

414B00002

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附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於**2014年6月18日**或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

石硤尾街坊福利會有限公司

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1* 通過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共：50%			
方案2* 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ * 請先考慮第四部分的建議 如沒有其他元素，唯有選擇2

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

(利用還可增加之核電能力)

1) 可考慮增加核能 由 70% ⁹⁰⁻ 現在 \rightarrow 100% 未來 (大前提是不用增加現有的核電設施)

2) 從電網購 15% 之用電 (加入少量之外來供電以

增加供電之多元化及平衡各方之訴求及增加政府的議價能力

30 APR 2014 17:23

Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by CINPEK ENGINEERING LTD.
(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total : 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1

Option 2

Reasons: (You can tick more than one box below)

Safety

Reliability

Affordability

Environmental Performance

Others

Please specify: _____

Part 4

Other Comments and Suggestions

Suggest to increase RE proportion such as wind / solar energy in Option 2.

09 MAY 2014 15:13

Annex

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Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by TAC company
(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

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Part 3

Specific Questions for Consultation

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Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1
Option 2

Reasons: (You can tick more than one box below)

Safety
Reliability
Affordability
Environmental Performance
Others Please specify: _____

Part 4

Other Comments and Suggestions

We are closing well, should not do any thing. May be improved option like solar or more on gas.



香港專業及資深行政人員協會 就未來發電燃料組合之意見書

2014年5月

前言

香港專業及資深行政人員協會去年就兩家電力公司的《管制計劃協議》2013年中期檢討提出之意見書，曾建議特區政府應盡快開展發電燃料組合的檢討¹，制定未來發展大方向。本會非常關注特區政府是次就未來發電燃料組合展開公眾諮詢，就此進行了深入討論，以便為政府提供意見。

香港是一個獨特的國際大都會，地少人多，高樓大廈林立，當中設置的自動扶手電梯及升降機運行無間，鐵路網絡四通八達，其國際機場為全球最繁忙之一，香港更是知名國際金融中心，經濟活動可謂頻繁不休，因此香港必須維持高度穩定可靠的電力供應，既是為了保持經濟上的競爭力，亦擔當維護社會及市民生命安全的重要使命。以香港目前的獨特環境及發展狀況，在電力規劃上實難以與其他城市相提並論，更難從外地實例，直接引入推行。

本會認為諮詢文件提出的兩個方案，並非最完善的方案，本會現謹就發電燃料、輸電系統、經濟效益、環保、從內地購電的意見等方面，提出一些意見。

期望政府在未來發電燃料組合的長遠規劃上作出策略性考慮，進行更深入研究及分析，預測未來可能出現的問題，並與兩家電力公司加強交流及合作，審慎制定最符合香港長遠利益的方案，確保香港未來數十年以至更長遠的未來均能繼續維持高度穩定、可靠、安全的電力供應，並達到合理價格及環保的政策目標。

¹ 專資會就「兩家電力公司的《管制計劃協議》2013年中期檢討」之意見書，2013年2月，www.hkpasea.org



香港專業及資深行政人員協會之意見：

1 發電燃料

1.1 煤

香港目前的燃料組合有 53% 燃煤發電，碳排放量偏高，本會同意未來應逐步減少燃煤發電的比例，改善空氣質素。

1.2 可再生能源(包括轉廢為能)

可再生能源(包括轉廢為能)毫無疑問是可持續、零排放的能源，但其發電成本高、可靠性低，更需以傳統發電方式作後備。在香港大自然環境的局限、土地資源匱乏下，依靠可再生能源作大規模供電在技術上並不可行，更不合乎經濟效益。本會建議政府有需要讓市民了解使用上述能源發電的局限及困難。

1.3 天然氣

天然氣發電的碳排放的確較燃煤發電為少，可靠度亦較高，能提供大規模基本負荷發電，但天然氣與煤的成本均會受制於國際燃料市場的價格波動，其中天然氣價格較煤高，加上各地對天然氣的需求急速上升，天然氣價格將出現持續上升的趨勢。但長遠來說，因頁岩氣的開採量增加而導致亞太區液化天然氣的價格下降的可能性還是存在的。

對於增加天然氣發電比例，香港能否繼續維持高度穩定、可靠的電力供應，取決於來源地能否提供長期穩定的天然氣供應，所指的是數十年甚至更長的年期，而有關因素亦決定了日後的發電成本。

