

# 立法會

## *Legislative Council*

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### **Panel on Economic Development Meeting on 23 November 2015**

### **Updated background brief on the future development of the electricity market**

#### **Purpose**

1. This paper provides background on the public consultation on the future development of electricity market and summarizes Members' relevant views and concerns in previous discussions.

#### **The current electricity market**

2. The Government launched a three-month public consultation on the future development of electricity market on 31 March 2015 ("the 2015 Consultation"). According to the public consultation paper, it is the Government's long-standing policy to ensure that electricity demand of the community is met safely, reliably, efficiently and at reasonable prices, while minimizing the environmental impact of electricity generation. The Government is also committed to introducing competition to the electricity market when the requisite market conditions are present<sup>1</sup>.

3. Electricity supply in Hong Kong is regulated through the Scheme of Control agreements ("SCAs") signed between the Government and individual power companies, namely, The Hongkong Electric Company Ltd. ("HEC")<sup>2</sup> which supplies electricity to customers on the Hong Kong Island, Ap Lei Chau and Lamma Island; and CLP Power Hong Kong Ltd. and Castle Peak

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<sup>1</sup> The commitment was made in the public consultation on the future development of the electricity market conducted by the Government in 2005-2006.

<sup>2</sup> HEC is a subsidiary of Power Assets Holdings Limited.

Power Company Ltd.<sup>3</sup> (referred to collectively as "CLP" hereafter) which jointly supply electricity to customers in Kowloon and the New Territories including Lantau, Cheung Chau and some outlying islands.

4. Both power companies are privately owned and vertically integrated in that they own and operate their respective electricity supply chains, including generation plants, transmission and distribution networks. They supply electricity directly to customers and provide customer services within their respective service areas. At the end of 2013, the total installed capacity of the two power companies was 12 645 MW, and the total number of electricity consumers was about 3 million, with about 80% being served by CLP and about 20% by HEC. In terms of the fuel mix, in 2013, coal-fired generation contributed to around 57% of the fuel mix on sent-out basis, followed by 21% natural gas and 22% nuclear power imported from the Daya Bay Nuclear Power Station ("DBNPS").

5. Electricity consumption in 2013 stood at around 43 billion kWh, with a split of 26% and 74% between residential and non-residential users, and aggregated maximum electricity demand was about 9 100 MW. In terms of the growth trend, Hong Kong's electricity end-use increased by 81% between 1990 and 2012, equivalent to a 2.7% increase per annum. During the same period, Hong Kong's real GDP increased by 134%, equivalent to an average of 3.9% per annum, while population increased by 25% (1.45 million), equivalent to an average of 1.0% per annum. The figures show that electricity use-to-GDP ratios have been dropping, which was mainly due to the growth in the less energy intensive service sector and increased awareness of energy conservation and energy efficiency. According to the forecast of the power companies, electricity consumption is expected to grow moderately at about 1% - 2% annually on average in the coming decade.

### **Development of electricity market and regulatory framework reviews**

6. Over the years, there have been suggestions that competition should be introduced to the electricity market to allow more suppliers, as well as to allow consumers to have choices, which will help drive down electricity tariff.

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<sup>3</sup> CLP Power Hong Kong Ltd. is a subsidiary of the CLP Holdings Limited. Castle Peak Power Company Ltd. ("CAPCO") is a joint venture electricity generating company established between CLP Power (40%) and ExxonMobil Energy Limited (60%). CLP Power has reached agreement with China Southern Power Grid International (HK) Co., Limited to each acquire half of the 60% interest in CAPCO held by ExxonMobil.

7. On the regulatory framework, there have been criticisms over the present contractual arrangements by SCAs, and the regulatory approach embedded therein, which allows the power companies to earn an agreed rate of return ("RoR") based on their average net fixed assets ("ANFA"), and encouraged over-investment. There has been quite some criticism that the current RoR of 9.99% (or 11% for investments on renewable energy ("RE") facilities) is too high and that the current arrangement which allows the power companies to pass the fuel cost for electricity generation to consumers does not provide sufficient incentive for the power companies to source the cheapest fuel available.

