Submission to Panel of Environment Affairs

Legislative Council

for the meeting on 27 March 2006

RESPONSE

Consultation Paper on Future Development of the Electricity Market in Hong Kong

Stage II Consultation

22 March 2006

Presented by

Civic Exchange, Rocky Mountain Institute and WWF

This Response is jointly presented by Civic Exchange, a non-profit public policy think tank in Hong Kong, Rocky Mountain Institute, a non-profit organisation based in Colorado, USA, and WWF, an international environmental organisation.

Summary of Response

Having responded extensively to the Stage I Consultation Paper, we remain disappointed with the Stage II Consultation Paper from the Economic Development and Labour Bureau (EDLB) because its goals are still too narrowly framed and fail to take into account the changing dynamics of future energy markets and energy technologies - or the opportunities that these changing dynamics can provide for the people of Hong Kong.

In this paper we focus on FOUR main issues:

1. The **narrow focus** of the Schemes of Control (SoC) discussion fails to adequately reflect the risks and opportunities of the modern energy world. We recommend that the Government reframe the SoC debate as part of the development of a multi-purpose **Integrated Energy Policy**.

2. **Energy efficiency** offers massive potential savings to Hong Kong consumers and potential new areas of profitable business to power companies and other sectors. The EDLB's greatest failing is not to have taken the opportunity to align the interests of the utilities and consumers, so that energy savings achieved can be appropriately shared thereby driving the utilities and consumers to work towards the highest gains from energy conservation and efficiency. We propose a series of measures that would ensure **energy efficiency is addressed at the same level as energy supply**.

3. Allowing **fair access to the grid to small power producers** would offer multiple benefits to Hong Kong's consumers and its energy system. The EDLB's Stage II position is vague in this area. We believe there are important aspects of the grid that should form the subject of public discussion, which will speed the entry of new, clean decentralised generation technologies. We suggest that the EDLB encourage a discussion about the various ways it may be possible to provide an open grid, including outright **purchase of the grid** by the HKSAR Government, or even simply a fair tariff system for independent power producers to access the grid.

4. **Increased participation from consumers and other stakeholders** in power sector decision-making could offer new opportunities for shared innovation. We note also the potential for greater public scrutiny to bolster a shortage of technical expertise within the EDLB. Energy policy is an area that Hong Kong is relatively weak in. Therefore, to create a better informed public and to accumulate expertise we believe a special energy sector body would be useful. We propose the setting-up of a **Citizens Energy Committee** to greater represent the interests of the people of the HKSAR in key energy sector decisions in the future.

Unless reforms along these lines are considered, we are sceptical that EDLB's recommendations will set Hong Kong on the right energy path for the future.

Recommendation 1: Begin with an Integrated Policy Objective

The world has changed since the original SoC were devised. Increased volatility of fossil fuel prices is forcing countries to think more seriously about energy security. Decreased costs of small scale energy supply technologies make decentralised energy sources more economic than large centralised power stations. The external costs of air pollution are being increasingly incorporated into policy making to protect urban populations. And the threat of climate change is becoming internalised into energy markets, through the development of carbon taxes and emissions trading across the world – a trend that may well expand to markets such as the HKSAR within the lifetime of existing power plants.

The SoC have not been reviewed in the context of the risks and opportunities of a rapidly changing and increasingly sophisticated energy world. The risk of repeating the formula, which is essentially what the latest proposals are suggesting, is that Hong Kong will be left with a power system that misses opportunities to make the HKSAR a cleaner, more efficient, more productive and more profitable place to live.

The solution is to replace narrow SoC objective with a multi-purpose Integrated Energy Policy Objective that focuses on the energy needs of the people of Hong Kong and to achieve a variety of important public policy objectives at the same time. By getting the policy objective right, we believe it can then better focus policy action.

We have attempted to draft a new Integrated Energy Policy Objective in the hope that

this will stimulate greater discussion of where emphasis should lie:

"The objective of an Integrated Energy Policy is to ensure that the public can enjoy reliable and safe energy supplies at reasonable prices within an energy system that; provides energy services at least cost to society; does not waste scarce energy resources; generates and uses energy highly efficiently; seeks to spur economic growth; protects the local environment; reduces Hong Kong's contribution to climate change; increases human resource productivity; and promotes public health".

We suggest this re-statement of the current objective because it:

(a) Puts reliability and safety first, which is what the public expects and deserves;
(b) Notes that price considerations are taken into account;
(c) Refers to an energy system and not just an electricity market;
(d) Refers to energy services at least cost to society;
(e) Emphasize that energy resources are scarce and that policy will seek to minimise wastage;
(f) Focuses attention on using policy to help drive energy efficiency in both generation, as well as usage;
(g) Recognises that energy needs to be seen in context of driving economic development (through conservation and efficiency measures), protecting the environment (through reducing emissions in generation and consumption, which will also reduce climate change), increasing worker productivity (through improving the indoor environments in particular), and protecting public health (through improving environmental and occupational health); and
(h) Necessitates that the Schemes of Control will be designed to reward the utilities for achieving the stated goals.