在技術層面，天然氣機組既可用於基本負荷運行，也適用於峰期供電。由於啟動時間較短，天然氣機組亦可作為後備發電設備，當系統出現緊急事故時作出支援。煤機特性，較適用於基本負荷供電。若用天然氣機組代替煤機，運作上也需要整套供電系統作出相



應配合。

而香港現為燃煤發電而設的發電機組並不適用於天然氣發電，若日後決定增加天然氣發電比例，必須重新規劃香港的供電鏈配合天然氣發電，包括新發電廠及新增跨境天然氣供應設施。在土地短缺問題下，或難以覓地展開相關規劃及工程，特區政府應研究在現有發電廠擴展的可行性，儘量減少對社區產生的影響。

1.4 核能

核能是高效能的清潔能源，核能發電可靠度高、價格相對其他能源穩定，不少國家均有發展核能供電。

由於 2011 年 3 月在福島核電站發生核事故，引起全球更加關注核安全，但值得注意的是多個國家對其核設施進行綜合安全檢查、進一步提升核設施的安全後，已決定繼續維持發展核能。例如，美國於 2012 年初再次核准興建新的核能反應爐、英國近期授權中國及法國在英國西南部一選址投資興建及營運核電廠、中國內地亦已重新審批新的核電機組等。

為應付未來發展的需要，電力需求將與日俱增，本會認為核設施安全未來將繼續受全球關注，各國及國際原子能機構亦會致力提升核設施的安全，有助發展核能。本會建議特區政府應研究香港應否增加核能發電的比例，並就增加核能發電比例提供另一燃料組合方案及相關研究數據供公眾參考及討論，引導不同意見的市民及團體作建設性的討論。

2 輸電網絡

香港現時購買廣東大亞灣核電站七成電量供香港用戶，電力主要經兩組 400kV 專線由內地輸港，接駁香港高壓電網，本會認為有關輸電專線容量未必可以應付未來供電發展的需要，特區政府有需要規劃及興建新的輸電設施及配電網絡。本會認同特區政府加強香港與內地輸電聯



網系統用量的方向，建議亦應加強港九供電聯網系統，讓內地電網、中電及港燈能夠電力互通，長遠有助締造健康的供電競爭環境，建議政府可研究香港日後開放電力市場的可行性及局限。

至於香港面對土地短缺問題，有關輸電基建設施工程或會因難以覓地而遇阻滯，建議可研究興建海底電纜。但輸電基建設施屬龐大投資，日後無論香港的未來發電燃料組合方案為何，期望政府應先審慎研究及分析相關新基建設施的長遠效益，以便尋找更適合香港未來發展的方案。

3 經濟效益

香港的電力供應服務達到世界級水平，而每月電費只佔家庭總支出約 2%，比較新加坡、紐約及悉尼等先進國家及地區，香港電費處於合理的水平，而未來電費預計將大幅增加，本會認為政府更有必要堅持使用清潔能源發電，選取最符合經濟及環境利益的發電燃料組合。

另本會認為電費上升亦有助市民明白電力是昂貴的資源，相信這是最有效的經濟誘因，促使市民節約能源，故本會建議政府日後應避免作出電費補貼。

4 環保考慮

本會建議政府就減排目標檢討放寬的空間，為兩家電力公司發展良好供電模式提供彈性。本會亦建議特區政府就兩家電力公司制定環保表現承諾，列出合理且有效的排放上限，要求兩家電力公司控制二氧化碳、氮氧化物、二氧化硫、可吸入懸浮粒子及其他污染物等的排放，履行保護環境的責任。

5 從內地購電的意見

作出從內地購電的決定前，政府應深入研究內地電力市場的未來發展方向及挑戰。現時所有內地電力輸港均需經中國南方電網有限公司輸



入，內地自從在電力市場實行「網廠分家」後，南網的角色為電力運輸商，並非電力製造商或發展商，對發電方式沒有管理權。換言之，屆時從內地購得的電力來源將難有控制權，即不能確保電力來自清潔能源，變相把發電引致空氣污染的責任轉移，香港長遠更會因制定了長期定額購電量而失去議價能力。另外，從電網購電的價格很有可能因內地政策(包括環保政策)及規管要求收緊而上升。

若香港日後必須從內地購電，特區政府有責任了解電力的發電燃料組合、來源及製造商，並應要求電力供應商履行環保責任，盡可能尋找排放較低的電力，例如主要購買幾乎零排放的核電或可再生能源電力，並必須確保電力供應高度可靠、安全及穩定。

