



公民黨  
Civic Party

二〇〇六年三月  
March 2006

# 締造可持續而開放的 電力市場

*Towards a Sustainable  
and Open Electricity Market*

# **Towards a Sustainable and Open Electricity Market**

In response to the Stage II Consultation Paper on  
Future Development of  
the Electricity Market in Hong Kong

March 2006



## **Summary of Proposals**

Whilst we agree with the policy objective as stated in the Stage II Consultation Paper, we are of the view that the Recommendations as proposed therein do not go far enough to achieve such objectives.

We propose the following:

### **An independent energy authority**

1. At present, electricity is put under the Economic Development & Labour Bureau (EDLB). We need an integrated approach taking into account environmental concerns as well as the need for an overall energy policy. Hence we propose an Independent Energy Authority (IEA) be set up as soon as possible with a view to the regulation of a competitive market.
2. Pending the set up of IEA, all capital investment proposals and financing plans by the power companies should be submitted to the Energy Advisory Committee for deliberation. Decisions should be made by EDLB on the recommendations of EAC, similar to the current arrangements adopted for EIA approvals by the Director of Environmental Protection and the Advisory Committee on Environment. The deliberation by EAC should be conducted in a transparent process, allowing the public to have access to relevant information and to make presentations at open hearing sessions.

### **Interconnection and Open Market**

3. The administration should set a firm timetable for mandatory opening up of the power grid for access by third parties before the first 5-year interim review of the new agreement, on terms to be set by the IEA. In setting such terms, the IEA will have in mind the policy objectives of reliable, safe and efficient energy supply with a bias in favour of renewable energy.
4. Prior to the opening up of the grid, the power companies should be required to make full use of the current HEC-CLP Interconnector for cross-supply and to prepare for full interconnection between Hong Kong Island and Kowloon.

5. The power companies should be required to keep separate accounts for the generation, distribution and transmission of electricity. This is essential to enable future opening up of the grid for access by third parties. It is also necessary for a pricing strategy which will induce power companies to be more environmentally friendly.

### **Pricing strategy**

6. The Consultation Paper continues to recommend the Average Net Fixed Assets (ANFA) as the base for determining return. However this encourages over-expansion and surplus capacity financed through high debt gearing. We recommend that from 2008 onwards, electricity tariffs should be regulated by a price-cap mechanism so that the tariffs should be adjusted largely in line with the change of inflation rate with future productivity gains shared between the public and the power companies.
7. However, the initial tariff used for the price cap should be reset in 2008 by reference to a reasonable return on equity for investors in the power companies. We propose to set the rate of return on ANFA at 7%, which is equivalent to over 13% rate of return on equity.<sup>1</sup> The current electricity tariff would then be reduced by 18% - 23%. We believe that a price cap set at this level can strike a reasonable balance between the interest of investors and the public.

### **Emission Reduction Strategy**

8. The Consultation Paper recommends that the permitted rate of return be dependent on the achievement of the emission caps stipulated. Hence emission just above or below a stated level may mean a significant difference in the return. This may lead to constant disputes and uncertainties and is not in the public interest. A better alternative is to require the power companies to pay an emission surcharge based on the volume of emission. This will induce the power companies to reduce emission through cleaner fuel and/or more efficient operations.

### **Energy efficiency**

9. Demand side management is the most effective means to conserve energy and

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<sup>1</sup> Calculation based on the 2005 financial statement of CLP.

reduce pollution. But the government has no real determination to do this. The Consultation Paper recommends that the power companies be given incentives to promote energy conservation when there is a conflict of interest in asking power companies to do so. The IEA should be tasked to promote energy efficiency, run demand side management programmes and set mandatory energy efficiency standards for building.

### **Renewable energy**

10. As for renewable energy, we are disappointed with the very low 1 to 2 % target by 2012. At the very least, the administration should make clear that this does not include energy-from-waste.
11. The IEA should encourage new power demands to be met by renewable energy and set tariffs or access fee to grids with a bias in favour of renewable energy.

### **Cross-border collaboration**

12. The administration and later the IEA should make preparation for enhanced interconnection with Guangdong to facilitate the introduction of any future competitive energy supply from the Mainland.
13. The administration and later the IEA should step up the development of renewable energy and set a regional RE target in collaboration with the Mainland.

