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**Panel on Economic Services and
Panel on Environmental Affairs**

Joint meeting on 28 April 2003

**Background brief on the
development of renewable energy in the context of the
2003 Scheme of Control Agreements Interim Review**

Purpose

This paper provides background information on the Scheme of Control Agreements signed between the Hong Kong Government and the two power companies as well as the development of renewable energy in Hong Kong.

Scheme of Control Agreements

2. The Scheme of Control (SOC) Agreements signed between the Government and the two power companies set out the obligations of the power companies, the returns for shareholders and the arrangements by which the Government monitors the power companies' financial affairs. According to the Administration, the SOC Agreements have the dual objective of ensuring that consumers enjoy a reliable and efficient supply of electricity at a reasonable price and that the electricity supply companies receive a reasonable return on their investment to encourage continued investment as is required to ensure adequate supply of electricity to meet demand.

3. The current SOC Agreements have a term of 15 years and will expire in 2008. They provide for two interim reviews of one year duration each, as follows :

	<u>CLP</u>	<u>HEC</u>
1st interim review	1.10.1997 - 30.9.1998	1.1.1998 - 31.12.1998
2nd interim review	1.10.2002 - 30.9.2003	1.1.2003 - 31.12.2003

During these reviews, each party to the SOC Agreements may request modifications to the SOC Agreements, the implementation of which will be

subject to the mutual agreement of both parties.

The 1997/98 Review

4. The first Interim Review of the current SOC Agreements was conducted in 1997/98. Major modifications to the SOC Agreements arising from the 1997/98 interim review include the following:

- (a) lower the rate of return on asset financed by customers' deposit;
- (b) exclude excess generation capacity from attracting permitted returns;
- (c) recognize the obligation to implement Demand Side Management; and
- (d) update the periods of useful life and depreciation of fixed assets.

5. The Panel on Economic Services discussed the arrangement for the interim review of the SOC Agreements in 2003 at its meeting held on 10 December 2002. Members requested the Administration to take the opportunity to urge the two power companies to lower the permitted return of 13.5% whilst ensuring a stable and reliable supply of electricity in Hong Kong. Members had also expressed views on a wide range of issues, including the disposal arrangement for the Development Fund ^{Note 1} after the expiry of the current SOC Agreements in 2008, the progress of increasing interconnection between power companies in the Guangdong region, and matters relating to environmental aspects of the SOC Agreements such as the use of renewable energy.

6. The Administration says it will take into consideration issues raised over time by Members of the Legislative Council and/or the community at large. These will include matters relating to the financial, technical, environmental and administrative aspects of the SOC Agreements.

Renewable energy

7. Hong Kong has been relying on fossil fuels to meet the energy needs. As Hong Kong does not have any fossil fuel reserves, all its primary energy ^{Note 2} needs are met by imports from the Mainland and other countries.

Note 1 Under the SOC Agreements, any excess of SOC Agreements net revenue over the permitted return was transferred to the Development Fund. The balance might be reduced to meet any shortfall in tariff revenue, thereby maintaining a stability over electricity tariffs.

Note 2 Primary energy refers to the energy embodied in the natural resources that has not undergone any form of artificial conversion or transformation. Availability of primary energy is location dependent. Examples of primary energy sources are coal, crude oil, sunlight and uranium.

The burning of fossil fuels however gives rise to greenhouse gas emissions, particularly carbon dioxide.

Developing renewable energy resources

8. Introducing more renewable energy sources may help contain fossil fuel use, thereby helping to contain external purchase of fuels and greenhouse gas emissions. In this connection, the Finance Committee approved in June 2000 funding of \$16.5 million for the Electrical and Mechanical Services Department (EMSD) to engage consultants to undertake a comprehensive study to investigate the viability of using renewable energy technologies in Hong Kong and to make recommendations for formulation of an implementation strategy. The study commenced in November 2001 for completion in 2003.