政府亦必須制定本地發電比例，以及預先準備後備供電方案及相關設施，以支援跨境輸電設施因意外斷裂或發生故障期間的本地電力負荷，確保香港仍能維持供電。

結語：

現時香港電力供應的可靠程度達致 99.999%以上，為市民提供安居無憂的生活環境，也為工商業提供持續不停的運作保障。此優勢保護市民的生命安全，亦促進香港的可持續發展及競爭能力，故未來發電燃料組合的調整必須高瞻遠矚，政府應選取最能符合香港長遠利益的方案，即使某一類燃料供應受阻，也不致影響整體發電，確保香港維持安全、可靠的電力供應，並平衡合理價格及環保表現的政策目標。

5/2B00008

致香港添馬添美道 2 號
政府總部東翼 15 樓
環境局
電力檢討科



未來發電燃料組合公眾諮詢

全港各區工商聯，由本港各主要工業區內的工商團聯合組成，會員均為香港各區內的主要工商翹楚，在愛國愛港的旗幟下，為香港的經濟發展和繁榮穩定積極貢獻逾二十年，成員包括香港觀塘工商業聯合會、東區工商業聯合會、香港黃大仙工商業聯合會、葵青工商業聯合會、香港深水埗工商聯會、香港荃灣工商業聯合會、新界東北區工商業聯合會、香港沙田工商業聯合會、香港九龍城工商業聯合會、香港油尖旺工商聯會及灣仔中西區工商業聯合會，合共十一個成員會。

本會非常樂意就本港工業發展所面對的問題與政府各部門商討對策，並建議採取適當的措施加以解決，對於政府提出的未來發電燃料組合諮詢文件，本會認為，只要能維持香港傳統工業發展，同時提高香港高科技發展的措施，本會都樂意與政府進行商討。

本會認為，無論工商業發展，或是市民日常生活，本港一直都可以依靠優質和可靠的電力供應，中電的可靠度達到 99.999%，是國際一流水準，是本港各大小企業龐大投資背後強而具有實力的支柱，因此，我們不希望政府輕率地在以兩者選其一的方式決定本港未來的發電燃料組合，而是一個具有彈性和靈活度的做法，兼容可靠、環境、價格等因素，考慮及國際燃料市場和技術發展的靈活做法，達致一個不斷追求與時並進和具前瞻性的政策和設施。

電費於本港工商界中一直佔相當重的百分比，以飲食業為甚，由於燃料價格反覆波動，本會特別關注最終的方案，是否能夠應對國際燃料市場和發展，讓本港能使用當時最佳價格的燃料，亦是相當本會關注。

總結而言，一個對本港工商界發展舉足輕重的發電燃料組合政策，應該經過仔細思量 and 討論，才選取最有利及最具彈性的做法，令業界和客戶都能達致多長遠利益。我們絕不可以對現時供電的高度可靠性作出妥協，亦不能接受一個欠缺應對市場發展的方案，因為可靠和具靈活性的電力供應，一直是是香港社會及經濟發展的重要基石。因此，我們均認為香港應謹慎評估所有方案，確保能非常靈活地，為香港制定一個長遠、全面和理想的燃料組合，而不應輕率地在兩者選其一的方案作出判斷。

祝身體健康！工作順利！萬事勝意！

12 MAY 2014 / 7:00

附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於**2014年6月18日**或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

Fruitful Yield Co, Ltd

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1* 通過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共：50%			
方案2* 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他(請註明): _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他(請註明): _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因:(可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

方案二: 煤(及可再生能源)可減至10%

513B00002



Response Form

Public Consultation on Future Fuel Mix for Electricity Generation in Hong Kong

Please send this response form to us on or before **18 June 2014** by one of the following methods:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Associated Technical Services Limited

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1

Option 2

Reasons: (You can tick more than one box below)

Safety

Reliability

Affordability

Environmental Performance

Others

Please specify: _____

Part 4

Other Comments and Suggestions

Local generation (Option 2) may provide more employment opportunities and better career prospects for the younger generation of HK engineers.

15 MAY 2014 17:07

Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Hai Ste Machinery & Equipment Co, Ltd
(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
Total : 50%				
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others Please specify: _____

Part 4

Other Comments and Suggestions

Solar Energy can be consider as its much more environmental friendly, suitable for sustainable development

回應表格 香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

Kin Sun Engineering HK Ltd.

