF) could receive a cash rebate equivalent to 70 per cent of its expenditure in project. Also, the Public Sector Trial Scheme of ITF provides funding support for production of prototypes/samples and conducting of trial schemes in the public sector to facilitate and promote the realisation and commercialisation of R&D results under ITF projects.

(9) To further encourage the transport sectors to try out green innovative transport technologies and the wider use of those green innovative transport technologies that have been proved to be relatively mature and suitable for adoption locally, the Government has announced in the 2018 Policy Address that the PGTF will be reviewed. The EPD is conducting the review along the following directions:

(a) Whilst the current conditions for approving subsidy for the PGTF trials (i.e. trials of technologies that stand a good chance of coping with the local operational requirements and could be adopted by the relevant transport sectors for wider use upon successful trial) should be retained, the Government would review if improvements could be made in various areas such as extending the subsidy scope (note) to vehicle types which has not been included currently (including electric commercial PCs and electric commercial private buses), applicants' eligibility, time required to approve applications, subsidy levels, limits on the number of applications for each type of technologies and conditions for receiving the subsidy, including the testing time of related technologies.

(b) The review should also explore means to encourage wider use of technologies that have been proved by the trials, e.g. e-CVs, to be relatively mature and suitable for adoption locally, e.g. whether subsidy should be provided to the trades for procuring the products for use and not for trial. The Government also needs to map out the specifications and criteria for implementation.

As for part (iv) of the question on non-franchised bus (NFB) services

(including tourist coach services mentioned by the Honourable Member), under the Road Traffic Ordinance (Cap 374) and its subsidiary legislation, operators must hold valid passenger service licences (PSLs) and passenger service licence certificates, while NFBs should also obtain appropriate service endorsements in order to operate relevant services. In approving the applications for PSLs, the Transport Department (TD) mainly takes into account factors such as the need for the services to be provided by the applicant, the level of services already or planned by other public transport operators, traffic conditions in the areas and on the roads where the services are to be provided, and the standard of service to be provided by the applicant. Operators are free to choose the appropriate vehicle types (such as electric buses, hybrid buses or conventional diesel buses) having regard to their operational needs. As at the end of 2018, 10 electric NFBs were registered. The TD will continue to maintain close communication with the trade with a view to providing appropriate assistance.

Note: The vehicle types in the current subsidy scope of the PGTF include taxis, public light buses, franchised buses, non-franchised public buses and goods vehicles.

(10) According to the Education Bureau, post-secondary institutions enjoy academic freedom and have a high degree of autonomy in curriculum development. At the same time, in addition to ensuring the quality and academic standards of the programmes offered, the institutions should also ensure that the curriculums meet the needs of society. To this end, institutions regularly liaise with relevant stakeholders to keep track of the latest manpower trend and industry needs.

Regarding the University Grants Committee (UGC)-funded universities, there are about 8 000 students who are enrolled in the UGC-funded undergraduate programmes related to the design, research and maintenance of electric vehicles in the 2017/18 academic year (AY). The academic programme categories of such programmes include "chemical engineering & materials techniques", "electrical & electronic engineering (including computer engineering)", "manufacturing & industrial engineering", "mechanical engineering" and "other engineering".

In the 2017/18 AY, about 230 students of the Vocational Training Council (VTC) were enrolled in full-time or part-time training courses relating to hybrid vehicles and EVs. The programmes include Higher Diploma in Automotive Engineering and a series of in-service training courses concerning the automobile industry. The Diploma of Vocational Education (DVE) (Automotive Technology) Programme run by the VTC also introduced a new module on new energy vehicles in the 2017/18 AY. In the 2018/19 AY, about 900 full-time and part-time students have enrolled in the DVE and Certificate in Vocational Education programmes in automotive technology.

The Pro-Act (Automobile) under the VTC provides part-time evening programmes for training EV mechanics. Since the 2015/16 AY, about 280 in-service training places have been provided for the vehicle servicing trade. Relevant contents are also included in the Higher Diploma in Automotive

Engineering Programme offered by the Hong Kong Institute of Vocational Education. VTC also encourages EV suppliers to share maintenance information related to the vehicle servicing trade in order to ensure that their programme contents can meet the industry's needs.

The EPD has all along been communicating and co-operating with VTC on vehicle repair and maintenance courses, and will continue such work.

(11) According to the TD, given that e-PCs currently account for only about two per cent of the total number of registered PCs, and that charging facilities furnished at government car parks are supplementary in nature, parking spaces with charging facilities will not be designated for the exclusive use of EVs on the principles of taking full advantage of parking space resources and according equal treatment to users of EVs and non-EVs. Nevertheless, having regard to the utilisation of government car parks, the contractors engaged by the TD or the Government Property Agency (GPA) will reserve parking spaces with charging facilities for priority EV charging by arranging for traffic cones to be placed and notices to be displayed at such spaces whenever practicable during non-peak hours. In addition, the Government plans to install new public chargers (all are medium chargers) at car parks under the TD and the GPA which are open for public use. The new chargers will be located at high levels of the car parks as far as possible to increase the chance of using them by EVs.