8. The current SCAs with CLP and HEC will expire on 30 September 2018 and 31 December 2018 respectively, with an option to be exercised by the Government before 1 January 2016 to extend them for five more years, i.e. until 2023. Meanwhile, the Government will discuss with the power companies changes that may be introduced to the post-2018 electricity supply regulatory framework, including the discussion of the stranded costs<sup>4</sup> implications not less than 36 months before the effective date of any specified market change. More information about SCAs is provided in **Appendix I**.

### **Mid-term review of SCAs in 2013**

9. The Government conducted a mid-term review of the current SCAs in 2013, and put forward to the power companies various proposals for modifying SCAs to improve certain terms and conditions for the benefits of consumers. These proposals included reducing permitted RoR, rationalizing fixed assets disposal arrangements, promoting energy efficiency, improving the incentive/penalty scheme, better regulating the Tariff Stabilization Fund ("TSF") balance, enhancing accountability and transparency and rationalizing certain accounting arrangements.

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<sup>4</sup> "Stranded Costs" refers to costs incurred by the relevant power company in relation to investments made or agreements entered into in respect of its activities which directly or indirectly relating to the generation, transmission, distribution, sale of electricity, energy efficiency and conservation, or emissions reduction (i.e., "electricity-related" activities), which become stranded (i.e. have not been recovered and cannot in future be recovered in the market) as a result of a change implemented by the Government to the electricity supply market structure causing material impact to the power companies in respect of their electricity-related activities (i.e., a "specified market change"). No less than 36 months prior to the effective date of a specified market change, the Government shall institute discussions with the power companies on, inter alia, the mechanism for the recovery from the market any stranded costs which cannot be mitigated by the measures to be implemented by the power companies, as reasonably required by the Government.

10. According to the Administration, the two power companies accepted some of these proposals, such as –

- (a) establishing an Energy Efficiency Fund to provide subsidies on a matching basis to non-commercial building owners to carry out improvement works to enhance the energy efficiency of their buildings;
- (b) raising the targets for supply reliability, operational efficiency and customer services;
- (c) enhancing transparency of the annual tariff reviews; and
- (d) lowering the cap on the TSF balance from 8% to 5% of its annual total revenues from local sales of electricity to alleviate the impact of tariff increase on customers.

#### **Public Consultation on Future Fuel Mix in 2014**

11. The Government launched a public consultation in 2010 on its proposed strategy and action agenda to combat climate change, and the proposal to adopt a carbon intensity reduction target of 50% to 60% by 2020 when compared with the 2005 level received broad-based public support. Based on the above climate change consultation and following the Fukushima incident in 2011, the Government launched in 2014 another public consultation on future fuel mix for electricity generation ("2014 Fuel Mix Consultation") and put forward two options, viz. importing more electricity through purchase from Mainland power grid (i.e. the China Southern Power Grid ("CSG"))<sup>5</sup>, and using more natural gas for local generation<sup>6</sup>.

12. Having regard to some 86 000 submissions received during March to June 2014, the Administration plans to take forward the following measures to meet the pledged environmental targets for 2020 –

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<sup>5</sup> A possible fuel mix ratio under this option was that Hong Kong would import electricity to meet about 50% of the demand, with about 20% being nuclear electricity currently imported from DBNPS and about 30% being new purchase from CSG; while natural gas for local generation would account for about 40%, and coal and RE the remaining about 10%.

<sup>6</sup> A possible fuel mix ratio under this option was to increase the share of natural gas to about 60%, and to keep that for coal and RE within about 20% while continuing with import of nuclear electricity from DBNPS for about 20% of the overall fuel mix.

- (a) to increase the percentage of local gas generation to around 50% of the total fuel mix in 2020, and, subject to a reasonable import price, to maintain the current interim measure to import 80% of the nuclear output from DBNPS, such that nuclear import would account for around 25% of the total fuel mix in 2020;
- (b) subject to public views on the tariff implications, to develop more RE;
- (c) to enhance its efforts to promote energy saving in the community and adopt more demand side management measures in order to reduce the overall demand; and
- (d) to meet the remaining demand for electricity by coal-fired generation.