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合		輸入		天然氣	煤 (及可再生能源)
		核能 (大亞灣核電站)	從電網購電		
現時 (2012)		23%	-	22%	55%**
方案1*	通過從內地電網購電以輸入更多電力	20%	30%	40%	10%
		總共：50%			
方案2*	利用更多天然氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

因可靠性對工程行業十分重要, 而方案1的可靠性有不確定因數.

516B00001

516B0000
Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Union Faith Energy (HK) Ltd

(name of person or organisation)

at _____ and _____

(telephone)

(e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1*	20%	30%	40%	10%
Importing more electricity through purchase from the Mainland power grid	Total: 50%			
OPTION 2*	20%	-	60%	20%
Using more natural gas for local generation				

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
 Option 2

Reasons: (You can tick more than one box below)

- Safety
 Reliability
 Affordability
 Environmental Performance
 Others

Please specify: _____

Part 4

Other Comments and Suggestions

Option 2 is the only plausible choice as the long-term option for Hong Kong.

516B00002

516B00002



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Cavendish International Holdings Ltd

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total: 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
 Option 2

Reasons: (You can tick more than one box below)

- Safety
 Reliability
 Affordability
 Environmental Performance
 Others Please specify: _____

Part 4

Other Comments and Suggestions

Reliable electricity is very important to the real estate and construction business. Option 2 is preferred because if Option 1 is chosen, additional portable generators that burn dirty fuel will have to be deployed as backup.

516B00003



Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Hutchison International Ltd

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
Total: 50%				
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others

Please specify: _____

Part 4

Other Comments and Suggestions

As an international company, electricity reliability is very important to every day business.

516 B00004



Annex

Response Form
Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:
 mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
 Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong
 e-mail: fuel_mix@enb.gov.hk
 fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by International City Holdings Ltd
 (name of person or organisation)

at _____ and _____
 (telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total: 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others

Please specify: _____

Part 4

Other Comments and Suggestions

Option 1 does not improve overall air quality. It's outsourcing pollution to Guangzhou which will flow down to HK anyway.

516B00005



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation in Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Hutchison Whampoa Ltd

(name of person or organisation)

at _____ and _____

(telephone)

(e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total: 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others Please specify: _____

Part 4

Other Comments and Suggestions

From the consultation documents, there are a lot of missing information on what each option entails. Given the uncertainty of option 1, Option 2 is preferred for its proven reliability and efficiency.



回應表格
香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址： 香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件： fuel_mix@enb.gov.hk

傳真： 2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

THE GREEN EARTH LTD

(個大或機構名稱)

— (電話) — 及 — (電郵) —

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1*	通過從內地電 網購電以輸入 更多電力	20%	40%	10%
		總共：50%		
方案2*	利用更多天然 氣作本地發電	20%	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基建。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: 雖然價格仍是未知之數, 但環保意識極高, 用天然氣為 60%, 煤則大幅減至 20%。

第四部分

其他意見或建議

建議 天然氣及再生能源比例為 40% : 40%



附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

我是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

Jinap Business

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合	輸入			煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電	天然氣	
現時 (2012)	23%	-	22%	55%**
方案1*	通過從內地電 網購電以輸入 更多電力	20%	30%	40%
		總共：50%		
方案2*	利用更多天然 氣作本地發電	20%	-	60%
				20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他(請註明): 我不認為此方案未來香港政府 可以有效監察各項環保表現、可靠性等指標
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他(請註明):

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因:(可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

香港的所有優勢背後都有很多因素及條件支持，穩定的電力供應正是其中一個條件。整體而言，現時本地兩間電力公司表現良好，可靠性亦非常高，表現達99.9997%的出色供電表現，在對比中國南方供電只得99.85%(城市供電可靠率)下，實在想不到理由為什麼未來需要借用其他地區提供本地電力，再者，若將來供電有問題的時候，我們還可以問責作跟進嗎？香港政府有100%把握處理嗎？而且，就環境影響而言，若使用中國電網，只是將環境影響部分推向中國處理，香港作為中國區領導的城市，為什麼不可以運用優勢將海外新技術帶入地區試行而要放棄自己將供電所帶出的負面影響推向一個發展中的國家？我認為道德上亦說不過去，既然最後結果都是要加電費作付出保護環境的代價，我認為香港更不應放棄自己供電，應該以身作則向鄰近地區起示範作用。

5/6 B000 12



附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)



Pegasus Greenland Ltd
 (個人或機構名稱)

