

**Legislative Council  
Panel on Development  
PWP Item No. 45CG -- District Cooling System  
at Kai Tak Development**

**Follow-up Actions to Meeting on 23 February 2016**

The Administration provides the supplementary information as required by the Panel as follows:

**(a) A list of the existing users and potential users of the district cooling services at Kai Tak Development (“KTD”);**

2. As mentioned in our previous discussion papers submitted to the Legislative Council (“LegCo”), the District Cooling System (“DCS”) at KTD will provide services to public and private non-domestic developments at KTD. Public developments in the region, which account for around 35% of the total air-conditioned floor area in KTD, will subscribe to the district cooling services. As at February 2016, we are providing district cooling services to the Kai Tak Cruise Terminal, the Ching Long Shopping Centre, the Trade and Industry Tower, as well as two primary schools.

3. Furthermore, upon completion of the DCS Phase III (Package B) scheduled for end 2018, a number of public developments in KTD, including the Hong Kong Children’s Hospital, the existing headquarters of the Electrical and Mechanical Services Department (“EMSD”) and the new developments including To Kwa Wan Station and Kai Tak Station of the Shatin to Central Link, and the proposed Kowloon East Regional Headquarters and Operational Base cum Ngau Tau Kok Divisional Police Station, will subscribe to the district cooling services.

4. On the other hand, heeding to the request of the LegCo Panel on Environmental Affairs at its meeting in June 2010, we will require private non-domestic projects in KTD to connect to the DCS with a view to maximising the environmental benefits of the project. This

connection requirement will be implemented by prescribing the appropriate provisions in the conditions of land sale to require the lessee to construct and maintain DCS substations for connection to DCS in accordance with the guidelines issued by EMSD. Since information on private potential users would only be available subject to the progress and development programme of KTD, we are unable to provide details at this stage.

**(b) as regards the equipment used in the KTD DCS, the places of origin of such equipment and the respective proportions of the equipment from different places of origin in the whole system;**

5. The major equipment used in the DCS at KTD, including chillers, pumps and distribution pipes, were manufactured in Hong Kong and the Mainland (around 90%) and other places (about 10%) such as Taiwan, Germany and Malaysia, and installed in Hong Kong. The Administration has adopted a stringent quality control regime, such as conducting regular on-site inspections, for monitoring the quality of materials used for the project. Staff would also be deployed to check the manufacturing facilities. Independent consultants are engaged to monitor the quality of the materials used.

**(c) a list of the contractors engaged in the DCS project and their respective services;**

6. EMSD has employed a design-build-operate contractor through open tender to carry out one of the six construction contracts for the DCS, as well as day-to-day operation of the DCS as per the established procurement procedures and practices. The contractor is Hong Kong District Cooling DHY Joint Venture, which has been formed by companies with extensive experience in operating the DCS in Europe and Singapore. The contractor is overseen and supervised by EMSD to ensure that proper and satisfactory service can be delivered to users. Wo Hing Construction Co. Ltd, Shinryo (Hong Kong) Ltd. and China Geo-Engineering Corporation have been engaged in carrying out the other five construction contracts for the DCS project.

**(d) the present charges and demand for district cooling services at KTD;**

7. The tariff is stipulated in the District Cooling Services Ordinance (Chapter 624) which was passed by LegCo in March 2015. Calculated by applying the auto-adjustment formulae set out in the Ordinance to the opening tariff at 2012/13, the capacity charge rate and consumption charge rate for 2015/16 are \$116.03 per kilowatt refrigeration per month, and \$0.1959 per kilowatt-hour refrigeration (“kW rh”) respectively. As at February 2016, the total demand for district cooling services at KTD is about 26 megawatt of refrigeration.

**(e) the proportion of the present demand to the overall capacity of DCS at KTD;**

8. As mentioned above, the total demand for district cooling services at KTD is currently about 26 megawatt of refrigeration, which is about 9% of the total design cooling capacity of 284 megawatt of refrigeration.

**(f) a comparison of the charges of DCS and those of other air-conditioning systems available in the market;**

9. The DCS tariff has been set at a competitive level comparable to the cost of individual water-cooled air-conditioning systems (“WACS”) using cooling towers, which is one of the most energy-efficient air-conditioning systems available in the international market. It seeks to recover both the capital and operating costs of DCS over its project life in 30 years.

10. A comparison of the unit costs of DCS and those of WACS for Government premises and public facilities, as well as commercial developments in KTD at the price level of 2012/13 is summarised below.

<b>Types of buildings (weighted average)</b>	<b>% of air-conditioned floor area in KTD</b>	<b>Unit Cost of DCS<sup>1</sup></b>	<b>Unit Cost of WACS<sup>2</sup></b>
<b>All building types</b>	100	0.635	0.791
<b>Government premises</b>	24	0.714	1.053
<b>Facilities of public bodies</b>	12	0.489	0.621
<b>Commercial developments (e.g. private retail and offices and hotels)</b>	64	0.632	0.722

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<sup>1</sup> The cost of DCS is equivalent to the capacity charge and consumption charge to be paid by a consumer for the use of the district cooling services. The unit cost of DCS is worked out by dividing the total annual charges paid by the consumer for a building (i.e. the capacity charge and the consumption charge) by the building's annual consumption of the cooling energy (i.e. the cooling energy, in the unit of kWh, actually used for generating chilled water to be supplied to the building) over a year.

<sup>2</sup> The cost of WACS is the life-cycle cost, which is the present value of the current and future expenditures for the procurement, replacement, operation and maintenance of building materials and building services installation throughout the life span of the self-generated WACS for a particular building type in the KTD. The cost items include construction cost of plant rooms and equipment (i.e. chillers, pumps, cooling towers, transformers and low voltage switchboards) and pipework, operation cost (i.e. electricity cost, water cost and sewage cost) and maintenance cost (i.e. annual maintenance cost and maintenance staff cost). The WACS is assumed to have a project life of 20 years.

The unit cost of WACS is worked out by dividing the total discounted cash flow of the costs by the required cooling energy (i.e. the quantity of heat removed per second in the unit of kWh, actually demanded for generating chilled water to be supplied to the building).

11. The unit cost of DCS calculated on the basis of the tariff set out in the Ordinance is lower than the unit cost of an individual WACS, which is in line with the expectation that long-term energy savings would translate into a reduction in cooling costs. For a typical office building of 60,000 square metres of gross floor area and 7,000 kW of cooling capacity, the monthly air-conditioning charge currently varies from \$3 to \$5 per square foot at the 2014/15 price level. On the other hand, the same for district cooling is estimated to be about \$2 per square foot. However, the amount of air-conditioning charges to be paid by the air-conditioning user needs to take into account the operation and maintenance fee to be set by the building owners or their authorized agents for the remaining parts of the central air-conditioning system for the building concerned.

**(g) as regards the proposed DCS Phase IIIC project which comprised pipe laying works in the vicinity of a number of sites at KTD, the future uses of such sites and the timetable for the development of such sites; and**

12. The proposed DCS Phase III (Package C) project would facilitate the connection of DCS to future developments mainly comprising the “Comprehensive Development Area” and “Commercial” sites intended for commercial development in the north apron of KTD near Kowloon City. Tying in with the infrastructure provision in the area, the development sites to be served by DCS under the project would be progressively made available for development.

**(h) how the Administration would handle the requests, if any, from schools that were required to use district cooling services for concession in DCS charges.**

13. A subsidy has been granted to the two pilot schools in KTD by the Education Bureau for payment of capacity charge for the district cooling services.