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For Information
on 25 July 2005

LEGISLATIVE COUNCIL PANEL ON ECONOMIC SERVICES

CLP POWER HONG KONG LIMITED
CASTLE PEAK POWER COMPANY LIMITED
2005 FINANCIAL PLAN

Introduction

This paper informs Members that the Executive Council has advised and the Chief Executive has ordered at the meeting on 28 June 2005 that the capital projects included in and the financial aspects of the 2005 Financial Plan of CLP Power Hong Kong Limited (CLP Power) and Castle Peak Power Company Limited (CAPCO)[1] (hereinafter referred to collectively as "CLP") should be accepted, and the projected basic tariff rates and extent of financing from the Development Fund proposed therein should be approved.

Background

General

2. CLP supplies electricity to Kowloon, the New Territories and outlying islands except Lamma Island. CLP's existing installed generating capacity is 8,263MW.

3. The Scheme of Control Agreement (SCA) provides, among other things, that

(a) six months before the period covered by the previous Financial Review expires, the two sides will conduct jointly a Financial Review to determine the consequential impacts on the tariff;

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1 CAPCO is a generating company jointly owned by CLP Power (40%) and ExxonMobil Energy Limited (60%).

(b) the projected basic tariff rates and the extent of Development Fund financing for the Financial Plan period are subject to approval by the Executive Council; and

(c) an annual Auditing Review shall be conducted to review jointly with CLP, the financial performance of CLP against the agreed estimates in the Financial Plan as well as its technical performance.

The 2005 Financial Plan

4. CLP's approved Financial Plan for 1999 to 2004 expired in end-December 2004. CLP submitted its 2005 Financial Plan covering the period from January 2005 to September 2008 in mid-2004, which details, inter alia, CLP's electricity demand forecasts, development plans, estimated expenditure and proposed tariff rates for each year up to September 2008.

5. Review of the 2005 Financial Review was in progress when the 2005 Tariff Review was conducted in end-2004. Members were informed in December 2004 that CLP decided to maintain its net electricity tariff for 2005 at 2004 level before the approval of the 2005 Financial Plan, an arrangement consistent with the provisions in the SCA.

6. With the assistance of an independent expert consultant, Nexant Inc. (Nexant)[2], we have reviewed the economic, technical and environmental aspects of the Financial Plan with CLP as part of the Financial Review as referred in paragraph 3(a) above. The review involved protracted discussions with CLP. Taking into account our comments, CLP submitted its revised 2005 Financial Plan in early June 2005.

Salient Features and Assessment

I. Load Forecast

7. CLP's maximum demand forecasts for determining the timing for additional generation capacity and sales forecasts for tariff planning have been examined by Nexant and the Government Economist

[2] Nexant is a consulting services provider headquartered in San Francisco, U.S.A., which provides energy policy, power system planning and applications consultancy services to clients worldwide. Nexant has been engaged in providing advisory services on the two power companies' development proposals and technical issues to Government of the Hong Kong Special Administrative Region since 2001.

(GEcon) and cross-checked against their own forecasts. CLP's demand forecasts are close to those of Nexant and slightly higher than those of GEcon while its sales forecasts are slightly lower. Nexant opines the variation reasonable and recommends acceptance.

8. The forecasts of Nexant and GEcon were based on economic data available in late 2004. The new Gross Domestic Product (GDP) figures announced by Government in March 2005 are 4.5 to 5.5% for 2005 and 4% per annum for 2006 to 2008. Both Nexant and GEcon opine that the latest GDP figures to be close to those available in late 2004 and the slight differences will not have material impact on the load forecasts.

II. Capital Projects

9. Capital projects (with useful life extending beyond or commencing after 30 September 2008) included in the Financial Plan can be broadly categorized into –

(a) projects required to meet demand and to be commissioned on or before 30 September 2008, and some of them may have some works and expenditure required after September 2008; and

(b) projects required to meet demand and to be commissioned after September 2008, but with part of the expenditure to be incurred on or before 30 September 2008.

10. As the existing SCA will continue until September 2008, the Government is in a position to consider the projects in paragraph 9 above under the existing SCA, and, where appropriate, approve the capital expenditure to be incurred up to September 2008.