_____ 及 _____
 (電話) (電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1* 透過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共: 50%			
方案2* 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明:

確保本地工人就業機會
減少電力公司裁員
藉口

第四部分

其他意見或建議

附件

回應表格

香港的未來發電燃料組合公眾諮詢

請於**2014年6月18日**或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

Television Broadcasts Limited 電視廣播有限公司

(個人或機構名稱)

_____ 及 _____
 (電話)

_____ (電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1* 通過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共：50%			
方案2* 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基建。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他 (請註明): <small>Should study impacts to large power consumption company.</small> Should have more alternatives of fuel supplies & combinations in open market for selection.
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他 (請註明): <small>Should study impacts to large power consumption company.</small> Should have more alternatives of fuel supplies & combinations in open market for selection.

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: Both option 1&2 are found unacceptable and should have more alternatives for selection.

第四部分

其他意見或建議

Both option 1&2 are found unacceptable. Should have more alternatives of fuel supplies & combinations in open market. Consultation to large power consumption companies should be conducted. Should review the target emission standards & time schedule if it is overed the requirement of international & nearby city standards and adjust the target emission standards & prolong implementation schedule according to the review results.



18/05/2014 00:56

To fuel_mix@enb.gov.hk

cc

bcc

Subject Response form

1 attachment



Response Form.pdf

致環保處：

因表格未能儲存散見之全部，故於下方再度列出：

- 1 內地供電穩定性比香港現有穩定性低 (一年停電3.2小時 vs. 一年少於1分鐘)。另外，長途電網，除了電力流失率高之外，更易受惡劣天氣影響，增加大停電風險
- 2 減核為世界潮流，香港應減少依靠核能，而非增加使用核能
- 3 南電主要以燃煤，燃油發電 (火電 62%) 不見得比港燈中電好。向南電購電，只是將污染物改由內地排放，除加劇當地污染，道義上說不通外；當冬季吹北或偏北風，污染物亦會隨風吹到香港；減排減污之說，自欺欺人
- 4 增加對內地電力依賴，除削減香港自主的能力，亦會減低購電的議價能力，東江水便是一例
- 5 其實再生能源，尤其太陽能，風能近年來愈趨成熟，效率愈來愈高，港府宜考慮增撥資源研究及建設再生能源發電站，引領香港成為世界環保先行者，若能發展出良好技術，或減低成本的方法，更可外銷他方，為香港帶來經濟效益

市民

CHENG KIT MAN

回應表格

香港的未來發電燃料組合公眾諮詢

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電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

_____ (個人或機構名稱)

_____ (電話)

及

_____ (電郵)

第二部分

燃料組合

燃料組合		輸入		天然氣	煤 (及可再生能源)
		核能 (大亞灣核電站)	從電網購電		
現時 (2012)		23%	-	22%	55%**
方案1*	通過從內地電網購電以輸入更多電力	20%	30%	40%	10%
		總共：50%			
方案2*	利用更多天然氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____
2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

519B00003



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by HIT Holdings Ltd

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX		IMPORT		NATURAL GAS	COAL (& RE)
		NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)		23%	-	22%	55%**
OPTION 1*	Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
		Total: 50%			
OPTION 2*	Using more natural gas for local generation	20%	-	80%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1

Option 2

Reasons: (You can tick more than one box below)

Safety

Reliability

Affordability

Environmental Performance

Others

Please specify: _____

Part 4

Other Comments and Suggestions

Burning more natural gas (option 2) will be better for air quality than relying on the heavily coal-centric power plants of CSP.

519B00005



Annex

Response Form
Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

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mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
 Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Hutchison Port Holdings Ltd
 (name of person or organisation)

at _____ and _____
 (telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total: 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others

Please specify: _____

Part 4

Other Comments and Suggestions

As the headquarters for a global port operations, electricity reliability is extremely important which is why we opt for Option 2.

519B00006



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

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mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by HPH IT Consultants Ltd

(name of person or organisation)

at _____ and _____

(telephone)

(e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1: Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total 50%			
OPTION 2: Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others

Please specify: _____

Part 4

Other Comments and Suggestions

Electricity outages causes damage to computer hardware components. Of the two options, Option 2 is more reliable.



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Mid-stream Holdings (HK) Ltd

(name of person or organisation)

at _____ and _____

(telephone)

(e-mail)

Part 2

Fuel Mix Options

FUEL MIX		IMPORT		NATURAL GAS	COAL (& RE)
		NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)		23%	-	22%	55%**
OPTION 1*	Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
		Total: 50%			
OPTION 2*	Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others Please specify: _____

Part 4

Other Comments and Suggestions

Option 2 is preferred. Even though the Government says large-scale grid import is technically feasible, it's still "untested".