### **Legislation**

14. The administration should be ready to introduce the necessary legislative measures to facilitate the interconnection of grids, opening up of the market, the regulation of a fair and competitive market and enforce environmental friendly regulations, should it not be possible to arrive at a satisfactory mutual agreement with the power companies. This would set aside uncertainties and create a level-playing field for all suppliers on the market.

## **Introduction**

1. The expiration of the Scheme of Control agreements (SOC) in 2008 provides an invaluable occasion to revamp the existing regulatory regime. This paper sets out our views on the proposal put forward by the government in the Stage II Consultation Paper.
2. The current SOC induces excessive capital expansion. Linking the permitted rate of return with fixed assets has resulted in high electricity tariff. We need to address these problems and install a new regulatory regime to prepare the ground for more competition whilst ensuring safe and efficient electricity supply.
3. There is also an environmental challenge. Electricity plants are the most significant air polluters in the territory. We need to deliver energy in more sustainable ways, i.e. switch to cleaner fuels and renewable energy, enhance energy efficiency, and retrofit facilities for emission reduction. Also, it is our international obligation to cut greenhouse gas emissions as much as possible and avoid devastating consequences caused by rising temperature. The new regulatory regime is crucial to the attainment of these goals.

## **An independent energy authority**

4. At present, electricity is put under the Economic Development & Labour Bureau (EDLB), whilst environmental regulation is overseen by Environmental, Transport and Works Bureau (ETWB). We need an integrated approach taking into account all aspects of electricity supply, as well as the need for an overall energy policy, including electricity, oil and gas. As this entails quite a lot of expert work, we propose an Independent Energy Authority (IEA) be set up as soon as possible with a view to the transition and regulation of a competitive market.
5. Pending the set up of the IEA, all capital investment proposals and financing plans by the power companies should be submitted to the Energy Advisory Committee (EAC) for deliberation. Decisions should be made by EDLB on the recommendations of EAC, similar to the current arrangements adopted for EIA approvals by the Director of Environmental Protection and the Advisory Committee on Environment. The deliberation by EAC should be conducted in a

transparent process, allowing the public to have access to relevant information and to make presentations at open hearing sessions.

### **Interconnection and Open Market**

6. There is a lack of competition in the electricity market. The electricity transmission facilities, which include the transmission grids and the substations, are privately owned by The Hongkong Electric Companies Ltd. (HEC) and CLP Power Hong Kong Ltd. (CLP). The impossibility of access to the transmission grids and substations effectively bar the entry of any third party competitors.
7. This segregation results in an electricity market with two monopolists and an implication on environment. HEC and CLP tend to overestimate energy demand and keep an exceedingly high level of backup capacity. If there is increased interconnection between the companies, the backup capacity – and the emissions that comes with it – can be substantially reduced without compromising service reliability.
8. There should be a firm timetable for mandatory opening up of the power grid for access by third parties, on terms to be set by the IEA. In setting such terms, the IEA will have in mind the policy objectives of reliable, safe and efficient energy supply with a bias in favour of renewable energy. To facilitate this long term objective, the power companies should be required to keep separate accounts for the generation, distribution and transmission of electricity.
9. Prior to the opening up of the grid, the power companies should be required to make full use of the current HEC-CLP Interconnector for cross-supply and to prepare for full interconnection between Hong Kong Island and Kowloon.<sup>2</sup>
10. The new Scheme of Control Agreements shall contain a clause under which both HEC and CLP have the contractual obligations to increase the capacity of the interconnector. Such upgrading can be done in phases in accordance with a pre-determined timetable, with the view to achieving full interconnection between Hong Kong Island and Kowloon.

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<sup>2</sup> The transmission networks of CLP and HEC are interconnected by a cross-harbour cable. The interconnection has a capacity of 720 MW. A consultation study commissioned by HKSARG in October 1999 concludes that the enhancement of the existing interconnector is technically feasible. Environmental Resources Management, “Interconnection and Competition in the Hong Kong Electricity Supply Sector”, Oct 1999. (available on [http://www.edlb.gov.hk/edb/chi/papers/studies/ex\\_summary\\_c.doc](http://www.edlb.gov.hk/edb/chi/papers/studies/ex_summary_c.doc))