Air pollution – an example of the need for an Integrated Energy Policy

The consultation document refers to the Hong Kong and Guangdong Provincial Governments' agreement in 2002 to set emission reduction targets on a best effort basis to be achieved by 2010-2012. The targets aim to reduce emissions of SO2, NOx, RSP and VOC by various percentages. Towards this end, the HKSAR Government says it will progressively tighten the emission caps when renewing the licences of individual power plants through mandatory licensing arrangements (paragraphs 2.30-2.32).

Hong Kong Power Sector Contributions to Air Pollution (2004)[1]

Pollutant	**Power Sector Contribution (%)**
Sulphur Dioxide	92%
Nitrogen Oxides	49%
Particulate Matter	51%
Non-methane volatile organic compounds	1%
Carbon Monoxide	4%
Carbon Dioxide	63%[2]

While there is general agreement that the development of these targets is an essential positive first step towards achieving better regional air quality, there remains concern on many fronts. Four years into the agreement period, there has been minimal reporting of performance progress from Guangdong and although Hong Kong is likely to achieve its targets within the set timeline, there is growing concern that this will still not materially improve local air quality. Furthermore, emission reduction targets were based on 2001 data and since that time Guangdong has more than doubled its vehicle population, increased its power consumption by 50% and a large proportion of manufacturers in the Pearl River Delta apparently run private 'backyard' electricity generators to fulfil the energy supply gap.

Furthermore, the consultation document does not mention that Hong Kong is already failing some of its own Air Quality Objectives, especially at road sides, which is where a large number of people are affected on a day to day basis.

[1] Using EDLB data, http://www.epd.gov.hk/epd/english/environmentinhk/air/data/emission_inve.html
[2] Figure for 'Energy Industries'

To be clear, we are not saying that the utilities should not do everything possible to reduce harmful emissions, but we saying that the HKSAR Government needs to give an accurate picture of the extent to which Hong Kong's overall air quality will improve in a material way, even with the Hong Kong utilities meeting their emissions reduction targets, when the overall picture from the whole of the Pearl River Delta, of which Hong Kong is part, indicates a dire picture of continuing poor air quality.

In order to resolve the air pollution issue Hong Kong needs a strategy that considers transport, Guangdong, Pearl River Delta together with the Power Sector at the same time, in order to support the co-ordinated actions of the EDLB in concert with other government bureaux and departments. This can only be achieved with an Integrated Energy Policy.

Recommendation 2: Promote energy efficiency

The production and distribution of electricity is a hugely wasteful process. Even in an efficient power system the amount of energy lost in the generation, transmission, distribution and end use appliance is 75% or higher. Saving energy at its point of use therefore results in at least a four fold saving at the point of power generation.

All energy industry actors agree that improving energy efficiency is unequivocally cheaper than generating more energy. A recent review in California noted that the average cost of energy efficiency programmes saved power at one half to one fifth of the cost to produce it (see figure 2).

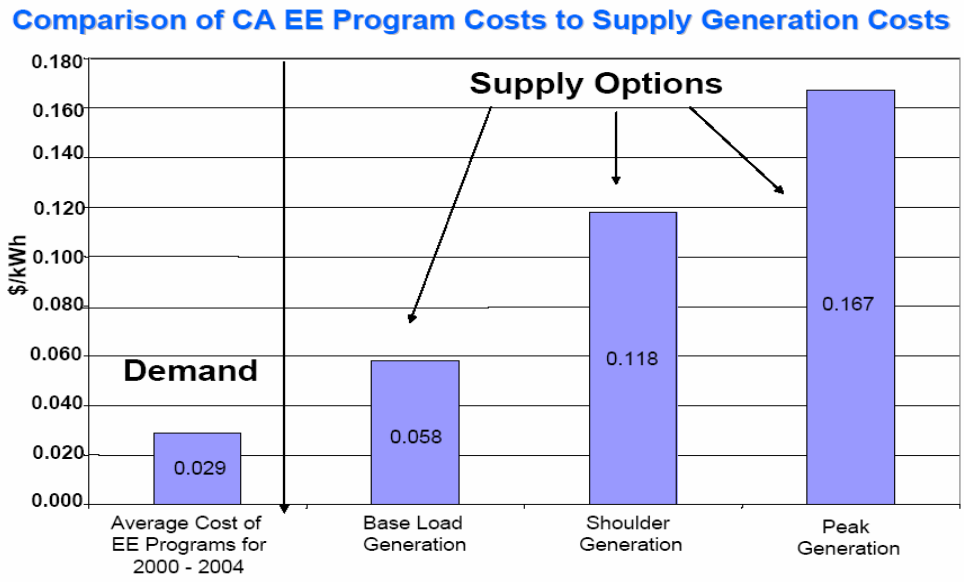

Figure 2: Energy efficiency Vs. Energy Supply in California.
(Source: Energy Efficiency Potential – it's always more than you think. Rick Weston, Regulatory Assistance Project. www.raponline.org)

