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1 April 2019

Miss Rita Yung
Senior Council Secretary (1)2
Council Business Division 1
Legislative Council Secretariat
Legislative Council Complex
1 Legislative Council Road
Central

Dear Miss Yung,

Legislative Council Panel on Development

**PWP Item No. 50CG —
Additional District Cooling System at the Kai Tak Development**

At the meeting of the Panel on Development on 26 February 2019, Members requested information on the estimated total district cooling service charges to be paid by the operator of the Kai Tak Sports Park (KTSP) to the Government over the project life of the District Cooling System (DCS) of 30 years; and the construction unit costs (in terms of the cooling capacity) of similar district cooling systems in other countries or cities. The Government's response is set out below.

Kai Tak Sports Park

The Government obtained funding approval for the construction of KTSP from the Finance Committee of the Legislative Council in June 2017. The project scope and key design features, including the multi-purpose main stadium and its retractable roof, were fully specified in the tender document and contract requirements of the "Design-Build-Operate" (DBO) Contract. The awarded Contracted Party (CP) has to furnish the design scheme of the KTSP in accordance with the contract requirements.

Based on the consumption level of KTSP, the CP will pay the charge for district cooling services to the Government in accordance with the DBO contract provisions.

Construction Unit Costs

As the Electrical and Mechanical Services Department (EMSD) does not have readily available information on the construction unit costs of DCS projects in other economies or cities, it has attempted an Internet search. However, the scope, design, technical complexity (e.g. length of pipework), cost factors (including labour cost), and service requirements (e.g. whether large-scale facilities will be served) of DCSs vary widely from one place to another. EMSD therefore considers that a simple comparison of the unit construction costs, without a comprehensive expert analysis, could be misleading. It also has reservation about drawing definitive conclusions from data available on the Internet, which may or may not have been verified by competent authorities.

Despite these limitations, EMSD considers that a report released by the United Nations Environment Programme in 2015 entitled “District Energy in Cities”¹ (the UNEP report) provides some useful reference points. The UNEP report analysed the “levelized unit cost of cooling production” of various district cooling systems, which takes into account the total capital costs **and** the project life operating costs in terms of cost per unit Megawatt hour (\$/MWh).

According to the UNEP report, the levelized cost of DCSs in general is about HK\$530/MWh (or US\$68/MWh) in 2013. The unit cost of the additional DCS (in terms of \$/MWh) at the Kai Tak Development in 2013 prices is within 10% difference from that amount.

The UNEP report also found that the levelised cost of a DCS is generally lower than that of decentralised building-based cooling systems. The conclusion was that the development of energy-efficient, climate-resilient and affordable district energy systems in cities is one of the least costly and most efficient solutions for reducing greenhouse gas emissions and primary energy demand.

That said, it should be stressed again that the DCSs surveyed in the UNEP report have different cooling technologies, scope of works, distribution network, service levels, complexity and operating environments. As they are located in cities at different stages of development, the cost factors, inflation, and other economic variables, which will affect the levelised cost, also vary significantly. The findings of the report therefore have to be interpreted with caution.

Yours sincerely,



(Paul WONG)

for Secretary for the Environment

¹ The UNEP report can be viewed at web.unep.org/ourplanet/october-2016/unep-publications/district-energy-cities.

c.c. Secretary for Financial Services and the Treasury (Attn: Mr Denny HO)
Secretary for Home Affairs (Attn: Mr HO Tat Hei)
Director of Electrical and Mechanical Services (Attn: Mr K C LO)