

**For discussion on
27 February 2017**

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

Promoting the Use of Electric Vehicles

PURPOSE

This paper briefs Members on the progress of Government's promotion of the use of electric vehicles (EV) and the first registration tax (FRT) concessions for EV for the period from 1 April 2017 to 31 March 2018 inclusive, as announced in the 2017-18 Budget Speech.

KEY MEASURES TO PROMOTE THE USE OF EV

2. To improve air quality, particularly roadside air quality, the Government has been proactive in promoting the replacement of conventional vehicles by EV, which do not have tailpipe emissions and are more energy efficient. The key measures include:

- i) the FRT^[1] for EV is waived till 31 March 2017. The objective of the waiver is to make EV less price-uncompetitive with conventional vehicles, taking into account its relatively short driving range and long charging time;
- ii) Enterprises that procure EV are allowed 100% profits tax

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

- The 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.
- The FRT rate of commercial vehicles (except van-type light goods vehicles not exceeding 1.9 tonnes permitted gross vehicle weight) is 3.7% to 17% of their taxable values depending on their vehicle classes; and motor cycles and motor tricycles at 35%.
- The FRT rates of van-type light goods vehicles 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.

deduction for the capital expenditure on EV in the first year of procurement;

- iii) electric private cars also enjoy a lower annual vehicle licence fee under the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374E)^[2]. For example, the annual vehicle licence fee for electric private cars ranges from about \$600 to \$1,100, which are significantly lower than that for conventional private cars ranging from \$3,815 (for petrol private cars with engine cylinder capacity not exceeding 1,500 c.c.) to \$12,675 (for diesel private cars with engine cylinder capacity exceeding 4,500 c.c.).
- iv) a \$300 million Pilot Green Transport Fund (PGTF) was set up in March 2011 to subsidise the public transport sector and non-profit organisations to test out green innovative transport technologies, including EV; and
- v) \$180 million has been allocated for subsidising franchised bus companies to purchase 36 single-deck electric buses for trial to assess their operational efficiency and performance under local conditions.

3. Charging is essential for the operation of EV. While EV should be charged at their own parking space, public chargers have to be put in place so that EV users might top up batteries of their EVs as and where necessary. To this end, the Government has been working with the private sector on setting up public chargers—

- i) since April 2011, developers putting the necessary EV charging infrastructure in the car parks of their new buildings, including provision of sufficient power supply and electrical wiring to facilitate future installation of chargers for EV users, would be

² 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 (c.c.) ranging from \$3,815 (for petrol PCs with engine cylinder capacity not exceeding 1,500 c.c.) to \$12,675 (for diesel PCs with engine cylinder capacity exceeding 4,500 c.c.).

granted concessions on gross floor area;

- ii) planning guidelines for new buildings have been amended to recommend 30% of private car parking spaces to be installed with EV chargers;
- iii) more EV chargers have been set up in collaboration with the private sector. As at December 2016, there were 1 518 public chargers of various types in Hong Kong covering all 18 districts, including 954 standard chargers, 345 medium chargers and 219 quick chargers. **Annex 1** gives a summary of public EV chargers;
- iv) a dedicated team and a hotline (tel.: 3757 6222) have been set up in the Environmental Protection Department (EPD) to provide information and technical support to interested parties in setting up chargers, and guidelines have also been issued on the arrangements and technical requirements for setting up chargers; and
- v) the two power companies have launched one-stop services to EV owners who intend to install charging facilities at their parking spaces. The services include site inspection, provision of technical advices, inspection of completed charging installation and connection of the power supply.

4. The above actions, coupled with advancement in the EV technology in recent years, contributed to a **sixteen-fold** growth of the local EV fleet^[3] in the past three years (i.e. from 436 at the end of 2013 to 6 982 at the end of 2016, according to the number of registered vehicles kept by the Transport Department, TD). There are also 249 EV in the Government fleet. Among these EVs, about 97% are private cars with electric commercial vehicles (excluding special purpose vehicles) accounting for less than 2%. A breakdown of the EV by vehicle classes is in **Annex 2**.

³ The figure excludes electric fork-lift trucks and electric industrial tractors which are special purpose vehicles not intended for ordinary use on roads.

REVIEW OF FRT WAIVER FOR EV

Electric Private Cars

5. The Government adopts a public transport-oriented policy with railway as the backbone. Indeed, nearly 90% of the 14.8 million daily passenger boardings are made on public transport. Heavy reliance of private cars will lead to road traffic congestion, which could also offset the efforts to improve roadside air quality. In case private cars are to be purchased, the Government would encourage buyers to opt for EV, which will help avoid creating additional pollution to roadside air quality.