519B00009

519B00009



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Cayley Property Management Limited

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1*	20%	30%	40%	10%
Importing more electricity through purchase from the Mainland power grid	Total : 50%			
OPTION 2*	20%	-	60%	20%
Using more natural gas for local generation				

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
- Option 2

Reasons: (You can tick more than one box below)

- Safety
- Reliability
- Affordability
- Environmental Performance
- Others Please specify: _____

Part 4

Other Comments and Suggestions

Electricity reliability is crucial for our residents living in high-rise apartments.

519 B00011



附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

磐石顧問工程師有限公司

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1' 透過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共：50%			
方案2' 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

*起新供電樞基建設要用者自付, 所

- 香港的環保意識比內地高,
- ~~反對~~反對將排放物輕移到內地,
- 內地都已經不: 夠電力供應, 時有停電

電
新
年

519B00015

519B00015



附件

回應表格
香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。
 郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科
 電子郵件：fuel_mix@enb.gov.hk
 傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

_____ (個人或機構名稱)
CJM CO., LIMITED
 _____ 及 _____
 (電話) (電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1* 通過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共：50%			
方案2* 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所樂的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他 (請註明): <u>因內地供電量自己也不足,很難信任</u>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他 (請註明): <u>因不是太陽能,所以未能清楚列明的百分比是否正確</u>

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: 方案一,因為不相信內地,如果要選擇,只會選二...

第四部分

其他意見或建議

太陽能會較為最好的環保物料,因沒有任何傷害物質,也不會放出影響空氣及環境

520B00001



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Harbourfront Landmark Premium Services Limited

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX		IMPORT		NATURAL GAS	COAL (& RE)
		NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)		23%	-	22%	55%**
OPTION 1*	Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
		Total: 50%			
OPTION 2*	Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1
Option 2

Reasons: (You can tick more than one box below)

Safety
Reliability
Affordability
Environmental Performance
Others Please specify: _____

Part 4

Other Comments and Suggestions

Our tenants are multinational businesses. Grid purchase will introduce uncertainty into the electricity market in terms of reliability and cost. Option 2 is preferred.



Response Form

Public Consultation on Future Fuel Mix for Electricity Generation in Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Estoril Court Management Company Limited
(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
Total: 50%				
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1

Option 2

Reasons: (You can tick more than one box below)

Safety

Reliability

Affordability

Environmental Performance

Others

Please specify: _____

Part 4

Other Comments and Suggestions

For our residents, reliability and cost are important factors. Option 1 introduces too many uncertainties. Option 2 is preferred.

520B00003



520B0000

Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Hongkong & Whampoa Dock Co Ltd

(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
Total: 50%				
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

- Option 1
 Option 2

Reasons: (You can tick more than one box below)

- Safety
 Reliability
 Affordability
 Environmental Performance
 Others Please specify: _____

Part 4

Other Comments and Suggestions

Because we need a stable electricity supply, option 1 will introduce uncertainties and we will have to invest in additional backup generators increasing costs.

520B00004



Annex

Response Form

Public Consultation on Future Fuel Mix for Electricity Generation in Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Elbe Office Investments Ltd
(name of person or organisation)

at _____ and _____
(telephone) (e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
Total: 50%				
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1

Option 2

Reasons: (You can tick more than one box below)

Safety

Reliability

Affordability

Environmental Performance

Others

Please specify: _____

Part 4

Other Comments and Suggestions

Hong Kong's electricity generation has been safe and reliable. Option 2 is preferred.

520B00005

520B0000



Response Form

Public Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Please send this response form to us on or before **18 June 2014** by one of these means:

mail: Environment Bureau, Electricity Reviews Division, 15/F, East Wing,
Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

e-mail: fuel_mix@enb.gov.hk

fax: 2147 5834

Part 1 (See Notes)

This is a corporate response (representing the views of a group or an organisation) or
 individual response (representing the views of an individual)

by Cayley Security Company Limited

(name of person or organisation)

at _____

(telephone)

and _____

(e-mail)

Part 2

Fuel Mix Options

FUEL MIX	IMPORT		NATURAL GAS	COAL (& RE)
	NUCLEAR (DBNPS)	GRID PURCHASE		
Existing (2012)	23%	-	22%	55%**
OPTION 1* Importing more electricity through purchase from the Mainland power grid	20%	30%	40%	10%
	Total: 50%			
OPTION 2* Using more natural gas for local generation	20%	-	60%	20%

* The above fuel mix ratios aim at providing a basis for planning the necessary infrastructure for electricity supply. Flexibility should apply to actual deployment of each fuel type, having regard to the circumstances happening on the ground.

