Scheme of Control Agreements with the two Power Companies
2013 Interim Review
Responses to Public Consultation

I refer to the Agenda of Panel on Economic Development Meeting on Monday 25 February 2013 on the captioned subject. It is noted that the current Scheme of Control Agreements (SCAs) signed with the two vertically-integrated power companies will be expired in 2018, and both parties have the right during 2013 to propose modifications of the terms and conditions of the SCAs but mutual agreement is needed for implementation. Against this background, I wish to present below my views and suggestions for your consideration:

Issues and Concerns

1. Safety, reliability, affordability and environmental protection are cited by the Government as the four principles guiding the energy policy in Hong Kong. It is well known that safe and reliable supply of electricity supply have been taken for granted by the community as a whole for decades. The environmentalists and the like-minded public, NGOs and business corporations have raised concern that emissions from electricity generation have caused poor local air quality and triggered global climate change.

2. The political parties and quite a lot of people too feel the power companies have been making huge profits but are still raising electricity tariff year after year. People residing and business locating on Hong Kong Island have been asking why they have to pay 20 to 30% more than those in Kowloon and New Territories.

3. Based on the phenomenal success in opening up the telecommunication sector, the public at large in Hong Kong have the perception that competition in a climate of free market forces will stimulate technical innovation and enhance the operational efficiency and productivity of the electricity sector. This will force the current service providers to adapt to the dynamic nature of market forces by improving efficiency and reducing costs.

4. With world's top notch electricity supply reliability of 99.99% plus and tariff much lower than numerous developed economies and some of them with deregulated market structure in place, such as Singapore, Tokyo, Sydney, New York, London and Paris, there are still strong calls from the community, particularly the political parties and NGOs, for restructuring by unbundling the electricity supply chain once the current SCAs expired in 2018. It is reckoned that the main drivers are to bring down or at least to cap the electricity tariff and provide greater customer choice.

Fixed Assets, Capital Investment and Electricity Tariff

5. Broadly speaking, the calculation of electricity tariff charged to the consumers is derived from (i) the permitted rate of return on fixed assets and (ii) fuel costs. Putting aside the complex issue of fuel costs which is characterized by rapid changes in regional and global social-political dynamics, the first and foremost action is to control and contain the increase in fixed assets and capital investment during the remaining term of SCAs.

6. In general, capital investment in fixed assets by the two vertically-integrated power companies is essentially to (i) replace the obsolete or retired electricity-related infrastructures and (ii) maintain adequate reserve margin of generation capacity and necessary back-up capability of transmissions and distribution network and associated installations. The list of useful lives of fixed assets as set out in the Schedule 2 of the SCA with Hongkong Electric , e.g. 60 years for buildings, overhead lines, cables, gas pipeline, transmission and distribution equipment, 35 years for coal-fired generating plants, 30 years for gas turbines, etc. are considered reasonable and in line with global practice. It is noted that the useful lives of CLP's fixed assets as set out in Schedule of its SCA are in general less, and this would facilitate earlier replacement and hence increase of capital investment in fixed assets. The significant disparity in useful life of fixed assets stipulated in the two SCAs warrants further review.

7. As in 2011, Hong Kong has a total installed electricity generating capacity of 12,624MW (including 70% of Guangdong Daya Bay Nuclear Plant and 50% of Phase 1 of Guangdong Pumped Storage Plant). The maximum (peak) system demand in 2011 was 9,200MW and this gives a very comfortable generation reserve margin of 37.2%. Notwithstanding that the capacity of the circuits interconnecting the power grids of CLP and HEC is 720MVA mainly for emergency back-up purpose, a reserve margin of 25% is considered adequate to maintain supply reliability of 99.99%. The decrease in reserve margin will defer the need for additional generating unit to meet, if any, increase in maximum system demand and hence reduce the pressure on tariff rise.

8. Under the SCAs, capital investment in adding new generating unit(s) and new transmission and distribution facilities is allowed to meet projected increase in peak system demand and electricity consumption. It is important to ensure that the projections provided by the power companies are realistic, taking due consideration of the up-coming completion of ten mega projects and the Government's drive for energy conservation and efficiency.

9. Furthermore, as the minimum load of Hong Kong system demand is less than half of the daily peak throughout the year, it is technically feasible to contain or even reduce the peak demand. One way to achieve this is to have substantial low off-peak time tariff in place, as adopted in the UK, to encourage consumers to switching their usual routine of electricity consumption in daytime to evening or night time. Progressive higher tariff structures for large-consumption consumers should be considered as this will likely bring down the peak system demand.

10. Procurement of electricity-related plant and equipment classified as capital investment should be subject to rigorous scrutiny to ensure they are functional, cost effective and adequate to serve the intended purposes, avoiding gold-plating of infrastructural components. Costs incurred in electricity-related operation and maintenance activities and non-electricity works and services should be closed monitored to ascertain exclusion from capital investment/expenditure.