Energy Efficiency Potentials in Hong Kong

The potential for energy efficiency in Hong Kong – partly because it has been so neglected in the past - is enormous. The potential annual electricity energy savings in a new office tower using state of the art technology compared to Hong Kong norms are in the order of 85% – 92%, whilst keeping construction costs flat.

Furthermore introducing best practice energy efficient workplaces could raise labour productivity by approximately 6%–16% due to improved thermal, visual, and acoustic comfort and indoor air quality.

Another hidden benefit is that as well as reduced power bills, energy efficiency would reduce Hong Kong's air pollution bill, by reducing the amount of polluting fuels that get burned. These costs, which have not been calculated in comprehensive detail particularly with respect to the fraction of costs attributable to the power sector, can nevertheless be expected to be substantial. More general costs estimates of Hong Kong air pollution include:

- Based on research from 1996 the Environmental Protection Department (EPD) estimated the economic cost of air pollution at HK$3,841 - 5,637 million or 0.35 - 0.51% of Hong Kong's GDP. The higher figure uses a willingness to pay methodology to attempt to quantify 'intangible' values such as pain and suffering associated with illness.
- The University of Hong Kong estimated the direct costs and productivity costs of air pollution at HK$1.5 billion per year. This figure is regarded as conservative as it does not include 'intangible' values.
- The University of Hong Kong also estimated that monetary value of the effects of air pollution on cardiorespiratory diseases in Hong Kong would be at least HK$11.1 billion for the year 2000.
- According to a 2004 report by Civic Exchange, the impacts of impaired visibility upon Hong Kong's HK$77 billion/year tourist industry are also likely to be significant.

We believe if Hong Kong wants to devise an incentive framework for the utilities to actively promote conservation and efficiency, then the EDLB has first got to use policy instruments to drive this rather than essentially leave it to the utilities with unclear policy objectives.

A set of policy instruments would carry more credibility if the HKSAR Government took the lead on energy efficiency within its own buildings and operations. Our many

visits to government offices across the territory show generally sub-optimal energy design and a great deal of energy wastage.

In addition much more analysis on the potential benefits of improved energy efficiency to the economy and lives of the residents of HKSAR is required. This would provide an important tool to promote energy efficiency with the public and with key sectors such as the construction industry that would be required to collaborate to realize the potential.

The SoC should reward the utilities for providing energy efficiency services as well as merely supplying power. We believe it would be better to decouple the amount of electricity sold, from the utilities' profits, so that they would be indifferent to sales volume. Only in this way will there be a real incentive for the utility to maximise its efforts to pursue energy conservation and efficiency and not just increase consumption.

In our view, the EDLB's proposal does not go far enough. The EDLB proposes that the Development Fund becomes a Tariff Stabilisation Fund, for the retention of net revenue in access of the agreed return which can be used to ameliorate the impact of tariffs increases for consumers (paragraph 2.68). Our suggestion is to instead create an Energy Efficiency Investment Fund, to actively encourage the utilities to save energy, and reduce the bills to consumers pay. Therefore, in our proposal, if in a given year, a utility sells less electricity than has been projected, the Energy Efficiency Investment Fund should be used to allow the utility achieve its projected profits. Moreover, when a utility cuts customers' bills with no reduction of service quality, the utility should be rewarded with a modest but attention-getting fraction of the savings, thereby aligning the utility's financial interest with those of its customers.

We believe our proposal is superior to the EDLB's multi-level rates of return. By focussing on energy conservation and efficiency, this is the right way to create an energy policy rather than to focus it on air emissions reduction from the utilities because our proposal has potentially a greater overall impact on energy consumption. Our proposal is also more transparent.

Recommendation 3: Ensure Fair Access to the Grid for Small Power Producers

It is a fact that shifting to a decentralised electricity system is cheaper and cleaner than continued exclusive reliance on large centralised generating plant. Rapid

decreases in the costs of small-scale generation technologies in the last decade, coupled with reduced transmission and distribution investment requirements make decentralised power the least cost generation option. For example, The World Alliance for Decentralised Energy (WADE), an industry group, estimated that shifting to a decentralised approach for mainland China could reduce capital investment requirements by up to 38% and retail costs by 28%.[3]

Dencentralised generation is also usually cleaner, utilising natural gas or renewable energy technologies, for example on-site gas micro-turbines, fuel cells and solar panels.