### **The 2015 Consultation**

13. The 2015 Consultation has reviewed the current regulatory arrangement and set out the Administration's views on the future regulatory tool, the price setting mechanism to be adopted, and the features of the future contractual arrangement, including the permitted RoR, tariff approval process, promotion of information transparency, incentive and penalty scheme to enhance power companies' performance, measures to promote energy saving and renewable energy, etc. The consultation paper (LC Paper No. CB(4)727/14-15(01)) also gives an account of overseas experiences in introducing competition to the electricity markets, and to pave the way for Hong Kong to introduce competition in the longer term. The consultation period has ended on 30 June 2015 and more than 16 000 submissions were received. Results of the findings were yet to be announced but the Secretary for the Environment spoke of the Consultation in mid-June 2015 that "the responses were supportive to the major content ... there are details subject to various opinions including energy saving, renewable energy and how to keep the tariff to be more reasonable".

### **Previous discussions of Members**

14. Members of the Panel on Economic Development ("the Panel") expressed related views and concerns in respect of future electricity market at the annual briefings on tariff adjustments, at the meetings about mid-term review of SCAs in 2013 on 26 November 2012 and 25 February 2013, and at

the meeting to discuss the five-year development plans of the two power companies (2014-2018) on 6 February 2014. They also received a briefing and met with deputations on the future fuel mix for electricity generation on 12 and 26 May 2014 respectively. Members also deliberated on the future development of the electricity market in Hong Kong at the Panel meeting on 27 May 2015, and received views from 38 deputations at a special Panel meeting on 6 June 2015. Some of their major views are summarized in ensuing paragraphs and the relevant Administration's views in the 2015 Consultation are extracted.

### Readiness to introduce competition in 2018

#### *Distributed power generation in Hong Kong*

15. Members enquired if the Administration had considered the suggestion of the Consumer Council ("CC") put forward in its report on "A study of Hong Kong electricity market" ("CC Report") on investigating the feasibility of broadening the access of natural gas pipelines for fuelling small-scale generation and the feasibility of using natural gas to fuel small-scale electricity generation for large buildings/building compounds such as hospitals and university campuses. They also asked if the latter proposal would cause any implications on the power grids maintained by the power companies.

16. The Administration replied that although distributed energy generation was adopted in some overseas places, whether it was suitable for densely populated Hong Kong with high usage was uncertain. According to the 2015 Consultation, the Administration considered that there may be opportunities for the development of small-scale distributed power generation.

17. As regards the use of natural gas for distributed generation, however, the 2015 Consultation points out that it necessitates the conversion of the existing town gas network to carry natural gas to supply fuel for generation. This will involve complex engineering works at the supply side and also necessitate substantial modification or replacement of town gas appliances and fittings by existing consumers. The relevant works are very complicated and will result in major inconvenience to many households.

#### *Grid access*

18. Members suggested that the Administration should open up the power grids to reduce the need for extra power generation units and reserve capacity through interconnection between power companies' facilities.

However, power companies argued that their respective systems had been interconnected as early as the 1980s. The benefits from the sharing of reserve capacity had been fully realized, and the potential of further cost saving through further interconnection of the two power grids appeared low.

19. According to the 2015 Consultation, the Administration plans to discuss with the existing grid owners to open up their power grids for access by new players, and to jointly conduct a study with a view to working out the detailed arrangements, including financial, technical, legal and regulatory arrangements, for access by new players to the existing power grids preferably on a voluntary basis.

*Enhanced interconnection with the Mainland power grid and between the local power grids*

20. Members noted that CLP's power grid had already been connected with that of Guangdong, but it would require eight to ten years to build new interconnection infrastructure.

21. The 2015 Consultation reveals that importing electricity from the Mainland would remain a feasible option to introduce new suppliers to the electricity market in Hong Kong, although there is a concern over the reliability of importing electricity from the Mainland at this stage. As such, the Administration plans to commission a study with the existing grid owners as well as CSG to look into the detailed arrangements for strengthening the interconnection between the power grids of the Mainland and Hong Kong as well as that between the existing grids in Hong Kong.

*Segregation of generation and transmission/distribution business of the power companies*

22. Members queried whether the Administration had given up the option of segregation of electricity generation from the power grid, and requested the Administration to give an account on the pros and cons of the options between importing more electricity from the Mainland power grid and segregation of electricity generation from the power grid.

23. According to the 2015 Consultation, in order to create a level playing field for all market participants, overseas experience shows that the vertically integrated power companies should be required to segregate their generation business from their transmission and distribution business to help avoid any discriminatory access arrangement against the new players. The current SCAs have already required the power companies to provide to the Government the segregated annual cost data pertaining to their generation,

and transmission and distribution systems. In order to promote transparency and to pave the way for introducing new players, the Administration will pursue with the power companies the proposal of publishing their segregated cost data, bearing in mind the need to protect commercially-sensitive information, disclosure of which may undermine consumers' interest.

