

For discussion  
on 9 June 2000

## **Legislative Council Panel on Economic Services**

### **Study of Interconnection and Competition in the Electricity Supply Sector in Hong Kong**

#### **Introduction**

This paper summarizes the public comments received on the consultancy study on interconnection and competition in the electricity supply sector in Hong Kong.

#### **Background**

2. At the meeting of the Legislative Council Panel on Economic Services held on 30 November 1999, Members were briefed on the findings of the consultancy study on interconnection and competition in the electricity supply sector in Hong Kong (the Study). Members noted that the consultancy report had been made available to the public on the Internet and that the public were being invited to offer comments on it. A copy of the paper provided to Members for that meeting is enclosed at the Appendix for easy reference.

3. At that meeting, Members expressed some views on the study covering areas such as constraints of the existing Scheme of Control Agreements (SCAs) with the power companies, fairness to shareholders of the power companies, reliability of supply, impact of increased interconnection on future competition, environmental implications and interconnection with the Mainland systems. Members also requested a further opportunity to discuss the matter.

#### **Public Comments Received**

4. The consultancy report was made available on the website of the Economic Services Bureau on 26 November 1999. The public were invited to offer their comments on the consultancy report before 31 March 2000. We have received eight written submissions from the

power companies, the Consumer Council and other organisations or individuals.

5. The submissions focus on different aspects of the consultants' report, including the practicability and benefits of the least cost scenario<sup>1</sup> (i.e. Scenario B) contained in the report, market and regulatory structure for Hong Kong's future electricity supply sector, and measures for safeguarding consumers' interests when the electricity supply sector is restructured.

6. Nearly all submissions acknowledged that increasing interconnection and enhancing competition in the electricity supply market should be beneficial to Hong Kong and electricity users in the long term. They were generally of the view that deregulation and introduction of competition was a global trend. They suggested that Government should examine all relevant issues, including reliability of supply, environmental implications, operation of the future market, regulatory arrangement under a competitive regime, fairness and level playing field for all potential competitors, and interests of other stakeholders when considering the way ahead.

7. Some also highlighted the complexity of transforming the electricity supply market and emphasized the need to map out the post-2008 arrangements early. They pointed out that to ensure a smooth transition, it would be necessary to address the transitional arrangements between the present and any proposed future market structure, to make early preparation for future third party access to the transmission network and to discuss with the Mainland authorities appropriate technical and environmental standards for the supply of electricity. It was also suggested that there is a need for an energy sector regulator for taking the matter forward and for a mechanism for safeguarding the interest of different categories of consumers upon restructuring of the electricity supply sector.

8. There were however divergent views on the viability of Scenario B contained in the consultants' report. There were views that given its potential economic and environmental benefits in deferring the

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<sup>1</sup> This least cost scenario, termed Scenario B in the consultants' report, was adopted by the consultants for economic analysis of the potential benefits of increased interconnection, whereby the forecast growth in demand in the supply area of Hongkong Electric Company Limited (HEC) in the next few years would be met by increasing the capacity of the interconnection between HEC and CLP Power Hong Kong Limited (CLP) so that the existing and future additional generation capacity of CLP could be utilized for supporting HEC's supply area without installation of additional generation capacity by HEC.

proposed new power plant of the Hongkong Electric Company Limited (HEC), Scenario B should be pursued. It was however also acknowledged that it would be necessary to obtain voluntary agreement of the two power companies and address the reliability issue before this scenario could be taken forward. Some suggested that the commercial interests of the power companies should be addressed through negotiation and agreement among the two power companies and Government.

9. On the other hand, there was suggestion that Scenario B might not be a practicable option considering the constraints of the SCAs. Some also expressed concern that pursuing this scenario might limit the competitiveness of HEC and thus adversely affect competition in the electricity supply sector in the long term.

10. The two power companies held different views on the viability of Scenario B, including related technical issues like the capability of the existing interconnection and the prerequisites for increased interconnection. One company felt that improved utilization of the existing interconnection or addition of new interconnection could be achieved through commercial arrangements. The other company placed great emphasis on reliability, which it felt should be achieved through a coordinating mechanism to coordinate planning and operation of power systems of all constituent utilities and adequate reserve capacity within individual systems as a reliability safeguard against transmission and stability problems.

### **Way Ahead**

11. We will brief Members on how we see the way ahead at the meeting of the Panel to be held on 9 June 2000. Any further views Members may have on the subject will be welcome.