9. The study comprises two stages. Stage 1 involves the collection and analysis of information on renewable energy technologies which includes the following key tasks -

- (a) evaluate the different renewable energy technologies to identify those appropriate for Hong Kong conditions, establish requirements and specifications for suitable renewable energy equipment and provide an estimate of the potential scale of application;
- (b) identify the practical arrangements to support the introduction and maintenance of new renewable energy technologies; and
- (c) devise a plan to address the priorities and preferences relating to the promotion of cost-effective renewable energy technologies.

Stage 2 involves a design and build pilot project to install photovoltaic^{Note 3} panels in existing government building(s) to provide technical data to assess the use of Building Integrated Photovoltaic systems.

Council's views on the use of renewable energy

10. The subject of developing renewable energy resources was discussed at the Council meetings on 17 January 2001 and 30 October 2002, during which the following two motions were passed -

Motion moved by Ir Dr Raymond HO on 17 January 2001

11. “That, in view of the limited reserves of fossil fuels, which render their prices susceptible to changes in supply and demand in the world market or

^{Note 3} Photovoltaic panel is a panel completed with built-in specially prepared semi-conductors that allow the direct conversion of light energy from the sun into electricity.

to manipulation by certain countries and organizations, and as the consumption of such fuels also leads to environmental pollution, it is necessary for Hong Kong to actively develop and utilize renewable energy resources; this is not only a way to identify and make the best use of local scientific and technological research talents and natural resources, but is also in line with government policies on innovation and technology, as well as the principle of sustainable development; as such, this Council urges the Government to adopt the following measures as soon as possible to expedite the development of renewable energy resources and their introduction in Hong Kong:

- (a) actively formulating a policy on the development of renewable resources, and making use of Hong Kong's advantages on various fronts, including its natural environment, availability of the relevant scientific and technological research talents, free flow of information, advanced communication equipment, sound financing services and close co-operation with the Mainland in scientific and technological research and development, so that Hong Kong will become a leader rather than just a follower in the development and utilization of renewable energy resources; and
- (b) apart from policy support, providing sufficient financial support to facilitate researches in and development of renewable energy resources, and promoting the necessary pilot projects."

Motion moved by Dr LAW Chi-kwong on 30 October 2002

12. "That, with the signing of the Kyoto Protocol and the international agreements reached at the Earth Summit by China, Hong Kong, as a special administrative region of China, has the responsibility to implement the commitments in these agreements, particularly the use of renewable energy resources and the reduction in greenhouse gas emissions; to this end, the Government should expeditiously formulate and implement the policy on renewable energy development so as to achieve the objectives in energy resources, environmental protection and economic aspects; the implementation of strategies for renewable energy resources should include:

- (a) increasing the use of renewable energy resources and setting a practicable target in this regard;
- (b) formulating corresponding legislation and administrative framework to facilitate the research and development and application of renewable energy resources;
- (c) providing support and incentives to promote the scientific and

technological research and market development of renewable energy resources;

- (d) incorporating the policy on renewable energy resources into town planning and urban development strategies and making it one of the key factors to be taken into account;
- (e) collaborating actively with the Pearl River Delta authorities and the Guangdong Provincial Government in studying the feasibility of developing and introducing renewable energy resources; and
- (f) promoting education, professional training and publicity, with a view to enhancing the public's understanding of renewable energy resources and their application skills.”

13. Members are generally of the view that efforts should be stepped up to facilitate the application of renewable energy with a view to resolving the problems caused by the production and use of fossil fuels. To this end, the Government should offer support and incentives to promote scientific and technological research and to nurture a market for renewable. It should also step up education and publicity campaigns to promote public awareness of renewable energy. The implementation of renewable energy should also include collaboration with the Guangdong Provincial Government and the Pearl River Delta authorities.

Latest position

14. The Administration briefed the Panel on Environmental Affairs at its meeting held on 6 February 2003 on the findings and recommendations of the Stage 1 Study commissioned by EMSD. Key findings of the Stage 1 Study is set out in the **Annex**. Installation works for Stage 2 Study has also been completed. The performance of the various types of panels, including rack type on the roof top, sunshade type from 1st to 12th floors, and skylight type at the front entrance hall in Wanchai Tower, will be monitored until early 2004. Technical data collected will be used to assess the efficiency, stability and safety of such systems under Hong Kong's weather conditions.