*Other measures to introduce competition to the electricity market*

24. Members considered market liberalization essential in enhancing electricity supply services provided to consumers. It was suggested that an independent body should be set up to study the matter of introducing competition to the current market, and that the Administration should consider setting out the framework for introducing competition to the market to attract new players. Some members urged the Administration to be prudent in considering market liberalization by studying the outcomes of liberalization of overseas electricity markets.

25. The Administration advised that it had looked into the experiences of market liberalization in Australia, Singapore, the United Kingdom and the US, and it showed that market liberalization had delivered mixed outcomes, and there was no conclusive evidence to suggest that market liberalization would help improve electricity supply.

Future regulatory framework

*Permitted rate of return*

26. Noting that the permitted RoR of SCAs was not reduced during the mid-term review in 2013, members criticized the Administration for failing to perform its gate-keeping role in restraining the two power companies from maximizing their return at the expense of the public. They commented that the improvements to be made to SCAs were insignificant at best. The two agreements were not equitable to customers, and the Administration did not seem to have any major change in the direction of future energy policy.

27. Members referred to the CC Report that the current SCAs were unfair to consumers as the power companies were allowed to earn a high risk-free permitted RoR on their ANFA the cost of which was transferred to consumers in the form of tariff. While urging the Administration to screen out unnecessary capital project proposals, a Panel member suggested lowering the permitted RoR to 5% or below under the next SCAs although some members considered that a high level of permitted RoR might attract new market players. A member also suggested the permitted RoR should be

reviewed every five years with considerations given to a host of factors including the global economy and bank interest rates.

28. The Administration advised that, in conjunction with independent energy consultant, it had exercised due care in reviewing the capital projects proposed by the power companies in their five-year development plans, particularly in terms of the need and timing for the projects. In fact, some of the capital projects proposed by the companies were not accepted by the Government. For example, under HEC's 2014-2018 Development Plan, the Government only approved the proposed L10 and did not accept the proposed gas-fired unit L11. Nevertheless, the Administration noted that the public understood and supported using cleaner fuel to help reduce carbon emission, and they were prepared to pay more to protect the environment.

29. In response to a member's view that there should be a penalty mechanism for the reckless investment in premature and unnecessary capital projects by the power companies, the Administration agreed to take this into account in the review of future SCAs.

30. According to the 2015 Consultation, in conducting the mid-term review of SCAs in 2013, the Government commissioned a consultancy study to review the methodology, parameters and assumptions used for setting the permitted RoR. In view of the downward trend of the risk-free rate and changes in risk appetites in recent years due to the global economic situation, the consultant suggested that the Administration could consider reducing it to the range of about 6-8%<sup>7</sup>. The Administration will commission a further study to update the appropriate permitted RoR, taking into account the prevailing market conditions, for the purpose of negotiation with the power companies.

31. In response to a request for disclosing relevant findings in the consultancy report suggesting the permitted RoR be lowered to the range of about 6% and 8%, the Administration advised that since there were strategic discussions and considerations in the analysis and content of the consultancy report, it was inappropriate to disclose the findings for it might affect future negotiations regarding the SCAs. Noting the Administration's response, the member requested the Administration to provide some useful and relevant information of the consultancy study to facilitate members' consideration and discussion of the future regulatory framework for the post-2018 electricity market. The Administration undertook to consider the request.

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<sup>7</sup> The above-mentioned permitted RoR of about 6-8% was derived by adopting an integrated approach taking into account the risk free rate, the cost of equity and the cost of borrowing in a regulated utility market.

*Excess generating capacity*

32. Some members considered that the current SCAs had, in effect, encouraged the power companies to accumulate assets indiscriminately to the extent that CLP had so much reserve capacity that it could sell excess electricity to the Mainland. The assets were fully paid for by Hong Kong customers to generate the excess electricity, but CLP only returned 80% of the profit it earned to offset its operating cost in generating electricity for local customers. Meanwhile, CLP claimed the full amount of permitted return from the reserve capacity. According to the Administration, CLP's Mainland sales would not be taken into consideration in approving any new generation plants and any loss in the Mainland sales would have to be absorbed by CLP's shareholders.