## **Pricing strategy**

11. The current infrastructure of CLP and HEC are essentially stranded assets. The investment and fuel contracts of the electricity industry are also long term, hence the need for a clear and stable policy.
12. The Consultation Paper continues to recommend the Average Net Fixed Assets (ANFA) as the base for determining return. However this encourages over-expansion and surplus capacity financed through high debt gearing, and as a result, allows the power companies to earn a return on equity of 20-30%.
13. We recommend that from 2008 onwards, electricity tariffs should be regulated by a price-cap mechanism so that the tariffs should be adjusted largely in line with the change of inflation rate with future productivity gains shared between the public and the power companies. However, the initial tariff used for the price cap should be reset in 2008 by reference to a reasonable return on equity for investors in the power companies. We propose to set the rate of return on ANFA at 7%, which is equivalent to over 13% rate of return on equity.<sup>3</sup> The current electricity tariff would then be reduced by 18% - 23%. We believe that a price cap set at this level can strike a reasonable balance between the interests of investors and the public.
14. This approach provides a win-win position to the power companies and consumers. The power companies can retain any profits derived from keeping the price not exceeding the price ceiling by improving its production efficiency while consumers will share the benefits of additional productivity gains.
15. Due to changes in technology and the financial markets, in line with international practice the price cap formula should be reviewed every five years. In addition to factors arising from the external environment, the review should take into account of the performance of the power companies during the review period, including its customer service standards, safety and security records, as well as levels of environmental emission compliance. The formula for the next five years should reward companies with good performance records, and penalize those which perform poorly.

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<sup>3</sup> Calculation based on the 2005 financial statement of CLP.



## **Emission Reduction Strategy**

16. Power generation is the predominant local source of emissions. In 2004, local power plants are accountable for over 90% of the total emissions of SO<sub>2</sub>, and around 50% of NO<sub>x</sub> and RSP.
17. The present regulatory regime has been ineffective as a gate-keeper of emissions. The refusal by the two power companies to enter into shared supply arrangement through full interconnection has resulted in artificially high reserve capacities in both companies. “Surplus” powers were sold to the Mainland - and more coal-fired units were put into operation for that purpose. Also, the power companies have been slow in carrying out retrofit programmes to reduce emissions.<sup>4</sup>
18. The Consultation Paper recommends that the permitted rate of return be dependent on the achievement of the emission caps stipulated. This mechanism, if put in place, may appear to be a significant step towards internalizing the environmental cost in the production of energy. Yet in practice, emissions just above or below a stated level may mean a significant difference in the return. This may lead to constant disputes and uncertainties and is not in the public interest.
19. A better option is to require the power companies to pay an emission surcharge based on the volume of emissions. This will induce the power companies to reduce emissions through cleaner fuel and/or more efficient operations. The Ho-Ping coal-fired power station in Taiwan, of which the CLP holds a 40% equity interest, is required to pay such a surcharge.<sup>5</sup> Not only will this benefit the environment, but this will provide the companies with a potential for further gains if it can adopt more environmentally friendly operations. In a sense, the ball is put straightly back into the power companies’ court.

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<sup>4</sup> In Guangdong, all generation units of capacity above 125 MW will be retrofitted with flue gas desulphurization systems by 2007. This stands in marked contrast to the HEC and CLP, of which the retrofit proposals would not complete until 2010 and 2011 respectively, according to their latest financial plan. “Government’s Environmental Policy for the Power Sector” (available on [www.epd.gov.hk](http://www.epd.gov.hk)), p.3.

<sup>5</sup> The Ho-Ping power station was in operation since 2002. Its generating capacity is 1,320 MW, or 16% the scale of CLP power plants in Hong Kong. With more stringent environmental regulations to meet, the SO<sub>2</sub> emission of the Ho-Ping was 3.1 kT in 2004, just 5.8% of its Hong Kong counterpart. *CLP Social and Environmental Report 2004*, pp. 44 and 47.

## **Energy efficiency and conservation**

20. Improving energy efficiency is an adept way to reduce the need for new infrastructure and promote consumer welfare. Nevertheless, the consultation paper does not specify any institutional arrangements to facilitate energy efficiency and conservation.
21. Though DSM is the most effective means to conserve energy and reduce pollution, past efforts were fragmentary and limited.<sup>6</sup> The government has no real determination to do this. Neither did the power companies, as permitted returns are based on fixed assets. The more they sell, the more they earn. In other words, there is a conflict of interest in asking power companies to promote energy efficiency.
22. The IEA should be tasked to oversee DSM programmes, advocate energy audit in the business sector, and put forward legislation on energy efficiency, such as mandatory energy efficiency standards for buildings.

