

政府總部
環境局
香港添馬添美道2號
政府總部東翼15至16樓



ENVIRONMENT BUREAU
GOVERNMENT SECRETARIAT
15/F & 16/F, East Wing,
Central Government Offices,
2 Tim Mei Avenue, Tamar,
Hong Kong

電話號碼 Tel : 3509 8638
傳真號碼 Fax : 2537 1002

本函檔號 Our Ref.:

來函檔號 Your Ref.:

10 December 2012

By E-mail

Mr Derek Lo
Clerk to Panel (Economic Development)
1 Legislative Council Complex
1 Legislative Council Road
Central
Hong Kong

Dear Mr Lo,

**Panel on Economic Development
Follow-up to meeting on 26 November 2012
SCA 2013 Interim Review**

At the ED Panel Meeting on 26 November 2012, the Administration agreed to reproduce, for Members' reference as requested, information about the two power companies' reserve margin for installed capacity last provided by them on 24 February 2012 in the context of the 2012 tariff review. ED Panel paper ref CB(1)1111/11-12(05) is relevant. Extracts of relevant parts of that reply from Hongkong Electric and CLP are at Annexes 1 and 2 respectively.

Members may wish to note in particular that –

- (a) as electricity cannot be efficiently stored, electricity demand from customers needs to be met by supply at all times;
- (b) installed capacity is determined on maximum demand forecast at a particular point in time, rather than annual total electricity consumption level;
- (c) in order to satisfy demand in a secure and reliable manner, total installed capacity must exceed the forecast maximum demand at any time, with a margin of reserve to cater for system contingency and allow the generating units to be shut down for maintenance

and repair. Inadequate generation capacity would lead to substantial power interruptions with unacceptable and costly consequences;

- (d) generating units would not operate at the full capacity at all times. The amount of electricity that could be generated by generating units is affected by a number of constraints, including demand profile, plant availability, fuel supply and emission caps, etc.; and
- (e) availability of generating plant is affected both by planned outages required for maintenance, refurbishment, replacement or modification to ensure safe, environmentally compliant, reliable and efficient operation, and by forced outages due to unforeseen plant constraints.

Yours sincerely,



(Ms Vyora Yau)
for Secretary for the Environment

**Extract of ED Panel paper ref CB(1)1111/11-12(05)
– Hongkong Electric’s reply to Q5**

“5.1 Calculation of Reserve Margin :

If based simply on the general formula, HK Electric’s Nominal Reserve Margin Percentage shall be calculated as follows:

$$\begin{aligned} & \text{Nominal Reserve Margin Percentage} \\ &= (\text{Total Nominal Installed Capacity/System Maximum Demand in 2009}) - 1 \\ &= (3736 / 2537) - 1 \\ &= 47\% \end{aligned}$$

However, according to the emission clauses in the Specified Process Licence (SPL) for the Lamma Power Station & Extension, only the eight coal-fired units and the two gas-fired combined cycle units are allowed to generate electricity for the system under normal operating conditions. The four 125MW unit rating light gas oil-fired gas turbines and one 55MW black start light gas oil-fired gas turbine will only be operated in emergency situations or put in service for short periods of time for peak-opping purpose. Hence in calculating the Total Usable Generating Capacity, the aggregated ratings of these 5 generating units should be taken out from the Total Nominal Installed Capacity.

All these 5 light gas oil-fired gas turbines were originally installed in the ex-Ap Lei Chau Power Station of HK Electric in the 1970s. At the time of demolition that Power Station, these units had been in service for only short periods and the environmental regulations were lax than today. Hence to avoid wastage, these units were reinstalled at end 1980s at the Lamma Power Station after modification. These 5 units now account for less than 2% of the total generation fixed assets at Lamma Power Station. According to the above considerations, the Reserve Margin shall be calculated by adopting the Total Usable Generating Capacity as follows:

$$\begin{aligned} & \text{Total Usable Generating Capacity} \\ &= \text{Total Nominal Installed Capacity} - \text{Aggregated Ratings of 5 units of light} \\ & \quad \text{oil-fired gas turbine} \\ &= 3736 - 555\text{MW} \\ &= 3181\text{MW} \end{aligned}$$

$$\begin{aligned} & \text{Reserve Margin Percentage} \\ &= (\text{Total Usable Generation Capacity/System Maximum Demand in 2009}) - 1 \\ &= (3181 / 2537) - 1 \\ &= 25\% \end{aligned}$$

**Extract of ED Panel paper ref CB(1)1111/11-12(05)
– CLP Power’s reply to Q5**

“CLP’s reserve margin had dropped from 39.1% in 2009 to 32.6% in 2011.

Over the years, CLP has taken diversified generation strategies in various aspects such as technology, fuel and mixture of generating units (size, type & number) etc, to minimize power supply risk. Among CLP's total generating capacity of 6,908MW in Hong Kong, majority of the units are coal-fired plants and were commissioned in the 1980s; others are gas-fired and distillate-fired plant. Most of these generating plants have been in service for over 10 years and many for more than 20 years. They require carefully planned maintenance, refurbishment, upgrade and improvement in order to ensure safe, adequate and reliable electricity supply and minimise emissions in an efficient manner. ”