33. According to the 2015 Consultation, there may be room to tighten the current mechanism by having the power companies take on a larger share of the financial consequence resulting from error in forecasting demand. This may be achieved by excluding a higher percentage of the net asset value of the mechanical and electrical equipment costs relating to new generating unit that fails the tests for excess generating capacity in SCAs which helps reduce the risk of over-investment.

34. Some members considered that the reserve margins should be kept at reasonable levels, say, at 10% to 15%, and urged the Administration to review the reserve capacity with a view to lowering electricity tariff. The Administration responded that as some coal-fired units were scheduled to be retired without any replacement in the coming few years, the resultant reserve margins of the power companies would drop to about 20% to 30% by 2018.

*Tariff*

35. Members noted from the CC Report that the current regulatory regime was not fair to the consumers in that the power companies were allowed to transfer to consumers the business risks associated with fuel price fluctuations and hence, there might not be adequate incentives for power companies to explore cheaper gas sources.

36. The Administration responded that it and the power companies had acted within the framework of the existing SCAs, and pointed out that the CC Report had put forward a package of key findings and suggestions for a gradual and progressive reform of the electricity market in Hong Kong.

37. Members queried why the Administration allowed the power companies to increase tariff because the power companies' need for tariff increase was purely for the sake of achieving a surplus of TSF balance. The Administration said that a positive balance in TSF was a standing arrangement. The purpose of TSF was to provide funds to ameliorate the impact of tariff increase on customers, or to facilitate tariff reduction where appropriate. The balances of TSF and Fuel Clause Account ("FCA") were designed to act to smooth out volatility in adjusting both the Basic Tariff and the Fuel Cost Charge. Doing away with the TSF and FCA arrangements might lead to wide fluctuations in tariff which the community might not welcome.

38. According to the 2015 Consultation, as the net tariff that consumers have to pay ultimately comprises both basic tariff and fuel clause charge, there is a case to consider whether the current arrangement of tariff approval<sup>8</sup> should be extended to cover not only Basic Tariff Rate but also the net tariff.<sup>9</sup> This will help strengthen the existing arrangement to ensure that the power companies are prudent in both fuel sourcing as well as fuel price forecasting.

#### *Emission performance*

39. With the effective operation of the Technical Memoranda under the Air Pollution Control Ordinance (Cap. 311) in emission control, the Administration had proposed to the two power companies to remove the Emissions Performance Linkage Mechanism ("EPLM").

40. Some members criticized the two power companies for refusing to exclude investments in any new or existing emission control facilities from earning permitted return, and particularly for HEC for insisting on maintaining EPLM under SCA. They considered that if the emission control facilities were allowed to be used for calculating permitted return, the power companies should not be given financial incentive payment at the same time.

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<sup>8</sup> Under the current SCAs, the power companies have to submit development plans ("DPs"), which set out the projected Basic Tariff Rate for each of the five years covered by the DPs, for the approval of the Executive Council ("ExCo"). In the following annual tariff reviews, no further approval from ExCo is required for the adjustment if the Basic Tariff Rate proposed by the power companies for a year covered by the DP does not exceed the projected Basic Tariff Rate approved for that year by more than 5%.

<sup>9</sup> The net tariff payable by customers comprises both basic tariff and fuel clause charge. If the current arrangement is extended to cover the net tariff, approval of ExCo is needed if the projected net tariff in a subsequent tariff review exceeds by a certain margin.

41. CLP agreed to remove EPLM during the mid-term review of SCA in 2013. HEC explained that EPLM comprised a penalty element as well as an incentive element. The amount of penalty for failing to meet the emission standards was four times the incentive awarded for meeting the standards. The continued enforcement of EPLM was in fact a driving force for HEC to continuously improve the emission requirements. According to the 2015 Consultation, there may be a case to apply a uniform treatment in future.

#### Fuel mix implementation

42. Regarding future fuel mix, members urged the Administration to strike a balance among the use of natural gas, coal and nuclear power for future electricity generation. There was a suggestion about importing more nuclear power for use, because new nuclear plants in the Mainland would adopt more advanced safety precautions. The Administration remarked that the future fuel mix promulgated in the 2015 Consultation was up to 2020 only, and the outcome of the detailed study on the arrangements pertaining to importing electricity from the Mainland grid might have a bearing on the future fuel mix. Nevertheless, members asked the Administration to devise facilitation measures to help the power companies to source fuel supplies at reasonable costs.