Economic Services Bureau  
Electrical and Mechanical Services Department  
June 2000

For information  
on 30 November 1999

**Legislative Council Panel on Economic Services**

**Study of Interconnection and Competition  
in the Electricity Supply Sector in Hong Kong**

**Introduction**

This paper briefs Members on key findings of a consultancy study of Interconnection and Competition in the Electricity Supply Sector in Hong Kong.

**Background**

2. Recognizing the global and regional trend and that a number of long term issues will need to be addressed in future, Government commissioned a consultancy in 1998 to conduct an independent Study of Interconnection and Competition in the Electricity Supply Sector in Hong Kong as a first step. The main objective was to establish whether additional interconnection between Hong Kong's two electricity supply companies and encouragement of competition in the electricity supply sector would be in the interests of consumers. The consultants were specifically asked to carry out the following tasks in the course of the Study-

Task 1: Assessment of the potential costs, benefits and other implications of increasing interconnection capacity between CLP Power Hong Kong Limited (CLP) and The Hongkong Electric Company, Limited (HEC).

Task 2: Assessment of the potential for competition in the electricity supply sector, evaluation of alternative market structures and identification of the optimal market structure.

3. The results of the Study reflect the independent findings of the consultants. The Final Report submitted by the consultants comprises over 160 pages and is written in English only because of the

numerous technical terms involved. We have provided copies to the Legislative Council Secretariat for reference by Members. To facilitate Members' consideration of the matter, a copy of the Executive Summary (available in both Chinese and English) is attached at the **Annex** to this paper. The Final Report and the Executive Summary could also be accessed at the web site of the Economic Services Bureau at-

<http://www.info.gov.hk/esb/new/index.htm>

## **Consultants' Findings**

### Task 1 : Interconnection

4. Key findings are broadly set out below.
  - (a) There is an existing interconnector with limited capacity between CLP and HEC. Increased interconnection capacity is technically feasible, although there may be some logistical and timing constraints which need to be studied further.
  - (b) Increasing the capacity of interconnection has certain potential benefits. However, the benefits in Hong Kong compared to those enjoyed by other interconnected systems elsewhere, would be limited because of the similarities in the peak load profiles and generation plant types of the two power companies.
  - (c) Under the current Scheme of Control Agreements (SCAs), which run to 2008, the Government cannot require the utilities to take steps to construct increased interconnection capacity. Implementation of such a requirement before 2008 would therefore be difficult to arrange without voluntary acceptance by the utilities.
  - (d) Under the least cost scenario analysed by the consultants, whereby HEC and CLP systems were regarded as one system for the purpose of planning for additional generation capacity, constructing substantial additional CLP-HEC interconnection capacity would enable CLP generation capacity to be used to support the HEC service area. Compared to the base case which entails construction of additional generation capacity within the HEC system in the

near term, this option would bring overall economic benefits equivalent to on average a reduction in tariffs of 0.4 cents/kWh in the period up to 2008. The economic benefits however would not be evenly distributed between customers of the two power companies. Compared to the base case, HEC tariffs would decrease whereas CLP tariffs would increase.

- (e) There may be a risk that implementing increased interconnection between HEC and CLP, deferring construction of additional generation capacity and implementing joint plant dispatch in the near term - which would deliver economic benefits by reducing costs and hence tariffs under the SCA - may also have the effect of strengthening CLP and weakening HEC from the point of view of future introduction of competition, and may work against longer-term consumer interests. However, increased interconnection capacity will eventually be necessary for competition and technical reasons.

## Task 2 : Competition

5. Key findings are broadly set out below.
6. There are several constraints in Hong Kong against the introduction of competition in the electricity supply industry in the short term. The key ones are -
  - (a) The SCAs, which are structured for regulating individual power utilities, are not compatible with the concept of competition. There will be virtually no scope for competition with the SCAs remaining as they are and with only two players in the market.
  - (b) The transfer capacity of the existing 132kV interconnectors is rather limited and therefore is not conducive to any meaningful competition between the two power companies. Installation of large capacity interconnectors is a pre-requisite for competition.
  - (c) Electricity supply from the Southern China network may be a potential source of economic electricity supply and may help bring additional competition to the Hong Kong

electricity supply sector in future. However, until the electricity supply industry in the Mainland is restructured, the prospect of having major new entrants into the Hong Kong electricity supply sector will be rather limited.