## **Renewable energy**

23. As for renewable energy, the government proposes to provide financial incentives to power companies and ask them to waive access fee for RE systems, with the view to meeting the 1% - 2 % target by 2012. We are disappointed with this very low target. It is perfectly feasible to meet 1% - 2% of local demand solely by wind power.<sup>7</sup> Even the Mainland as a developing economy is committed to a 5% target by 2010. At the very least, the administration should make clear that this does not include energy-from-waste.
24. The consultation paper does not specify what the financial incentives are, and it is not known if the target will be met. In any case, the target should be backed up by effective policy instruments. A better alternative is to require all suppliers on the market to include a certain percentage of RE in their local or regional portfolio, i.e. making it an obligation to provide renewable energy.

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<sup>6</sup> The power companies have introduced a small scale DSM programme in 2000. The EMSD launched a voluntary energy efficiency registration scheme for buildings, with only 1162 registration certificates issued for the period 1998 to 2005.

<sup>7</sup> Approximately, installing 57 sets of 3.2 MW wind turbines would be able to meet 1% of local electricity demand.

25. In addition, the IEA should encourage new power demands to be met by renewable energy. Grid access should be mandatory provided that certain technical and safety standards are complied with. Access fee to grids for RE should be waived.

### **Cross-border collaboration**

26. The Hong Kong and Guangdong Provincial Governments pledged to reduce emissions of sulphur dioxide, nitrogen oxide, respirable suspended particulates and volatile organic compounds by 40%, 20%, 55% and 55% respectively by 2010, on a best endeavour basis. Hong Kong has made reasonable progress since then. The emission levels of NO<sub>x</sub>, RSP and VOC are well on target, but the emissions of SO<sub>2</sub> have gone up 47% over the same period.<sup>8</sup>
27. Unfortunately, data of the similar sort on the Pearl River Delta Region are yet to be released. So it is not known how the Guangdong province is catching up with the 2010 target. Some recent data indicate that the regional air pollution is worsening, “the concentration of RSP recorded at the general air monitoring stations increased by 15% from 1999 to 2004 due to the increase in regional pollution background. Ozone, the indicator pollutant for regional smog, increased by 26% during the same period.”<sup>9</sup>
28. As there will be enhanced grid connection between Hong Kong and South China, the government and later the IEA should review the RE potential in a regional perspective, and set a regional RE target beyond 2012 in collaboration with the Mainland.
29. In preparation of a comprehensive emissions trading scheme within the region, the two governments should consider setting a regional emission cap. They should also put in concerted efforts for the development of renewable energy and set an incremental regional RE target, so as to foster a more sustainable model of energy production and consumption.
30. A fair and competitive electricity market within the Pearl River Delta region would require that different technical and environmental regulatory standards (to

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<sup>8</sup> “Government’s Environmental Policy for the Power Sector” (Working paper of the Environmental Protection Department, available on [www.epd.gov.hk](http://www.epd.gov.hk)), p.2.

<sup>9</sup> “Improving the Air Quality of Hong Kong - A Progress Report November 2005”, (Working paper of the Environmental Protection Department, available on [www.epd.gov.hk](http://www.epd.gov.hk)), p.2.

name just a few) are brought in line with each other. The government should liaise with the Mainland in view of this long term development.

### **Legislation**

31. The administration should be ready to introduce the necessary legislative measures to facilitate the interconnection of grids, opening up of the market, the regulation of a fair and competitive market and enforce environmental friendly regulations, should it not be possible to arrive at a satisfactory mutual agreement with the power companies. This would set aside uncertainties and create a level-playing field for all suppliers on the market.

### **Conclusion**

32. As a rule, no monopolist will voluntarily give up its hold on its market share. So it is the job of the government as a regulator to create a sustainable and open electricity market by transforming the existing SOC. We look forward to working with the Government, the power companies and the civil society in devising a fair regulatory framework for the post-2008 electricity market.

