LED Public Lighting Replacement Programme of the Highways Department
Frequently Asked Questions

Q	**What is public lighting system? What types of lighting are included in the system?**
A	Public lighting system is an auxiliary facility for road network. Public lighting facilities include carriageway lighting, footpath lighting, cycle track lighting, underpass lighting, high-mast lighting, high-bay lighting at public transport interchanges, footbridge and subway lighting, gantry sign and roadside directional sign lighting, traffic bollards, etc. In general, high pressure sodium (HPS) lights, ceramic discharge metal (CDM) halide lights, fluorescent tubes of high energy efficiency and light emitting diode (LED) lights are used in the public lighting system.

Q	**What are the purposes for launching the LED Public Lighting Replacement Programme by the Highways Department (HyD)?**
A	The main purposes of the HyD to launch the LED Public Lighting Replacement Programme are to enhance energy efficiency of public lighting system and to reduce carbon emissions so as to provide the public with a safe, reliable and sustainable public lighting system.

Q	**Why does the Government want to launch the LED replacement programme for the public lighting system?**
A	Suitable lighting systems are installed at public roads by the HyD in order to provide road users with reliable and cost-effective lighting. We have constantly paid attention to the advancement of lighting technology in the market and continually enhanced the existing lighting facilities. In light of the fact that LED light technology has matured considerably over time and its reliability has greatly improved, coupled with the significant drop in the prices of LED lights, we

	consider that it is now an opportune time to adopt LED lights at the public lighting system to create a green and energy saving environment for the community.

Q	**Has the Government conducted any trial scheme for LED road lights? What were the results?**
A	Since LED road light products became available in the market, the HyD has been monitoring the technological and market development of LED road lights and has carried out various field trial schemes for LED road lights. Since 2009, the HyD has been installing LED road lights in different places over the territory, and results of the trial schemes showed that LED road lights performed well in terms of energy saving, colour rendering and reliability. LED lights are more energy efficient than the HPS lights, saving energy up to about 30%.

Q	**Has the Government made any reference to the relevant experiences of other countries regarding the LED Public Lighting Replacement Programme?**
A	Apart from the experiences gained from the trial schemes conducted locally, the HyD has all along kept in touch with overseas and the Mainland authorities to gather information on the application of LED road lights in other places and to make reference to their experiences. In order to keep apace with the technological and market development of LED road lights, the HyD has received more than 20 groups of representatives of road lights manufacturers from the Mainland and abroad in 2015 and 2016. In addition, representatives of the HyD were sent to various cities in Mainland and aboard for exchange of ideas with the institutions of lighting professionals and road lights manufacturers there.

Q	**Apart from the trial schemes, has the Government conducted tests on the use of LED lights in gantry signs, roadside directional signs and pedestrian subways?**
A	As regards road sign lighting, the HyD installed LED lights for three gantry signs and roadside directional signs lighting in 2015. The results indicated that LED lights allow more uniform illumination and are about 70% more energy saving than the existing CDM halide lights. For subways, the HyD carried out trial installation of LED tubes in 20 subways in 2015 and 2016. The results indicated that LED tubes are about 20% more energy saving than traditional T8 fluorescent tubes with satisfactory illumination.

Q	**What are the advantages of LED lights?**
A	As compared to the conventional lights, LED lights have various advantages: • long service life: 50,000 to 100,000 hours (service period equivalent to about 5.5 to 11 years) • energy saving: saving about 30% of energy as in the case of road lights • environmentally-friendly: mercury free • efficient: very little emission of infrared radiation with low heat dissipation • robust and reliable: without wire filament and glass bulb • colour rendering: high colour rendering with faithful revelation of colours • adjustable: adjustable light intensity to save energy • flexible: instant lighting and required no pre-heating

Q	**What public lighting facilities will be replaced with LED lights?**
A	Under the LED Public Lighting Replacement Programme, the HPS lights for carriageway, footpaths and cycle tracks will be replaced with LED lights progressively according to the life expectancy of existing road lights. Moreover, the HyD would also replace the CDM halide lights used in gantry signs and roadside directional signs as well as the T8 fluorescent tubes in footbridges, subways and covered walkways with LED lights.

Q	**It is said that LED light will be too sharp and bright. Is this likely to cause discomfort?**
A	Based on the test results in the past and public opinions, the HyD has selected LED lights (colour temperature of 3,000K) which are softer in colour than those commonly used in European or American cities (colour temperature of 4,000K to 5,000K), allowing the public to adapt more easily and feel comfortable with the light.

Q	**It is said that LED road light of high colour temperature releases invisible blue light which might have an impact on the secretion of melatonin in human body at night, thus affecting our sleeping cycle. Is it true?**
A	In the design of LED, no invisible ultra-violet or infrared radiation will be produced. Under the same colour temperature, the quantities of blue light energy emitted by different kinds of lights are similar, and lights with higher colour temperature will have higher blue content. Take the 3,000K LED road light used by the HyD as an example, the blue light content is just half or less than half of that of the 4,000K to 5,000K LED road light used in Europe or the USA. The quantity of blue light emitted by LED lights used by the HyD is similar to that of the conventional lights, enabling the public to adapt more easily and feel comfortable

	with the light. It is also in line with the recommendation made by the American Medical Association in 2016 on selecting road lights with colour temperature not exceeding 3,000K to diminish the impacts on human health and the environment.

Q	**Will the wider use of LED road lights lead to more electronic wastes?**
A	The technology of LED lighting has become more mature over time and the life span of a LED light is about five times longer than conventional lighting. Thus, the quantity of lighting facilities to be discarded in the future will definitely reduce substantially. LED lights do not contain mercury as is the case of conventional lights and over 90% of the material of a LED light is recyclable. Therefore, the quantity of discarded materials from LED lights will be much less than conventional lights.

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