6. In recent years, the licensed^[4] private car fleet has been growing substantially, a 13% increase between 1 January 2014 and 31 December 2016, being an average of 4.1% per year. As at end 2016, private cars accounted for 73% of the entire vehicle fleet. While electric private cars account for just 7.3% of the first registered^[5] private cars in 2016, its rapid growth in the past few years has become a cause for concern in the Government's endeavour to rein in the growth of private cars. Partly because of the advancement in the technology, electric private car manufacturers have been producing mass-market electric private car models with prices, reliability and driving performance that are increasingly competitive with those of conventional cars. For example, technological advancement in recent years has enabled the majority of electric private car models on the local market to be priced below \$500,000 (with FRT waived). These electric private cars have a travel range of around 160 km or more after a full charge, meeting normal daily driving need of most local drivers. More manufacturers are expected to go down the same path to produce affordable models of electric private cars in coming years, leading to further increase of supply and market competition in the local market. This latest development calls for a good balance between promoting the use of electric private cars and stemming the excessive growth of the private car fleet, when considering the FRT concession for electric private cars after the expiry of the current waiver.

⁴ The figures refer to the number of vehicles with a valid licence which can be used on roads.

⁵ The figures refer to the number of vehicles first registered in Hong Kong.

Electric Commercial Vehicles

7. Commercial vehicles are the major source of roadside air pollution. They account for about 95 % of the vehicular emissions of respirable suspended particulates (RSP) and nitrogen oxides (NO_x), which are key roadside air pollutants. Replacing conventional commercial vehicles with electric ones will bring forth the greatest air quality benefits, and is hence a priority of the Government.

8. However, high production cost, limited service life, long charging time and low energy density of EV batteries remain at present the key constraints for EV to take up commercial transportation duties. The number of licensed^[6] electric commercial vehicles (excluding special purpose vehicles^[7]) only increased from 63 in end 2013 to 96 in end 2016. Take battery electric buses as an example, an electric single-deck franchised bus costs about \$4 million, about twice that of its conventional counterpart. It takes about 3 to 4 hours to fully charge its battery but even a full charge is insufficient for undertaking the daily mileage of a normal single-deck bus, particularly in the summer with the air conditioning system in full operation. Furthermore, the low energy density of EV batteries will reduce the payloads of commercial vehicles – goods and passengers. For example, the electric van models being sold on the local market can only take up payloads ranging from 0.35 to 0.65 tonnes with vehicle prices up to about \$400,000 (with FRT waived), whereas the payload of the most popular conventional one is about 1 tonne and priced about \$300,000. These underscore the need for further advancement in the EV technology before electric commercial vehicles could become a true rival to their conventional counterparts. There is thus a strong case for continuing the current FRT waiver for electric commercial vehicles for another limited period of time.

⁶ The figures refer to the number of vehicles with a valid licence which can be used on roads.

⁷ Special purpose vehicles refer to electric fork-lift trucks and electric industrial tractors which are not intended for ordinary use on roads.

Electric Motor Cycles and Electric Motor Tricycles

9. The price of an electric motor cycle or electric motor tricycle could be about 2 to 3 times that of its conventional counterpart, even with FRT waived. In addition, their driving performance generally falls short of the conventional ones (i.e. limited driving range and 3 to 4 hours for a full charge). This might explain why the number of licensed electric motor cycles or electric motor tricycles in operation has remained on the low side at present (i.e. 37 as at end December 2016). Their popularity can only be improved upon the advancement in the EV technology over time. In addition, motor cycles and motor tricycles, unlike private cars, are not currently a major cause of road traffic congestion. There is thus a good case to continue the current FRT waiver for the electric motor cycles and electric motor tricycles for another limited period of time.

FRT WAIVERS FOR EV FROM 1 APRIL 2017 to 31 MARCH 2018

10. As announced in the 2017-18 Budget Speech on 22 February 2017, the FRT concessions for EV for the period from 1 April 2017 to 31 March 2018 inclusive are as follows –

- i) electric private cars: their FRT will be waived up to \$97,500; and
- ii) electric commercial vehicles^[8], electric motor cycles and electric motor tricycles: their FRT will be waived in full.

The Government will review nearer the time the FRT waiver in light of the latest technological development and market situation of EV, and other traffic considerations, in order to ensure effective implementation of the relevant policies and prudent management of public finances.

11. To avoid inadvertent impact arising from the FRT concession cap on buyers who have placed orders for the electric private cars from local

⁸ “Commercial vehicles” refers collectively to goods vehicles, buses, light buses, taxis, and special purpose vehicles.

registered distributors or owners^[9] who have arranged shipment of the electric private cars to Hong Kong before the delivery of the 2017-18 Budget Speech by the Financial Secretary, as a one-off arrangement, electric private cars ordered by buyers from local registered distributors or arranged for shipment to Hong Kong by owners before 11 a.m. of 22 February 2017 (Hong Kong time) can still enjoy the current full FRT exemption even if the concerned electric private cars are first registered after 31 March 2017. This arrangement has made reference to that adopted by TD for handling exemption from paying FRT at new rates for private cars which were ordered from a local registered distributor or arranged for shipment to Hong Kong by their owners before the announcement of the FRT rate increase for private cars in 2011. The electric private car owner or the concerned electric private car distributor does not need to make any application to TD for the full FRT waiver before the first registration of the electric private car. When submitting the first registration application, the electric private car owner^[10] / the concerned electric private car distributor^[11] will be requested to submit an application for full FRT waiver at the same time, which should be supported by documentary proof such as bill of lading / order form and deposit receipt to prove that shipment of the electric private car to Hong Kong was arranged / the electric private car's order was placed before 11 a.m. on 22 February 2017 (Hong Kong time). Before processing the first registration application, TD will vet the eligibility of the electric private car concerned for the full FRT waiver. If necessary, TD will require the electric private car owner or the distributor concerned as appropriate to make a statutory declaration under the Oaths and Declarations Ordinance (Cap. 11) as to the timing of arranging the shipment or placing the order respectively. If the application for the full FRT waiver is approved, no FRT will need to be paid upon first registration of the electric private car concerned. The relevant details will be announced as soon as practicable.