## **Appendix Membership List of the Electricity Market Working Group**

Hon Audrey Eu Yuet-mee, SC, JP

Hon Mandy Tam Heung-man

Hon Ronny Tong Ka-wah, SC

Mr. Albert Lai

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公民黨  
Civic Party

二〇〇六年三月  
March 2006

# 締造可持續而開放的 電力市場

*Towards a Sustainable  
and Open Electricity Market*

# 締造可持續及開放的電力市場

回應香港電力市場未來的發展  
第二階段諮詢文件

2006年3月

公民黨

## 建議摘要

我們同意《香港電力市場未來的發展第二階段諮詢文件》提出的政策目標，但我們同時認為文件中提出的建議，並不足以達致這些目標。就此，我們提出以下建議：

### 成立獨立能源管理局

1. 現時，電力政策由經濟發展及勞工局負責。我們認為，當局須以整全角度處理電力問題，包括環境影響，也有需要制訂綜合的能源政策。故此，我們建議盡早成立獨立的能源管理局，為規管開放競爭的電力市場作好準備。
2. 在能源管理局成立之前，電力公司的所有資本投資和融資計劃，都應該交由能源諮詢委員會審議，繼而由經濟發展及勞工局根據能源諮詢委員會的建議，作出最終決定。此機制跟現行的環評制度相似，即由環境保護署署長及環境諮詢委員會審批環境評估報告。能源諮詢委員會在審議有關計劃時，應採納高透明度的程序，讓公眾有適當的渠道查閱相關資料，並可透過公聽會表達意見。

### 電力聯網及開放市場

3. 當局應在新協議進行五年中期檢討前，根據能源管理局制訂的條款，就強制兩電開放電網訂立確切的時間表。能源管理局制訂有關條件時，應以可靠、安全及有效率供電為政策目標，並以政策鼓勵可再生能源發展。
4. 當局應規定兩電充份利用現時的聯網相互供電，為港島和九龍全面聯網和開放電網作好準備。
5. 當局應規定兩電分拆發電、配電及輸電業務的帳目，此舉是日後開放電網的先決條件。與此同時，政府應透過電費機制，促使兩



電提高環保表現。

## 電費機制

6. 諮詢文件建議，沿用固定資產回報率作為計算准許回報的基礎。然而，此舉會鼓勵電力公司透過大舉借貸，過度擴充規模，以致產能過剩。我們建議從 2008 年開始，以價格上限的可加可減機制計算電費，電費大致隨通脹率調整；至於生產力提升帶來的得益，則由用戶和電力公司分享。
7. 2008 年，當局應參考電力公司的合理股本回報率，重訂電費水平，以啟動新機制。我們建議以固定資產平均淨值（ANFA）的 7% 定為准許回報率，相當於超過 13% 的股本回報率。<sup>1</sup> 這個水平將使現時的電費下調 18-23%。我們認為，把電費上限訂於該水平，可以在投資者和公眾利益之間取得合理的平衡。

## 減排政策

8. 諮詢文件建議，准許回報應與電力公司能否達致排放上限掛鉤。換言之，排放量稍高或稍低於規定水平，對回報有重大影響，或引致持續糾紛或不肯定因素，不利公眾利益。較佳的做法是向電力公司按量徵收排放費，以促使電力公司透過使用較清潔的燃料及提升運作效率，減少排放污染物。

## 能源效益

9. 需求管理是節約能源和減少污染的最有效辦法，但政府過往未有大力推動。諮詢文件建議透過經濟誘因，要求電力公司推廣節約能源。但要求電力公司這樣做，根本存在利益衝突。這方面的工作應交由能源管理局負責，包括推廣能源效益、制訂需求管理計劃、及訂立強制性的建築物能源效益標準。

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<sup>1</sup> 按中華電力有限公司 2005 年財務報表推算。

## 可再生能源

10. 政府提出，希望在 2012 年以可再生能源應付 1-2% 電力需求，目標之低令人失望。當局最低限度應訂明，該目標不包括「轉廢為能」的發電量。
11. 能源管理局應鼓勵以可再生能源滿足新的電力需求。制訂電費或連接電網的費用，應鼓勵可再生能源發展。

## 跨境合作

12. 當局及將來的能源管理局應與廣東省政府磋商，就加強兩地聯網展開準備工作，以便將來從內地引入電力供應商，加強本港市場的競爭。
13. 當局及將來的能源管理局應該與內地合作，訂立可再生能源的區域性目標，以促進可再生能源的發展。