11. Members were informed on 31 January 2005 that we are working on the future arrangements for the electricity market after the expiry of the current SCAs in 2008. We are hence very mindful that this 2005 Financial Plan under the current SCA, and Government's approval of it, should not pre-empt future regulation of and arrangements for the electricity market after 2008.

12. CLP has since revised its 2005 Financial Plan, which now excludes projects falling within paragraph 9(b) above except with regard to the emission reduction project (vide paragraphs 22 to 26 below). We

have also made it explicitly known to CLP that Government's approval of the projected basic tariff rates and the extent of Development Fund financing in the 2005 Financial Plan should not pre-empt Government's consideration of future regulation of and arrangements for the electricity market after 2008, nor should it give rise to any expectation of renewal or extension of the SCA or any expectation of entitlement to cost recovery and/or return on investments in the relevant assets.

Generation Development

13. In the revised 2005 Financial Plan, CLP has proposed to –

(a) commission the Units 7 and 8 at Black Point Power Station in 2005 and 2006 respectively, pursuant to the agreement reached with Government in 1999;

(b) refurbish the six coal-fired and two coal/gas-fired generating units at the Castle Peak Power Station (Units A1 to A4 and B1 to B4) to ensure continued compliance with safety and environmental requirements and maintain its operational efficiency and reliability;

(c) carry out post-commissioning projects for replacement of worn-out or aged equipments and general improvement work for the plants at Black Point and Castle Peak; and

(d) carry out the following two environment-related projects pursuant to the understanding reached in the 2003 Interim Review –

(i) construct and commission a commercial-scale wind turbine (800kW) as a demonstration project on the use of renewable energy for power generation; and

(ii) retrofit the four coal-fired generating units at Castle Peak Power Station (Units B1 to B4) with Flue Gas Desulphurization (FGD) plant and Selective Catalytic Reduction (SCR) plant for reducing atmospheric emissions.

(a) Units 7 and 8 at Black Point Power Station

14. In December 1999, Government agreed to CLP's proposals to defer installation of Unit 7 from 2003 to 2005 and Unit 8 from 2004 to 2006 at Black Point.

15. We agree with Nexant that the proposed budget to complete the project in the Financial Plan period is reasonable. With the addition of these two generating units, the installed generating capacity of CLP will be sufficient to meet the expected electricity demand throughout the Financial Plan period.

(b) Castle Peak mid-life refurbishment projects

16. Members were informed in June 2000 that Government had agreed to CLP's proposals to refurbish the eight generating units at Castle Peak Power Station to ensure its safe and reliable operation, in the context of CLP's previous Financial Plan, but the refurbishment of the two oldest units (i.e. Units A1 and A2) would be subject to review.

17. CLP completed its assessment in late 2004 and concluded that decommissioning/mothballing of Units A1 and A2 is not appropriate as the units are required to ensure overall system reliability and to meet demand during the scheduled outage of Castle Peak B units for retrofit works referred to in paragraph 23 below. Electrical and Mechanical Services Department agrees that decommissioning/mothballing of these units at this stage would not be a prudent option from the operation point of view. Units A1 and A2 have therefore been included for the mid-life refurbishment.

18. The bulk of the refurbishment projects have commenced in the previous Financial Plan period. We agree with Nexant that the proposed budgets required to complete the projects in this Financial Plan period are reasonable.

(c) Post-commissioning projects

19. We agree with Nexant that these on-going projects are necessary and justified for ensuring operational reliability and the proposed budgets reasonable.

(d) Environment-related projects

20. Members were informed on 24 November 2003 that, during the 2003 Interim Review, we have reached an understanding with CLP whereby –

(i) CLP recognizes Government's efforts in exploring alternative power sources including renewable energy, to supplement conventional power generation from fossil fuels and in promoting public awareness of these alternative power sources and participation in the exploration. To this end, CLP is prepared to plan and set up commercial scale wind turbines for public demonstration and efficiency testing, subject to detailed feasibility studies and further discussion on the implementation details with Government; and

(ii) CLP recognizes Government's efforts to improve regional air quality. Government will continue discussions with CLP on substantive means to achieving emission reduction needed to meet the emission caps that will take effect from 2010.

(i) Commercial scale wind turbine

21. With regard to paragraph 20(i), CLP now proposes to construct and commission a commercial-scale wind turbine of about 800kW. Nexant has confirmed and we agreed that the wind turbine technology is a proven commercial renewable technology and the cost of the project is reasonable.