** Inclusive of a small percentage of oil

Part 3

Specific Questions for Consultation

Q1: How do you view each of the two fuel mix options with regard to safety, reliability, cost, environmental performance and other relevant considerations? (Please indicate your view on **EACH** of the two options.)

Option	Support	Not Support	Reason for NOT supporting (You can tick more than one box)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Safety <input checked="" type="checkbox"/> Reliability <input checked="" type="checkbox"/> Affordability <input checked="" type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Safety <input type="checkbox"/> Reliability <input type="checkbox"/> Affordability <input type="checkbox"/> Environmental performance <input type="checkbox"/> Others (please specify): _____ _____

Q2: Which of the two fuel mix options do you prefer? Why? (Please tick **ONLY ONE** box)

Option 1

Option 2

Reasons: (You can tick more than one box below)

Safety

Reliability

Affordability

Environmental Performance

Others

Please specify: _____

Part 4

Other Comments and Suggestions

Hong Kong local electricity generation has a long proven safety record. Option 2 is preferred.



附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於**2014年6月18日**或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

Pacswitch Globe Telecom Limited

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1* 通過從內地電 網購電以輸入 更多電力	20%	30%	40%	10%
	總共：50%			
方案2* 利用更多天然 氣作本地發電	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配率按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: _____

第四部分

其他意見或建議

We are a OPCA licensed Service Based Operator in Hong Kong and operating a Data Centre to provide voice and data service to overseas customers. Our business need a very stable and reliable power feed for our operation. We have our own back-up battery and power gen for backup purpose, but it needs higher cost and long time for warm-up and shutdown, it is not a good idea to use usually. So we suggest HK have to build our own Natural Gas power stations and we do not suggest import electric power from S.China Grid. It is all about reliable and keep HK as a major HUB of telecom position.



附件

回應表格 香港的未來發電燃料組合公眾諮詢

請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址：香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件：fuel_mix@enb.gov.hk

傳真：2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

K&M Electronics Ltd.

(個人或機構名稱)

(電話)

及

(電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1*	20%	30%	40%	10%
	總共：50%			
方案2*	20%	-	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基礎。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他 (請註明): <small>electricity price too cheap & lowering the price without it</small>
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input checked="" type="checkbox"/> 其他 (請註明): <small>electricity price too high & not stable</small>

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他

請註明: The water cost of waste water in Hong Kong is much higher than the electricity tariff. We do not want to help the risk of water tariff.

第四部分

其他意見或建議

We need a power source which is totally under our own control and it has known calculated risks.

回應表格
香港的未來發電燃料組合公眾諮詢



請於2014年6月18日或之前透過以下方式提交你的意見。

郵寄地址： 香港添馬添美道二號政府總部東翼十五樓環境局電力檢討科

電子郵件： fuel_mix@enb.gov.hk

傳真： 2147 5834

第一部分(見註)

這是 團體回應 (代表個別團體或機構意見) 或
 個人回應 (代表個人意見)

POWERTECH SYSTEM ENGINEERING LIMITED

(個人或機構名稱)

_____ 及
(電話)

_____ (電郵)

第二部分

燃料組合

燃料組合	輸入		天然氣	煤 (及可再生能源)
	核能 (大亞灣核電站)	從電網購電		
現時 (2012)	23%	-	22%	55%**
方案1*	通過從內地電 網購電以輸入 更多電力	20%	40%	10%
		總共：50%		
方案2*	利用更多天然 氣作本地發電	20%	60%	20%

*以上的燃料比例用以提供一個基礎作規劃電力供應所需的基建。不同燃料的實際分配應按實際情況釐定。

**包括少量燃油。

第三部分

具體諮詢問題

問1: 就安全、可靠性、合理價格、環保表現及其他相關的考慮而言，你對兩個燃料組合方案有何意見？(請就每個方案說明你的看法)