#### *More use of natural gas*

43. In respect of the option to increase the share of natural gas and reduce the use of coal for local generation, a member commented that while the cost of natural gas was higher, consumer electrical appliances were becoming more energy efficient, which would help reduce the electricity consumption thereby making this option more affordable.

44. According to the 2015 Consultation, the Administration intends to increase the share of natural gas in the fuel mix from 40% in 2017 to some 50% in 2020, instead of the originally proposed 60% in the 2014 Fuel Mix Consultation. It envisages that a small number of additional gas units would need to be built in order to increase the use of natural gas. Such units would in any event be required for meeting the growing electricity demand in early 2020s as the coal-fired generation units gradually retire.

45. A member supported the use of floating liquefied natural gas ("LNG") storage and re-gasification unit, which resembled an LNG terminal on a tanker, in Hong Kong. He added that the Administration could draw on experiences from Singapore on this matter and explore the feasibility to build an artificial island to accommodate such installations. There was also an enquiry about the feasibility of land allocation for LNG installations and its pros and cons vis-à-vis purchasing natural gas from the Mainland.

46. The Administration advised that the power companies could import natural gas from various sources, including the piped gas through the Mainland's Second West-East Natural Gas Pipeline. It would give careful consideration to the technological viability and tariff implications when examining proposals on LNG storage and re-gasification unit.

#### *Nuclear energy*

47. In view of the increase in the price of natural gas, some members opined that consideration should be given to increasing the use of nuclear energy for generating electricity. They enquired about the feasibility of increasing supply of nuclear power from DBNPS. A member was also concerned about the relative cost and environmental implications regarding the use of nuclear power against natural gas in local fuel mix.

48. CLP imported 70% of the nuclear power of DBNPS for the past two decades and would continue until 2034. It had reached an agreement to import an additional 10% of output from DBNPS during the period between 2014 and 2018. According to CLP, the additional import would not require additional investment in new infrastructure nor would it increase safety risks. The Administration advised that due to technical constraints, 80% was the maximum average amount of nuclear power which could be imported in a year and it was not feasible to increase the level to 100% for the time being. The Administration also advised that the cost of the additional import of about 10% of output of DBNPS for 2014-2018 was much higher than the cost of the first 70% contracted long time ago, and hence the difference between the future cost of nuclear power and that of natural gas was not significant.

#### *Demand side management*

49. Members were generally concerned about the high projected increase in Basic Tariffs in the coming years up to 2018. Some members had suggested that the Administration should introduce more stringent energy saving indicators such as setting "hard targets" on electricity consumption and implement progressive electricity tariff rates to encourage energy saving and reduce electricity charges. A member also suggested the use of technologies such as mobile apps to help consumers save energy.

50. The Administration advised that on-going discussions with power companies were being held to introduce measures to reduce pressure on tariff increase. With the promotion of various energy saving initiatives, the rate of increase in electricity consumption of Hong Kong in recent years had slowed down. According to CLP, business customers had a strong incentive

to save energy as a way to save costs and it would continue to provide energy audits as well as energy saving solutions and facilities to these customers.

51. According to the 2015 Consultation, the Government is committed to taking further action to promote energy savings and to reduce the demand for electricity consumption. It is reviewing Hong Kong's energy intensity target and has plan to enhance its efforts to promote energy saving through tightening regulatory tools, enhancing public education and mobilizing stakeholders.

52. The Administration advised that there was a mechanism under the SCAs to encourage the two power companies to promote energy efficiency and conservation. As mentioned in the "Energy Saving Plan for Hong Kong 2015 ~ 2025+", the Hong Kong Housing Authority had installed smart meters and display panels at ground level lobbies of new housing blocks so that tenants could see the average electricity consumption per flat of their own block with a view to encouraging them to save energy.

53. The 2015 Consultation also seeks public view as to how the existing energy savings measures under SCAs could be improved to further encourage and require the power companies to help promote demand side management, such as the introduction of the Advanced Metering Infrastructure, to enhance the management on electricity demand.