(ii) Emission reduction project

22. To improve regional air quality, Government and Guangdong reached a consensus to reduce, on a best endeavour basis, the emission of four major air pollutants in the region by 2010. To meet the emission reduction targets, we will need, inter alia, to cap the CLP's emissions in 2010 by stipulations in Specified Process Licences to be issued by Environmental Protection Department (EPD).

23. Pursuant to paragraph 20(ii) above, CLP proposes to retrofit the four coal-fired generating units at Castle Peak Power Station (CPPS) with FGD plant and SCR plant for reducing atmospheric emissions of sulphur dioxide (SO_2) and nitrogen oxides (NO_X) respectively. CLP

noted, in putting forward the proposal, that the project requires major capital investment and long lead times. Hence, while CLP would proceed with the necessary preparatory planning and upfront engineering work, it will review the way forward in the light of the Government's long-term environmental policy and the successor regulatory regime, prior to making major investment commitment for this project.

24. Having assessed the proposed project against the 2010 emission reduction targets, Nexant opines that –

(i) CLP cannot meet its emission targets to be stipulated by EPD for SO_2, NO_X and respirable suspended particles (RSP) by 2010; but

- will be able to meet the target for NO_X in around 2012 when the FGD and SCR retrofit projects are fully implemented; and

- will meet the target for SO_2 from 2012 onwards if new natural gas supply is also secured by 2011;

(ii) CLP's proposal is the most viable and cost-effective option[3] for reducing SO_2 and NO_X emissions, among other alternatives, such as repowering of existing coal fired units with Combined Cycle Gas Turbine (CCGT) and switching to natural gas for the existing coal fired units;

(iii) CLP's proposed budget is reasonable and justified; and

(iv) CLP has not put forward any proposal to reduce RSP emissions – the FGD retrofit will lower the RSP emissions to some extent. However, there are no cost effective technologies available to further reduce RSP on coal fired units already equipped with electrostatic precipitators. Repowering of existing coal fired units with CCGT and switching to cleaner fuel (which will entail higher cost and be dependent on additional gas supply) or RSP emission trading (when such is available in the regional market) are the only alternatives.

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[3] The new FGD and SCR systems would reduce emissions of SO_2 by about 90% and NO_X by about 80% from the four Castle Peak B units.

25. Although the project is designed to meet the 2010 emission targets and commissioned after the expiry of the current SCA, we support the emission reduction project as they help to reduce air pollutants and facilitate meeting the emission reduction targets needed for improving the air quality in Hong Kong and the Pearl River Delta Region.

26. Nevertheless, the project is not sufficient for achieving the 2010 targets and CLP will need to take additional measures to ensure that, if CLP were to continue to meet in whole or in part the demand for electricity or requirements for electricity after 30 September 2008, the intended emission caps for 2010 which may apply to CLP would be met. In this connection, CLP has been informed specifically that the consideration or approval of the projected basic tariff rates and extent of financing from the Development Fund of the 2005 Financial Plan shall not be or be taken as a representation or promise that Government considers or has accepted as adequate the emission reduction project in meeting the intended emission caps as conditions which may be specified upon renewal of Specified Process Licences issued by the Authority to CLP pursuant to the Air Pollution Control Ordinance before, on or after 30 September 2008.

Power Systems Development

27. Power systems projects include new substations, additional circuits, improved control equipment, or reinforcement of existing system to ensure that adequate transmission and distribution facilities are in place to meet new demands, maintain reliability of supply and improve the safety and environmental aspects of CLP’s systems.

28. We share Nexant’s view that the power systems projects will enhance reliability and performance and are required, with the continuing development in the new towns and other major projects in Kowloon and the New Territories. Nexant also opines the capital expenditure for various projects reasonable and within expected ranges. We will monitor the projects through the annual Auditing Review in the light of actual demand build-up.

Customer and Corporate Services Development

29. Projects relating to customer and corporate services include metering system development, service centre improvements and information system development. We share Nexant’s views that these projects are reasonable.

III. Energy Conservation and Efficiency

30. CLP had included in its previous Financial Plan a package of Demand Side Management (DSM) programmes to encourage non-residential customers to contribute to energy efficiency. When the programmes were completed in 2003, the Energy Efficiency & Conservation (EE&C) Working Group was formed to coordinate the efforts among Government and the power companies to promote energy efficiency in Hong Kong. EE&C activities such as education programmes and technical advisory services for customers will continue during the Financial Plan period.

