LCQ10: New types of traffic light signals and public lighting systems

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Following is a question by the Hon Cheung Hok-ming and a written reply by the Secretary for Transport and Housing, Ms Eva Cheng, at the Legislative Council meeting today (January 20):

Question:

It has been reported that development of the technologies of using light emitting diodes ("LED") in illumination is becoming more mature in recent years, with its gross output in the global market amounting to 5.6 billion US dollars in 2008, and many countries have extensively used this technology in traffic light signals and public lighting systems. Regarding the application of LED in Hong Kong, will the Government inform this Council:

(a) given that the Transport Department's scheme to replace all conventional traffic signals in Hong Kong with LED ones in stages has commenced since February 2009, of the latest progress of the scheme, as well as when it will be completed according to the latest estimation;

(b) how such LED traffic signals compare with conventional ones in terms of illumination level, efficacy and durability;

(c) whether the authorities will, when replacing the remaining conventional traffic signals, consider installing LED green traffic light signal countdown timers at the same time so as to enhance road safety; and

(d) given that the authorities had indicated, in its reply to the question raised by a Member at the meeting of this Council on November 21, 2007 regarding the use of more energy-efficient public lighting systems, that suitable LED

lighting fittings were not available in the market at that time, whether the authorities had, in the past two years, followed closely the latest development in the relevant technologies so as to take suitable follow-up actions and conduct tests?

Reply:

President,

My reply to the four parts of the question is as follows:

(a)&(b) In terms of luminance, traffic signals using light emitting diodes (LED) are comparable to the conventional ones using incandescent lamps (the former's luminous intensity range from 300 to 720 candela (cd) and the latter from 200 to 800 cd). In terms of efficacy, LED traffic signals have a life expectancy of ten years, far longer than their conventional counterparts which last for one year only, and can save 60% to 70% electricity compared to the conventional ones. Therefore, LED traffic signals should be used extensively for their higher energy efficiency as well as lower recurrent operational and maintenance costs during their design life.

The Finance Committee of the Legislative Council approved in 2008 the provision required for the territory-wide replacement of conventional traffic signals with LED traffic signals. The Transport Department (TD) is working in full swing to implement the replacement works as scheduled. The works are to be carried out in three stages in Hong Kong (HK), Kowloon (KLN) and New Territories (NT) regions respectively. The first stage, covering traffic signals at about 400 junctions in HK region, has commenced in February 2009. As at end 2009, the signals at over 80% of the junctions had been replaced. The remaining works will be completed in the first quarter of 2010. The second stage, covering traffic signals at about 670 junctions in KLN region,

will start in January 2010 and is expected to complete in the first quarter of 2011. The third stage, covering traffic signals at about 830 junctions in NT region, is planned to commence in end 2010 and expected to complete in the third quarter of 2012.

(c) TD has studied in detail the issue of whether advance warning devices for vehicular traffic signals (such as traffic signal countdown timers) can enhance road safety. It is understood that so far there is no authoritative literature supporting the effectiveness of such devices in reducing the rate of traffic accidents. On the contrary, some overseas research has found that drivers react differently to such devices. For example, the motorist in the front may decide to stop his car when he sees that the green signal has been running to the last few seconds but the one behind him may choose to accelerate and speed past the junction. In such circumstances, the potential risk of head-tail collisions will increase instead, thus affecting road safety. As such, we have no plans to retrofit traffic signals with countdown timers.

(d) As regards LED lighting fittings, the Highways Department (HyD) has been liaising with the suppliers of such fittings in the past few years and closely monitoring the technological development to attain information on LED lighting products and test their luminous efficacy.

Given the improved luminous efficacy of current LED products, HyD is conducting tests on such products. HyD installed eight LED street lamps along two designated streets and four LED fluorescent lamps on two designated footbridges in October 2009. Results of the preliminary technical assessments on these products were satisfactory. To further test the efficacy of LED lighting fittings, HyD plans to conduct a trial of a larger scale by installing 100 LED street lamps and 200 LED fluorescent lamps on footbridges over the territory. The installation works are expected to complete

in mid 2010.

Separately, HyD is also conducting tests on the new ceramic discharge metal halide (CDM) lamps which are more energy-efficient than the conventional high pressure sodium lamps, with a view to examining the feasibility of using these two major new types of road lighting (i.e. LED lighting fittings and CDM lamps) on an extensive basis, having regard to their prices, energy efficiency, safety and durability.

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