## 立法

14. 當局與兩電商討未來的市場發展之餘，若未能達成滿意安排，應準備以立法方式促成兩電聯網、開放市場、維護市場公平、促進競爭及加強環保規管。此舉可消除不確定因素，為所有電力供應商提供公平的市場環境。

## 引言

1. 政府與兩家電力公司的《管制協議》將於 2008 年屆滿，現在正是全面檢討現行規管架構的合適時機。本文件載列我們就《香港電力市場未來的發展第二階段諮詢文件》的意見。
2. 現行《管制協議》制度下，電力公司的准許利潤與固定資產掛鉤，導致資本過度擴張，電費水平高企。此問題須加以糾正，並在確保安全及高效率電力供應的前提下，制訂新的規管制度，為引入市場競爭奠定良好的基礎。
3. 電力的環保問題同樣有待改善。發電廠是本港最大的空氣污染源，香港的能源生產應符合可持續發展原則，使用清潔燃料和可再生能源，提升能源效率，裝設減排裝置。此外，香港也應該履行國際義務，減少排放溫室氣體，避免全球氣溫上升造成的災難性後果。新的規管制度是達致這些目標的重要工具。

## 成立獨立能源管理局

4. 現時香港政府就規管電力市場的分工，政策制訂由經濟發展及勞工局負責，環保規管則交由環境運輸及工務局執行。我們認為，有關電力供應的所有問題，應該整合處理，政府亦應該制訂一套包括電力、燃油和氣體燃料等的綜合能源政策。由於有關工作需要不少這方面的專家協助，我們建議盡快成立一個獨立的能源管理局，訂立具競爭性電力市場的過渡安排和規管制度。
5. 在能源管理局成立之前，電力公司的資本投資和融資計劃，應交由能源諮詢委員會審議，再由經濟發展及勞工局根據能諮會的建議作出批核。此機制跟現行的環評制度相似，即由環境保護署署長及環境諮詢委員會審批環境評估報告。我們建議，能源諮詢委員會在審議有關計劃時，採納高透明度的程序，讓公眾應該有適當渠道查閱相關資料，並可透過公聽會表達意見。

## 電力聯網及開放市場

6. 香港的電力市場缺乏競爭，香港電燈有限公司（港燈）和中華電力有限公司（中電）各自全資擁有輸電系統，包括輸電網絡和電力分站，其他電力公司既無法使用兩電的電網和電力分站，根本難以加入競爭。
7. 電力市場割裂，不但導致市場由兩家公司壟斷，而且不利環保。港燈和中電傾向高估電力需求，備用電量維持在過高水平。若兩電加強聯網，可望大幅減低後備電量，減少排放廢氣，且不會影響供電可靠性。
8. 當局應該提出確實的時間表，強制兩電向第三者開放電網，開放電網的條款則由能源管理局制訂。制訂有關安排時，能源管理局應以可靠、安全而有效率的電力供應為政策目標，並向可再生能源提供優惠。為配合長遠的政策目標，當局應規定電力公司分拆發電、輸電和配電業務的帳目。
9. 在電網全面開放前，當局應著令兩家電力公司善用現時已連結的網絡，相互提供電力。與此同時，兩電應該為香港島及九龍完全聯網作好準備。<sup>2</sup>
10. 新的《管制協議》亦應訂明，兩家電力公司須履行合約責任，增加電網連接系統的容量。政府訂立時間表，促使兩電分階段落實全面聯網。

## 電價策略

11. 中電和港燈的基礎建設均是難以移動的資產，加上電力公司的投

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<sup>2</sup> 目前中電及港燈透過海底電纜局部聯網，負荷為 720MW。香港政府在九九年十月委託顧問公司研究聯網，顧問報告指加強兩電聯網，技術上完全可行。參看香港環境資源管理顧問有限公司，《香港電力供應行業的聯網與競爭》，1999 年 10 月 ([http://www.edlb.gov.hk/edb/chi/papers/studies/ex\\_summary\\_c.doc](http://www.edlb.gov.hk/edb/chi/papers/studies/ex_summary_c.doc))。