11. According to Schedule 6 of the two SCAs, the Government should demonstrate to the public that the cost-benefit study of increased electricity grid interconnection for firm power interchanges is being actively pursued. This will further reduce the generation reserve margin of Hong Kong and facilitate market restructuring after 2018.

Fuel Costs and Fuel-Mix Strategy

12. It is noted that the 2012 average natural gas prices given in papers presented by CLP and HEC at the LegCo Economic Development Panel meeting on tariff reviews held on 11 December 2012 were US$7.74/mmBtu (HK$57.2/GJ) and US$12.64/mmBtu (HK$93.4/GJ) respectively based on the pricing mechanism of their existing gas supply contracts. CLP's paper also revealed the unit prices of its gas supply sources are: US$6 from the fast Yacheng 13-1 gas field (approaching the end of its useful life with rapid decline) and US$14 from short-term South China Sea, and opined that the current market price of US$18-21 would be the reference price for the long-term 2nd West to East Pipeline source commencing in 2013.

13. At the aforesaid meeting on tariff reviews, CLP pointed out the need to doubling the volume of natural gas (cleaner fuel) in fuel mix from 20.5% in 2011 to 45% in order to meet the 2015 SO_2, NOx and RSP emission caps. This means that more than 45% of natural gas in fuel mix is required to meet the further tightening 2017 emission caps based on the assumption that the amount of imported nuclear power and the performance of coal plant in emission control remain unchanged. Based on the unit price of natural gas at US$18, the fuel cost alone would be in the order of HK$1.30/kWh. It is estimated that the electricity production cost would be increased to HK$1.65/kWh. Once the current supply from of cheaper gas sources exhausted, the pressure on tariff rise for the next few years is tremendous and the extent would depend much on the ratio of natural gas in fuel mix for electricity generation.

14. It is interesting to note that based on the actual emissions from power plants recorded in 2011, the fuel mix of 33% gas and 67% coal currently adopted by HEC will be able to comply with the 2015 Emission Caps on SO_2, NOx and RSP comfortably and possibly even 2017 Emission Caps. This has taken account of the projected 1% increase in annual electricity consumption and on condition that no significant deterioration of gas turbine performance. However, the expiry of the 5-year short-term gas supply contract in 2014 would require HEC to secure new source of gas supply by end of 2014. The price of new gas will also be expensive and hence the pressure on tariff rise from 2015 onwards would be significant and the extent again depends on the ratio of natural gas in fuel mix for electricity generation.

15. It is generally believed that joint fuel procurement would allow the power companies to secure more competitive prices of fuel supply that can result in lower cost for electricity production. However, it is considered not that practical for supply of natural gas to Hong Kong due to absence of common gas carrier and sizable storage facilities. Nevertheless, it is worth exploring the feasibility of joint procurement of coal supply.

16. Hong Kong prides itself as Asia's World City and an international financial centre, there is a pressing need to improve the local air quality and to demonstrate to the world that Hong Kong is committed to tackle climate change. Given the electricity sector is responsible for 67% of carbon emission, and emissions of 50% SO_2, 25% NOx and 16% RSP in Hong Kong, it is concurred that it is necessary to revamp fuel mix for electricity generation by increasing use of natural gas and imported nuclear electricity to improve Hong Kong's air quality. However, Hong Kong is an open society with diverse vested interests, setting acceptable levels of air quality and carbon emission reduction targets which lead to changes in supply side fuel and energy mix, and increase in electricity tariff which would inevitably invite extensive, intensive

debate. The Government should actively engage the public and stakeholders in the early stage of policy formulation process, and set out clear objectives and road map for Hong Kong to make the transition to be a truly clean, low carbon, preferred city. Engagement can be in the form of conducting territory wide questionnaire survey or even holding public hearings to answer questions.

Concluding Remarks

17. Hong Kong has 7.1 million people living and working in a highly dense urban environment as 75% of the territory's total area of 1,104 km^2 is countryside. The small geographic area, dynamic urban environment and vibrant social and business activities conducted mostly in high-rise buildings and tall structures pose unique challenges to the electricity service providers. The SCAs in their present form have been serving its intended purpose well, ensuring the two power companies, CLP and HEC, are committed to provide safe, quality, reliable and reasonably affordable electricity to Hong Kong.

18. It is well recognized that electricity, a form of universal sought-after energy, is vital for the effective operations of our society and a driving force for quality human development and economic prosperity. Being a metropolitan city and service-oriented economy with no natural resources, Hong Kong is dependent on imports of all its fossil fuels and nuclear electricity to drive its economies and development. It is of paramount importance to have in place a sound and sustainable energy policy which can maintain a balance among the fundamental goals of economic growth, fuel and energy security, affordability and environmental quality which are competing with times. The motion passed by the LegCo in January 2012 urging the Government to establish an energy management authority to explore Hong Kong's long term energy demand, formulate and execute an energy policy deserves implementation, and I sincerely hope that this will be in place within the term of the office of the present Administration.

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13 February 2013