(12) To support the development of smart city, the Government plans to set up a smart system for the Government's public EV charging network. The features will include instant electronic information on the status of chargers, payment system and management facilities for parking spaces equipped with chargers. The Government will also explore the feasibility of including other features, such as enabling reservation of parking space equipped with chargers. The EPD is now installing equipment on public chargers in some Government car parks to test the real-time electronic information on the use of 100 chargers for public information through the Government Electronic Platform. The trial will be completed by the end of this year.

(13) The Government always welcomes the trade to introduce commercial electric vehicles that are suitable for use in Hong Kong. Currently, 83 models of electric vehicles have been approved for registration and use in Hong Kong, among which 25 are commercial vehicles, including light goods vehicles, light buses, buses and taxis of brands from Europe, Japan and the Mainland.

To safeguard the structural and operational safety of roads, the TD would, as stipulated in the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap 374A), limit the maximum gross weights for various classes of vehicles, having regard to the road design and road environment in Hong Kong, with no differentiation between electric vehicles and non-electric vehicles. Since relaxation of the maximum gross weights of vehicles involves such considerations as structural and operational safety of roads, the Government would need to handle the matter with great caution. Currently, the Government has no plan to fully relax the relevant statutory requirement. In

case any particular road users would need to use overweight vehicles due to exceptional circumstances, the TD may give special consideration and grant exemption on a case-by-case basis provided that the safety of other road users and the road structure would not be compromised.

(14) Waste EV batteries have to be properly handled under the Waste Disposal Ordinance. Most EV manufacturers or agents currently have engaged licensed collectors to collect/handle their waste EV batteries. After proper preliminary treatment, these waste EV batteries are exported to appropriate treatment facilities in Japan, Korea or Belgium for proper handling and/or recycling. Although the age of most EVs in Hong Kong remains low and the number of retired EV batteries remains small at this stage, as EVs will become more popular in the future, the EPD is exploring with EV suppliers the issues of proper collection and handling of waste EV batteries so as to enhance protection of the environment.

(15) The effectiveness of the policies on promoting the use of e-CVs depends very much on the maturity of e-CV technologies, their prices and suitability for use in Hong Kong (including their ability to suit the operation mode of local transport sectors), etc. In order to find e-CVs that have been tested to meet local operational needs, the Government has been subsidising local trials of green innovative transport technologies, including EVs, that stand a good chance of coping with the local operational requirements and could be adopted by the relevant transport sectors for wider use upon successful trials through the PGTF, and fully subsidising franchised bus companies to try out electric buses.

As at the end of December 2018, the PGTF approved 140 trials, including 75 trials of e-CVs with a subsidy of some $90 million, covering various types of vehicles (a total of 106 vehicles including taxis, light buses, single-deck buses and goods vehicles). Results of the trials have shown that most of the e-CVs currently in the local market have limitations such as high production cost, limited service life, long charging time and/or low energy density of the batteries. Thus, the driving range and charging time of most e-CVs are yet to be able to fully cope with the operational needs of the local transport sectors. Besides, prices of e-CVs are generally not as competitive as their conventional counterparts. The trades also reflect that insufficient maintenance service support is quite common.

Nevertheless, results of the trials have also shown that compared with other e-CVs, electric light goods vehicles (e-LGVs) are more likely to gain popularity in Hong Kong and are suitable for operators who require relatively lower daily mileage and payload because batteries of these vehicles can be topped up outside operation hours. In order to promote the use of e-LGVs, the Government has organised experience sharing workshops for the transport sectors who are suitable to adopt this vehicle type.

The Government will continue to keep in view the development of e-CV technology and encourage the transport sectors to make use of the PGTF to try out other green innovative transport technologies and other suppliers to introduce more products to the local market. Since the results of the PGTF

trials have also shown successful examples, such as e-LGVs, that could meet the operational requirements of some transport sectors as evidenced by the willingness of more transport operators to try out e-LGVs under the PGTF, as stated in answer (9) above, the Government is reviewing the PGTF on how to further encourage the transport sectors' wider use of those green innovative transport technologies, including EVs, that have been proved to be relatively mature and suitable for adoption locally.

As for franchised buses, there are currently about 6 100 franchised buses in Hong Kong. About 95 per cent of them are double-deckers and the remaining are single-deckers. Currently the technology of double-deck electric buses is still developing and there are very few models available in the international arena. Furthermore, their passenger carrying capacity and operational efficiency still cannot meet the operational needs in Hong Kong (including long daily service hours, high peak passenger loadings, the need to tackle hilly terrains as well as intense air-conditioning demand in hot and humid summer). The Government will keep in view the development in other places and introduce trials in due course. Besides, the EPD is recently working with the two major franchised bus companies to preliminarily explore the feasibility of developing double-deck electric franchised buses suitable for local use.

Regarding the single-deck electric buses, the Government provided $180 million to fully subsidise franchised bus companies to acquire 36 single-deck electric buses (including 28 battery-electric buses and eight supercapacitor buses) and their charging facilities for conducting two-year trials to test out their performance, reliability as well as economic feasibility in local conditions. At present, 26 battery-electric buses and four supercapacitor buses have commenced operations on a number of routes. The trial programme of single-deck electric buses is still in progress. Subject to the outcome of the trials, the Government will promote wider use of electric buses by the franchised bus companies, taking into account affordability of the companies and passengers.