31. Nexant has recommended that CLP should continue load research programmes to gain more insight into how electricity is used, to better target future EE&C programmes and to improve load forecasting work. We will review the effectiveness of EE&C programmes with CLP each year with a view to identifying possible improvements in the future.

IV. Financial Aspects of the Financial Plan

Capital Expenditure

32. CLP forecasts that total capital expenditure over the period 2005 to September 2008 will amount to around $24 billion.

Permitted Return and Net Return

33. The Permitted Return of CLP is based on its Average Net Fixed Assets and the Net Return is derived after taking into account certain deductions provided for in the SCA. CLP's projected average annual Net Return in the Financial Plan period is about the same as the actual and forecast in the last Financial Plan period.

Development Fund (DF)

34. Under the SCA, any excess in Net Revenue over the Permitted Return, after deduction of excess capacity adjustment, is transferred to the DF. The main purpose of the DF is to assist in the acquisition of fixed assets and the balance may be reduced to meet any shortfall in net revenues.

35. CLP’s DF balance would decrease in the Financial Plan period and is projected to be substantially below the DF cap agreed during the 2003 Interim Review by end September 2008. With decreasing balances, there would be no surplus DF to finance CLP’s capital expenditure programme in the Financial Plan period.

Tariff Levels

36. Members were informed in December 2004 that CLP has frozen its net tariff for 2005 at the 2004 level before the approval of the 2005 Financial Plan, pursuant to the SCA (vide paragraph 5 above).

37. CLP projects annual average increase in basic tariff and net tariff for 2006 to 2008 to be below Government’s medium-term forecast inflation rate of 3.0% per annum. However, it should be borne in mind that in practice, the actual basic tariff to be charged to consumers each year will be determined in the preceding year, following discussions between Government and CLP during the annual Tariff Review, taking into account any variations in the component parts of the Financial Plan.

V. Environmental Implications

38. Natural gas consumption in 2005 and 2006 will be about 80% of the maximum daily intake by CLP before 2003. The level will decrease to about 60% in 2007 and 2008, when more coal-fired generation units, which are less efficient and more polluting, will be used for electricity generation. As the environmental benefits of CLP’s proposed emission reduction project will not be fully reaped until around 2012, pollutant emissions from CLP will increase and may further aggravate the air quality. The Specified Process licence of CPPS is due for renewal. EPD is taking the opportunity to impose caps on CPPS with a view to reducing the emissions to the practical minimum, and maximising the use of natural gas.

39. Albeit practical and cost-effective, CLP’s emission reduction proposal will not be able to meet the intended emission caps for 2010. EPD opines that additional measures are required to be taken by CLP to reduce the emissions, and these could be the speeding up of the work programme for retrofitting the Castle Peak units, replacing some coal-fired units with additional new gas-fired combined cycle gas turbines or purchasing credits in the emissions trading market. Nevertheless, such measures, if taken, be it individually or in combination, will necessarily have implications on, among other things, tariff.

40. The increase in electricity generation and the reduced use of natural gas will inevitably increase the emission of carbon dioxide (CO_2), one of the important greenhouse gases (GHG). The emission reduction projects will also lead to a slight penalty in terms of efficiency which will also lead to a slight increase in emissions. Although Hong Kong is a very small emitter of GHG emissions in the global context (contributing to about 0.2% of the global emissions), it will help stabilize the GHG emissions if CLP could expedite their acquisition of alternative natural gas supply for electricity generation, which again will have implications on tariff.

VI. Sustainability Implications

41. A sustainability assessment of CLP's 2005 Financial Plan shows that CLP's proposal should contribute positively to the economic development of Hong Kong by ensuring that reliable, safe and efficient electricity will continue to be delivered to consumers at reasonable costs. Moreover, the commissioning of the commercial-scale wind turbine as a demonstration project is in line with Hong Kong's Sustainable Development Strategic objective of promoting the use of renewable energy. It would be desirable if there is further planning of possible renewable energy facility, following the successful commissioning of the wind turbine.

Consultation with the Energy Advisory Committee

42. We have consulted the Energy Advisory Committee. The Committee supports CLP's proposals in the 2005 Financial Plan.

Economic Development and Labour Bureau
22 July 2005