#### *Renewable energy and energy conservation*

54. Addressing members' concern on the more extensive use of RE, the Administration pointed out that there were cost and space considerations in the development of RE. For example, the unit generation cost for RE would likely be many times higher than that for gas-fired or coal-fired electricity. Following strenuous efforts made to improve energy efficiency and conservation, it was expected that by 2020, major electrical equipment in all new commercial buildings would be up to 50% more energy efficient as compared with the 2005 building stock.

55. The Administration advised further that given the natural constraints and geographical limitations in Hong Kong as well as the current state of technology, there were limited opportunities in using RE as a major affordable fuel source. Notwithstanding, the Government had been encouraging the development and wider adoption of RE.

56. Deputations in general shared the aforesaid constraints and limitations in using RE. Members noted their suggestions for the Administration to formulate policies and provide incentives including land allocation and a higher permitted return plus a bonus with a view to

enhancing the RE development and to draw on experiences from other jurisdictions which provided a guaranteed price support for RE producers to shoulder the risks by themselves in running financially viable projects.

57. According to the 2015 Consultation, the Administration is open to the suggestion of further promoting RE by the public sector, private sector (including solar water heating, grid connection, feed-in tariff and net metering) or the power companies, subject to the community's acceptance of a higher tariff implication. In response to members' concern, the Administration expressed its open attitude towards further promotion of the development of small-scale distributed RE.

### **Council questions**

58. At the Council meetings on 17 October 2012, 23 January, 19 June, 23 October, 27 November, 11 December 2013, 9 April and 11 June 2014, 3 and 24 June 2015, Dr Hon Kenneth CHAN, Hon TANG Ka-piu, Hon CHAN Hak-kan, Hon Cyd HO, Hon Kenneth LEUNG and Hon James TIEN raised questions about the electricity market covering, among others, measures to reduce electricity tariff, subsidies of the Government, the use of solar energy, opening of the power grid, the future fuel mix in electricity generation, the impacts on basic tariffs of lowering the permitted profit rate and Government's policy on introducing competition to the electricity market. Hyperlinks to the relevant written replies from the Administration are provided in **Appendix II**.

### **Latest development**

59. The Administration will brief the Panel on the views received during the 2015 Consultation at the meeting on 23 November 2015.

### **References**

60. A list of the relevant papers which are available on the LegCo Website (<http://www.legco.gov.hk>) is in **Appendix II**.

### Information about the Scheme of Control agreements

The Scheme of Control agreements ("SCAs") set out the rights and obligations of the power companies and provide a framework for the Government to monitor the power companies' financial affairs and technical performance. To achieve the policy objective of providing reliable, safe and efficient electricity supply at reasonable prices, SCAs include the following key features –

- (a) an obligation for the power companies to provide sufficient facilities to meet present and future electricity demand;
- (b) an obligation for the power companies to supply electricity at lowest possible cost; and
- (c) provision for periodic financial review and annual tariff review, and for annual audit of the technical and financial performances of the power companies.

2. Major terms of the current SCAs are set out below –

- (a) the annual permitted rate of return ("RoR") is 9.99% (vis-à-vis 13.5% to 15% in previous SCAs) of the power companies;
- (b) the annual permitted rate of return is 9.99% (reduced from 13.5% to 15% previously) on the average net fixed assets of the power companies;
- (c) the power companies' permitted RoR is linked to their emission performance under the emission performance linkage. A penalty level at, respectively, 0.4 and 0.2 percentage points reduction of return on all non-renewable energy fixed assets will be imposed if the power companies exceed any of the emission caps of  $\geq 30\%$  and  $\geq 10\%$ , respectively. They will be given a smaller financial incentive at 0.1 and 0.05 percentage points increase of RoR for over-achievement of all the emission caps of  $\geq 30\%$  and  $\geq 10\%$  respectively;
- (d) financial incentives are provided to encourage more usage of renewable energy;

- (e) the portion of the net asset value on machinery and electrical equipment relating to new generating facility found to be excessive upon commissioning for exclusion from the company's average net fixed assets for calculating the return is set at 50% for both power companies (previously 40% for CLP<sup>1</sup> and 50% for The Hongkong Electric Company Ltd. ("HEC"));
- (f) the threshold above which the Executive Council's approval is required for adjustment of the Basic Tariff is 5% (lowered from 7% in the previous SCAs), limiting the room for the power companies to adjust their tariffs;
- (g) a Tariff Stabilization Fund ("TSF") is maintained for the retention of net revenue in excess of the agreed return for the power companies and the cap on TSF balance is 8% of annual local sales (down from 12.5% in the previous SCAs);
- (h) the Government will have unfettered discretion to introduce changes to the electricity regulatory framework, starting 1 October 2018 for CLP and 1 January 2019 for HEC, after taking into consideration market readiness and other relevant factors. The changes may include the introduction of legislation to replace the SCAs regime; and
- (i) in the event of a change implemented by the Government to the electricity supply market structure that caused material impact to the power companies, they shall recover from the market stranded costs that could not be mitigated by measures required by the Government.