資期及燃料合約年期較長，故有需要訂立清晰而穩定的監管政策。

12. 諮詢文件建議，以固定資產平均淨值（ANFA）作為准許回報的計算準則。不過，這樣會鼓勵電力公司透過大量借貸增加投資額外產能，形成過度擴張。兩間電力公司歷年的股本回報率高達20-30%。
13. 我們建議，現行《管制協議》在2008年屆滿後，電價應採用價格上限機制規管，並大致上根據通脹率調整，並讓用戶和電力公司分享生產力提升的帶來的得益。在2008年，當局應參考電力公司的合理股本回報率，重訂電費水平以啟動新機制。我們建議以固定資產平均淨值的7%定為准許回報率，相當於超過13%的股本回報率。<sup>3</sup> 這個水平將使現時的電費下調18-23%。我們認為，把電費上限訂於該水平，可以在投資者和公眾利益之間取得合理的平衡。
14. 這個建議為電力公司和用戶締造雙贏局面。電力公司可在電費不超過規定上限的情況下，保留提升生產效率所得的利潤，用戶亦可分享生產力提升帶來的好處。
15. 按國際慣例，為顧及科技進步的因素及投資市場的變動，價格上限的計算公式應該每5年檢討一次。除了上述外在因素，檢討考慮的因素包括電力公司在5年間的表現，包括顧客服務水平、供電安全及可靠性、排放量是否符合標準等等。檢討之後重訂的公式，應獎勵表現良好的公司，懲罰表現差劣的公司。

## 減排策略

16. 發電廠是本港最主要的污染源。2004年，本地發電廠排放的二氧化硫佔總排放量的90%，排放的氮氧化物及可吸入懸浮粒子亦

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<sup>3</sup> 按中華電力有限公司2005年財務報表推算。

佔總排放量約 50%。

17. 現行的規管制度並不能有效地控制污染物的排放。兩電拒絕透過全面聯網實施共同供電，使兩家公司的備用電量均處於極高水平。電力公司啓動燃煤發電機組，以將「剩餘」電力售往內地。此外，兩電落實減排措施的進度亦相當緩慢。<sup>4</sup>
18. 諮詢文件建議，電力公司的准許回報率與能否達到污染物排放上限的規定掛鉤。若落實此建議，似乎是朝著將電力生產的環境成本「內化」，走出重要的一步。但在此制度下，排放量稍高或稍低於規定水平，對回報有重大影響，或引致持續糾紛或不肯定因素，不利公眾利益。
19. 較佳的做法是向電力公司按量徵收排放費，以促使電力公司透過使用較清潔的燃料及提升運作效率，減少排放污染物。例如中電持有 40% 權益的台灣和平燃煤發電廠，亦須按量繳交排污費。<sup>5</sup> 此項措施不單有助改善環境，亦能夠提供更大的空間，使電力公司透過加強環保運作而得益。換句話說，此舉等同將球打回電力公司的場區，讓其自行決定以最有效的方式減排。

## 能源效益及節能

20. 改善能源效益可以有效減少電力基建需求，用戶亦可因此減省電費，可謂一舉兩得。然而，諮詢文件並未提出任何推動能源效益和節約能源的制度性安排。
21. 需求管理是節約能源和減少污染的最有效辦法，但過往香港在這方面的成果極其有限。<sup>6</sup> 政府並沒有真正下定決心推動需求管

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<sup>4</sup> 廣東省政府已規定，所有發電量 125MW 以上的發電機，必須於 2007 年前安裝脫硫裝置。然而，據港燈及中電最近向政府提交的財務計劃，港燈須於 2010 年才完成減排裝置，中電更延至 2011 年才完成。參看《政府對電力行業的環保政策》（環境保護署文件，載於 [www.epd.gov.hk](http://www.epd.gov.hk)），頁 3。

<sup>5</sup> 台灣和平發電廠於 2002 年投產，機組發電量為 1320MW，約相當於中電在本港發電量的 16%。由於和平發電廠須遵守較嚴謹的環保標準，2004 年該廠的二氧化硫排放量僅為 3.1kT，相當於中電本港二氧化硫排放量的 5.8%。參看中華電力有限公司《2004 年社會及環境報告》，頁 44 及 47。