⁹ In the case of an owner importing the vehicle from abroad, the vehicle has been arranged for shipment to Hong Kong before 11 a.m. of 22 February 2017 (Hong Kong time).

¹⁰ For cases where the electric private cars under first registration are imported by their owners.

¹¹ For cases where the electric private cars under first registration are sold by registered distributors.

The Legal Provisions to Effect the FRT Concessions

12. The FRT waiver for electric vehicles was first provided in 1994 under section 5(3) of the Motor Vehicles (First Registration Tax) Ordinance (Cap. 330)^[12]. The provision, which was set to expire at midnight on 31 March 1997 under section 5(4)^[13] of Cap. 330, was extended six times over the past two decades, each time with a resolution positively passed by the Legislative Council. However, since sections 5(3) and 5(4) of Cap. 330 do not allow for different waivers for different classes of electric vehicles, nor do they allow for any cap on the waiver provided, they cannot be relied on to implement the FRT concessions for EV as mentioned in paragraphs 10(i) and (ii) above. Therefore, the Government will implement the said FRT concessions in 2017-18 pursuant to sections 5(5) and 6(3) of Cap. 330^[14], the two provisions relied on for the FRT concession of the current Environment-friendly Commercial Vehicles Scheme.

Financial Implications

13. According to TD, 7 212 EV were first-registered between 1994 (i.e. when the FRT waiver for EV was first introduced) and end of 2016. The corresponding FRT foregone was about \$4.4 billion. It is not possible to estimate the revenue foregone might have arisen from the FRT concession for EV in 2017-18. The revenue foregone will depend on the sales of EV, which in turn very much hinges on the availability of EV models on the local market that meet the driving needs of local drivers, their actual prices, and other factors like economic situations, etc.

¹² s.5(3)-Tax shall not be payable in respect of any motor vehicle which is propelled solely by electric power and does not emit any exhaust gas.

¹³ s.5(4)-Subsection (3) and this subsection shall expire at midnight on 31 March 1997* or such later date as the Legislative Council may by resolution determine. (*Expiry date: 31 March 2017 (see L.N. 237 of 1997; L.N. 70 of 2000 and 27 of 2000 s. 3; L.N. 77 of 2003; L.N. 53 of 2006; L.N. 50 of 2009; L.N. 44 of 2014).)

¹⁴ s.5(5) - The Chief Executive may remit in whole or in part first registration tax payable and may attach conditions to any remission.

s.6(3) - The Chief Executive may refund in whole or in part first registration tax paid.

WAY FORWARD

14. Members are invited to note the Government's efforts on this front and the FRT concessions for EV for the period from 1 April 2017 to 31 March 2018 inclusive as explained in paragraph 10 above.

**Environment Bureau/Environmental Protection Department
February 2017**

Annex 1

Distribution of Public Charging Facilities by Districts (as at End 2016)

District	No. of Chargers			District	No. of Chargers		
	Standard	Medium	Quick		Standard	Medium	Quick
Central & Western	164	42	19	Kwai Tsing	17	13	7
Eastern	126	34	17	Tsuen Wan	44	12	10
South	4	7	16	Sai Kung	38	11	8
Wan Chai	67	30	10	North	35	10	3
Kowloon City	54	2	14	Tai Po	3	3	8
Kwun Tong	62	42	23	Sha Tin	79	12	24
Sham Shui Po	43	20	4	Yuen Long	40	11	9
Wong Tai Sin	55	12	9	Tuen Mun	10	13	9
Yau Tsim Mong	100	48	23	Islands	13	23	6
			Total	1518	954	345	219

Annex 2

Number of Registered Electric Vehicles by Vehicle Classes (as at End 2016)

	Government EV	Privately-owned EV	Total No. of EV
Private cars	165	6829	6994
Light goods vehicles	15	74	89
Medium goods vehicles	0	2	2
Light buses	0	7	7
Taxis	0	1	1
Buses	0	24	24
Motor cycles	69	45	114
Total	249	6982	7231

Note: The figures exclude electric fork-lift trucks and electric industrial tractors (commonly used for waste management by estate management agents within residential areas) which are special purpose vehicles not intended for ordinary use on roads. The number of registered electric special purpose vehicles was 107 in end 2016.