3. The Government may introduce changes to the electricity supply regulatory framework after the expiry of the SCAs. Before implementing any changes to the electricity supply regulatory framework, the Government will take into account all relevant factors and discuss with the power companies market readiness, potential future changes to the electricity supply regulatory framework, and transition issues before 1 January 2016.

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<sup>1</sup> CLP refers to CLP Power Hong Kong Ltd. and Castle Peak Power Company Ltd.

## List of relevant papers

Issued by	Meeting date/ Issue date	Paper
Panel on Economic Development	11 December 2012	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Background brief</a> <a href="#">Information from power companies on five-year development plans and annual tariff reviews elaboration on the notes on confidential information</a>
	25 November 2013	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Background brief</a> <a href="#">Administration's paper</a>
	10 December 2013	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Background brief</a> <a href="#">Legislative Council Brief - 2014-18 Development plan and 2014 tariff review of the two power companies</a>
	6 February 2014	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Background brief</a> <a href="#">Legislative Council Brief - 2014-18 Development plan and 2014 tariff review of the two power companies</a>
	28 April 2014	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Background brief</a> <a href="#">Legislative Council Brief - public consultation on future fuel mix for electricity generation</a>
	12 May 2014	<a href="#">Agenda</a> <a href="#">Minutes</a>

Issued by	Meeting date/ Issue date	Paper
	26 May 2014	<a href="#">Agenda</a> <a href="#">Minutes</a>
	16 December 2014	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Background brief</a>
	27 May 2015	<a href="#">Agenda</a> <a href="#">Minutes</a> <a href="#">Administration's paper on public consultation on the future development of the electricity market</a> <a href="#">Administration's letter dated 5 June 2015 in response to Dr Hon Kenneth CHAN on "Future development of the electricity market in Hong Kong" (Chinese version only)</a>
	6 June 2015	<a href="#">Agenda</a> <a href="#">Minutes</a>
Council Meeting	17 October 2012	<a href="#">Written reply by the Secretary for the Environment to a question on "Measures to Facilitate Reduction in Electricity Tariffs" raised by Dr Hon Kenneth CHAN Ka-lok</a>
	23 January 2013	<a href="#">Written reply by the Secretary for the Environment to a question on "Electricity Expenditure of Government Departments and Public Organizations, Government's Subsidies on Electricity Expenditure for Specific Industries, and Electricity Tariffs" raised by Hon TANG Ka-piu</a>
	19 June 2013	<a href="#">Written reply by the Secretary for the Environment to a question on "Review of Scheme of Control Agreements and Fuel Mix" raised by Hon LEUNG Yiu-chung</a>

<b>Issued by</b>	<b>Meeting date/ Issue date</b>	<b>Paper</b>
	23 October 2013	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Use of Solar Energy to Generate Electricity" raised by Hon CHAN Hak-kan</u></a>
	27 November 2013	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Fuel Mix for Future Energy Policy" raised by Hon Dr Elizabeth QUAT</u></a>
	11 December 2013	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Electricity Demand and Power Grid" raised by Hon Cyd HO</u></a>
	9 April 2014	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Options on Future Fuel Mix for Electricity Generation" raised by Hon Kenneth LEUNG</u></a>
	11 June 2014	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Future Fuel Mix for Electricity Generation" raised by Hon Kenneth LEUNG</u></a>
	3 June 2015	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Electricity Tariffs" raised by Hon TANG Ka-piu</u></a>
	24 June 2015	<a href="#"><u>Written reply by the Secretary for the Environment to a question on "Future Development of the Electricity Market" raised by Hon James TIEN</u></a>
Consumer Council	4 December 2014	<a href="#"><u>Searching for New Directions - A Study of Hong Kong Electricity Market (English version only)</u></a>