<sup>6</sup> 電力公司曾於 2000 年推出一項小型的電力需求管理計劃。機電工程署現正推行一項自願性的

理。電力公司的准許回報與固定資產掛鉤，售電愈多，利潤愈豐，自然不會真心推動。要求電力公司推動能源效益，根本存在利益矛盾。

22. 政府應賦權能源管理局負責推廣電力需求管理，倡議在商界推行能源審計，以及準備就能源效益立法，例如訂立強制性的建築物能源效益標準。

## 可再生能源

23. 政府提出向兩電提供財政誘因，及要求兩電免費供可再生能源接駁電網，以期在 2012 年以可再生能源應付 1-2% 的電力需求。這個可再生能源目標實在太低，令人失望。其實，單憑風力發電，已足以應付全港 1% – 2% 的電力需求。<sup>7</sup> 中國大陸雖屬於發展中經濟體系，也提出在 2010 年達到 5% 供電來自可再生能源的目標。當局最低限度應清晰表明，2012 年 1% – 2% 的目標不包括來自「轉廢為能」的發電量。
24. 諮詢文件並沒有訂明經濟誘因的水平，也無說明當局將如何確保可再生能源達標。其實，任何政策目標必須輔以有效的政策工具。政府應規定所有電力供應商，必須在其發電組合中包括某個百分比的可再生能源。換言之，所有電力供應商均有責任提供可再生能源，此方案比提供經濟誘因更有實效。
25. 此外，能源管理局應鼓勵以可再生能源應付新的電力需求。只要符合技術及安全標準，電網必須向可再生能源的發電機組開放，並豁免接駁電網的費用。

## 跨境合作

26. 粵港兩地政府曾經協議，致力於 2010 年把二氧化硫、氮氧化物、

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建築物能源效益登記計劃。在 1998 至 2005 年，該署發出 1162 張建築物能源效益證書。

<sup>7</sup> 舉例來說，裝設 57 台功率為 3.2MW 的風力發電機，便可滿足全港 1% 的電力需求。

可吸入懸浮粒子及揮發性有機化合物的排放量，分別減低 40%、20%、55%及 55%。近期資料顯示，香港三種污染物（包括氮氧化物、可吸入懸浮粒子及揮發性有機化合物）的減排，已取得合理進展，但同期二氧化硫的排放量則增加了 47%。<sup>8</sup>

27. 然而，珠江三角洲的減排資料至今仍未公開，故我們未能確定，廣東省將如何實現 2010 年的減排目標。最新資料顯示，區域性的空氣污染問題正在惡化，「區域性污染導致一般空氣監測站錄得的可吸入懸浮粒子濃度，在 1999 年至 2004 年間上升 15%；區域性煙霧的指標性污染物臭氧，其排放量在同期增加了 26%」。<sup>9</sup>
28. 由於香港與南中國將會進一步加強聯網，政府及將來的能源管理局應該從區域性的角度，探討可再生能源的潛力；並應該與內地合作，制訂跨越 2012 年的可再生能源區域目標。
29. 為準備在區域內實施全面的排放交易計劃，粵港兩地政府應考慮訂立區域性的排放上限。兩地政府亦應該積極合作開發可再生能源，以建立可持續的電力生產及消耗模式。
30. 香港若要與珠江三角洲融合，建立公平及具競爭性的電力市場，有需要劃一兩地不同的技術和環境規管標準。政府應該就這個長遠發展方向與內地磋商。

## 立法

31. 當局與兩電商討未來的市場發展之餘，若未能達成滿意安排，應準備以立法方式促成兩電聯網、開放市場、維護市場公平、促進競爭及加強環保規管。此舉可消除不確定因素，為所有電力供應商提供公平的市場環境。

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<sup>8</sup> 參看《政府對電力行業的環保政策》（環境保護署文件，載於 [www.epd.gov.hk](http://www.epd.gov.hk)），頁 2。

<sup>9</sup> 參看 “Improving the Air Quality of Hong Kong - A Progress Report November 2005”（環境保護署文件，載於 [www.epd.gov.hk](http://www.epd.gov.hk)），頁 2。



## 總結

32. 原則上，市場壟斷者不會自願放棄既得的市場。故此，政府身為市場監管者，有責任完善現行的《規管協議》，以建立可持續及開放的電力市場。我們期望與政府、電力公司及公民社會合作，為 2008 年後的電力市場制訂公平的規管方案。

## 附錄 電力市場研究小組成員名單

余若薇議員, SC, JP

譚香文議員

湯家驊議員, SC

黎廣德先生

程明達先生

楊志良先生

\* 林本利博士、Mark Williams 博士、陸啓明博士及張韻琪小姐曾出席小組會議，提供寶貴意見；  
鄧國輝先生、黃俊恆先生及劉熙賢先生協助撰寫本報告，謹此致謝。