7. The consultants have identified and assessed four types of possible market structure, namely Vertically Integrated model, Single Wholesale Purchaser model, Multiple Wholesale Purchasers model and Retail Competition model. Hong Kong currently has in place the Vertically Integrated model, whereby power companies undertake all activities, including generation, transmission, distribution and retailing, in distinct service areas. The consultants consider that, while consumer benefits may be realised from increasing the interconnection capacity and operating power pooling arrangements, such changes would not in themselves promote competition under this model. The other models identified envisage, inter alia, separation of the generation business from the transmission, distribution and retailing business, the operation of the transmission network by an independent system operator, procurement of new generation capacity through competitive tender and different degrees of competition at generation, wholesale or retail level or at more than one level.

8. The consultants' main finding in relation to the development of a more competitive market structure in Hong Kong is that no major reforms of the existing market structure are advisable until 2009 at the earliest since there is no real potential for introducing competition at the generation level before then. After that date, it would be possible to introduce competition between generation companies and at the wholesale levels (particularly if the electricity sector in Southern China has developed sufficiently to support participation by power producers located in that area) and eventually at the retail level.

9. The consultants consider that the introduction of competition will require some reorganisation of the present structure of the industry. Generation and transmission activities may have to be separated. Regulation in a form different to the SCAs would be needed for transmission, distribution and retailing activities. Different models could be introduced taking into account, inter alia, developments and industry structure in the Mainland. However, the consultants consider that the Single Wholesale Purchaser model, under which competition is introduced between sellers of electricity at the generation level, offers a common starting point for the different alternative paths.

## **Preliminary Views of the Energy Advisory Committee**

10. The consultants' report and findings were put before the Energy Advisory Committee<sup>2</sup>. Its preliminary views are set out below-

- (a) the Study is an important first step by Government in charting the future development of the electricity supply market in Hong Kong. The consultants have stated their views on how such development should proceed and the issues and constraints that will need to be addressed along the way. It is clear however that substantial additional work is needed to define in more detail the institutional and regulatory framework required to support the development of future market structure envisaged by the consultants and the transition path and time-frame. Although the existing SCAs will not expire until 2008, the Committee considers it highly desirable for the Government to map out the way forward early in order to enable interested parties to prepare for any changes that may be introduced.
- (b) reliability of electricity supply is vital to Hong Kong's interests, and that due consideration must be given to the maintenance of reliable electricity supply when considering any major changes to the present transmission system and regulatory and market structure.
- (c) whilst interconnection does not by itself bring about competition, it would facilitate competition particularly where there are multiple suppliers. The realization of the potential benefits of competition would however hinge on the establishment of a suitable transmission grid and supporting market and regulatory structure whereby competition in the supply of electricity can be introduced to Hong Kong with participation of multiple suppliers, including CLP, HEC and, in due course, electricity suppliers based in Southern China. The Committee believes that this should be the long-term objective.

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<sup>2</sup> The Energy Advisory Committee advises the Government on energy policy matters. Its membership is drawn from fields relevant to energy supply, energy efficiency and conservation, environmental protection and consumer interests.



- (d) the environmental impacts of various long and short term options, including those arising from the different types of fuel used for electricity generation under different options, would need to be evaluated and taken into account when considering the way forward.
- (e) the economic benefits<sup>3</sup> identified under the least cost scenario whereby joint planning by CLP and HEC as one system involving increased interconnection are relatively small compared to the present tariffs<sup>4</sup> or the potential long-term benefits that may be brought about by increased competition under the scenario described in (c) above. It is important to consider the Study in context to ensure that discussion on the long-term development of increased interconnection and competition would not be disproportionately overshadowed by the pursuit of relatively small short-term benefits.

## Way Forward

11. The consultants have made it clear that this is an initial feasibility study and have recommended further detailed studies in a number of areas. The Energy Advisory Committee has also pointed out that substantial additional work is needed to define in more detail the institutional and regulatory framework required to support the future market structure envisaged by the consultants and the transition path and time-frame. The Government will carefully examine the findings of the Study and conduct the necessary detailed studies with a view to mapping out a way forward that is in the best interest of Hong Kong.

12. Meanwhile, any views from Members and other interested parties are welcome.

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<sup>3</sup> The consultants have estimated that the economic benefits of the least cost scenario would translate on average across the two electricity companies into tariffs 0.4 cents/kWh less than those under the base case in the period up to 2008.

<sup>4</sup> According to the 1998 Annual Reports of CLP and HEC, the average net tariffs of CLP and HEC for the year 1998 were 89.48 cents/kWh (before a special rebate of 1.82 cents/kWh) and 90.30 cents/kWh respectively.

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