We believe there needs to be a clearer and broader statement that EDLB to promote decentralised power generation, by facilitating fair access to the grid for small power producers (SPPs).

Since the EDLB provides that in the long run, grid access "will be made available" to new power suppliers of renewable as well as non-renewable power, including from the mainland (paragraphs 2.21 and 2.10), it is incumbent on the EDLB to be clear about how this will be achieved as it involves a significant policy departure from the current model. As such, the vague mention of the possibility of the Government drafting new regulations and setting-up a separate regulatory authority is insufficient for both the public and the utilities. Nor does proposing to "assist where necessary" negotiations between new suppliers and the utilities sufficiently helpful to drive a policy to open the grid (paragraph 2.22)

It would be better for the EDLB to state clearly that its longer-term policy goal is for there to be an open grid and what options there are to achieve this goal. This will also solve the problem of interconnection between the two utilities (paragraphs 2.23-2.25).

An open grid could presumably be achieved by the HKSAR Government buying the grids from the utilities or to come to some arrangement where the grids will effectively be opened to others provided they generate cleaner power. Towards this end, the EDLB should carry out a study to consider the likely cost of Hong Kong buying the grid from the two power utilities so that access and connection can be a matter of public rather than private ownership. The grids could then be merged as one grid for the whole of Hong Kong and its ownership could be held by a public corporation. While it is beyond the ambit of this paper to discuss the financial and

[3] http://www.localpower.org/documents_pub/w_model_chinashort.pdfs

operational aspects of this arrangement, we note that there are international examples of the grid being listed. In promoting discussion about the future of the Hong Kong grid, we believe the EDLB should also consider what other ways short of outright purchases may be viable to open the grid, for example a fair tariff system for independent power producers to access the grid.

No doubt, buying the grid (if this is found to be in Hong Kong's best long-term interest) will involve significant cost from the public purse but in view of the fact that this could be important for Hong Kong's long-term future in achieving higher energy security, cleaner emissions and other gains described in 3.4 above, there may well be strong justifications to do so. Moreover, we note from the 2006-2007 Budget, the HKSAR Government is predicting sizable budget surpluses (paragraph 82 of the 2006-2007 Budget), thus the HKSAR Government have adequate financial strength to consider such an option. We expect the EDLB to provide a discussion on these matters.

Recommendation 4: Enhanced participation from consumers and other key stakeholders

The EDLB proposes to keep the current institutional set-up for now. Our concern is a long-standing one. In view of the growing complexity of energy issues, the consultation paper does not discuss how the HKSAR Government will ensure that it has the most current, internationally-informed, in depth understanding of issues. Under its current set-up, we do not believe the Energy Advisory Committee as presently structured and organised have the level of expertise to inform policy.

In order to improve the quality of decision-making over Hong Kong's energy future and the accountability of the Government and power companies to consumers on issues such as price, pollution and energy security we believe that greater public participation should be encouraged. The nexus between the consumer, regulator and energy supplier should be viewed as an opportunity for supporting the quality of decision making and bringing the public into

In countries such as the US, Canada and India, it is standard practice for power sector regulators to consult consumer organisations on issues such as proposed tariff increases. Frequently this is viewed by regulators as a useful way of bringing in outside analysis and expertise to balance the opinions of energy suppliers, and giving regulators the opportunity to make a more balanced decision.

Improved public participation can be used to gain more accurate feedback from

consumers on issues such as new infrastructure development and also solicit their support for the design and implementation of new energy plans.

Furthermore building a closer relationship with consumers provides opportunities for innovation and public–private partnership. This could be particularly appropriate for example in the development of energy efficiency programmes with specific sections of the community, encouraging small power producers and implementation of renewable energy schemes funded by a green power tariff.

It is proposed that the SoC creates a Citizens Energy Committee, with representatives from consumer, environmental and social welfare organisations as well as academia This Committee should be consulted on a regular basis by the Government and power companies on the full range of issues concerning Hong Kong's power sector. The new committee will likely help to build broad expertise among various sectors so that in the long-term, Hong Kong can better understand energy issues with the view that all sectors can work towards fulfilling the new policy objectives we proposed.

SUMMARY

In the long-term, issues of energy supply, energy security and reliability depend on a resilient energy infrastructure. In Hong Kong, we can see what this means by comparison between land-based telephones and wireless systems. Resilient systems generally are decentralised rather than centralised, which is where distributed energy systems and energy efficiency have critical roles to play. Thus, we urge the EDLB and the HKSAR Government as a whole to envision the more active role they need to play in devising an Integrated Energy Policy for Hong Kong rather than to continue to look through the narrow prism of the current electricity market.