15. In view that the Administration is in the course of reviewing the SOC Agreements with the two power companies, members urged the Administration to take the opportunity to discuss with the two power companies issues relating to the development of renewable energy in the context of the 2003 SOC Agreement interim review. Meanwhile, it should formulate a strategy to promote the wider use of renewable energy in Hong Kong.

16. The Panel on Environmental Affairs and the Panel on Economic

Services will hold a joint meeting on 28 April 2003 to discuss issues relating to the development of renewable energy in the context of the 2003 SOC Agreements Interim Review.

17. Friends of the Earth has put forward a written submission vide LC Paper No. CB(1)1484/02-03(02).

Council Business Division 1
Legislative Council Secretariat
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Annex

Key Findings of Stage 1 Study on the Potential Applications of Renewable Energy in Hong Kong

The following sets out the consultant's key findings and recommendations:

- (a) Upon reviewing current technological trends and applications, and taking into account Hong Kong's local characteristics, renewable energy (RE) that are considered potentially feasible¹ for wide-scale application in Hong Kong include -
 - (i) solar power;
 - (ii) wind power;
 - (iii) building integrated fuel cells; and
 - (iv) energy from waste.

- (b) Major issues that may hinder wide-scale development of RE in Hong Kong include -
 - (i) there may not be suitable sites for implementing largescale RE projects;
 - (ii) there may be concerns about the visual, noise and possibly safety impacts of some RE systems (e.g. wind turbines);
 - (iii) the current pricing of power supply has not taken into account the environmental costs associated with combustion of fossil fuel, which remains a major fuel source for energy production. Thus power generated by the more environmental-friendly RE appears to be comparatively more expensive than that coming from conventional fossil fuel. In addition, the prevailing regulatory

¹ Other new and renewable energy sources / systems reviewed include energy from biomass, smallscale hydroelectric systems, geothermal energy, tidal and wave power, and independent energy storage systems (which permits excess electricity generated during the periods of high availability of renewable energy and lower power demand to be transported and stored, and released later during periods of lower resources availability and high power demand).

framework tends to drive investment of power companies towards the 'cheaper' conventional method of power generation; and

(iv) terms and conditions for accessing the electricity grid by third party including RE providers are currently set at the sole discretion of the existing power companies.

(c) In order to create a positive market environment for wide-scale application of RE, the consultant recommends the following measures:

(i) to put in place a mechanism which would enable investors in RE schemes to earn a reasonable or reasonably attractive return;

(ii) to conduct necessary studies and develop guidelines and standards to address potential concerns to be brought about by specific RE systems;

(iii) to promote the public awareness of RE sources and technologies; and

(iv) to improve the access of RE schemes to the existing power grid.

(d) The two power companies in Hong Kong are each operating under a Scheme of Control (SOC) Agreements with the Government, which will expire in 2008. The SOC Agreements provide a framework for monitoring the performance of power companies so as to protect the interests of consumers. Under the current SOC Agreements, power companies have no obligation to generate electricity from RE sources or to offer grid access to independent RE generators. The interim review on the current SOC Agreements scheduled for 2003 gives an opportunity for the Government and the power companies to discuss issues relating to the development of RE in Hong Kong.

- (e) Taking into account the constraints of development of RE in Hong Kong and the estimation of possible RE projects coming on stream, the consultant recommends that the targets of contribution from RE produced locally to annual electricity demand (against the baseline year of 1999) should tentatively be set at 1% (355 Giga Watt hour, GWh) in 2012, 2% (710 GWh) in 2017 and 3% (1065 GWh) by 2022 respectively. These targets should then be reviewed periodically in the light of RE developments in Hong Kong and advancement in RE technologies in the international market.

For further details, please refer to LC Paper No. CB(1) 843/02-03(04) issued for the meeting of the Panel on Environmental Affairs on 6 February 2003.