方案	支持	不支持	不支持方案的原因 (可選擇多過一項)
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> 安全 <input checked="" type="checkbox"/> 可靠性 <input checked="" type="checkbox"/> 合理價格 <input checked="" type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 安全 <input type="checkbox"/> 可靠性 <input type="checkbox"/> 合理價格 <input type="checkbox"/> 環保表現 <input type="checkbox"/> 其他 (請註明): _____ _____

問2: 你認為在兩個燃料組合方案中，哪一個較理想？為什麼？(請只選擇一個)

方案1

方案2

原因: (可選擇多過一項)

安全

可靠性

合理價格

環保表現

其他 請註明: _____

第四部分

其他意見或建議

香港政府不可能保證人民幣不升值，香港市民將來肯定要交多電費。

20th May, 2014

Subject: HKUST ENVR5260 Response to
Consultation on Future Fuel Mix for Electricity Generation for Hong Kong

Dear Electricity Reviews Division,

The students of the course ENVR 5260 Environmental Policy and Management at The Hong Kong University of Science and Technology (HKUST) recently conducted an in-depth analysis of the Government's Consultation on Future Fuel Mix for Electricity Generation. The potential options discussed in the consultation document are most relevant to a sustainable future of Hong Kong. As postgraduate students, our discussion on the fuel mix from multiple aspects aims to consolidate the options proposed by the government. In addition, we hope our thoughts on this topic can supplement the debate over the two options.

We examined 6 aspects, namely reliability, affordability, environmental performance, implication on the post 2018 electricity market, diversification and the flexibility in scaling up future supply. One option enjoys greater advantages over the other on certain aspects. However, as a whole, the class support Option 2 which involves using more natural gas for local generation, as it will provide multiple benefits to Hong Kong's current fuel mix, while bearing a lower level of associated risk.

Should there be any comments or questions regarding our responses, please feel free to contact Ray Chung, the course teaching assistant at swchungaa@ust.hk.

Yours faithfully,

Students of the ENVR 5260 Environmental Policy and Management course, HKUST
CHAN Sin, CHEN Fangzhou, CHENG Sijie, CHEUNG Kwan Ho (Howard), CHEUNG Sau Ling, CHONG Ho Man, DU Dijia, HE Zenan, IU Chun Yip (Lawrence), KUNG Hiu Suet, KWAN Chung Wa, LAM Wing Yan, LAU Chin Wong, LAU Mei Kan, LI Shiyong, LUNG Hiu Ying, MOK Kar Yan, NG Ming Yui (Arvin), PATHANIA Rohit, SUN Kit Chi, XU Quanang, YAM Siu Man, YIP Ching Man and YU Weiping

Table of Contents

1. Reliability	5
1.1 The importance of reliability.....	5
1.2 Comparison between Option 1 and 2.....	6
1.2.1 Reliability of Option 1 – Import electricity through purchase from Mainland power grid.....	6
1.2.2 Reliability of Option 2 – Uses more natural gas for local power generation	8
1.2.3 Recommendation and Improvements	10
1.3 Conclusion.....	11
2. Affordability	13
2.1 The importance of considering affordability.....	13
2.2 Electricity affordability in Hong Kong – a critique to the government’s analysis	13
2.3 Electricity affordability in Hong Kong – a comparison between Option 1 and 2 based on our critique	15
2.4 The possibility to achieve the affordability.....	16
3. Environmental performance	17
3.1 Emission requirement.....	17
3.1.1 Hong Kong.....	17
3.1.1 Missing information of Chinese emission target	17
3.2 Assessment of two options.....	18
3.2.1 Option 1	18
3.2.2 Option 2	19
3.3 Conclusion.....	20
4. Implication on the post-2018 electricity market.....	21
4.1 Post-2018 market implication of Option1	21

4.2	Post-2018 market implication of Option 2.....	21
4.2.1	Possibility of introducing new electricity supplier (open the electricity market) 21	
4.2.2	Electricity deregulation in California.....	21
4.2.3	What we should do.....	22
5.	Diversification	26
5.1	The aim of fuel mix diversification.....	26
5.2	Comparison of Option1 and 2 regarding their fuel mix diversification.....	27
5.2.1	Reduction in local electricity generated by coal	27
5.2.2	Dependence on imported sources	27
5.2.3	Reliance on a single fuel type	28
5.2.4	Diversification of option 1	28
5.3	Our suggestions and why it is better than Option 1 and 2.....	29
5.4	Case studies	31
6.	Flexibility in scaling up future supply.....	34
6.1	Why do we need to consider the flexibility in scaling up future supply?	34
6.2	Issues of ensuring the flexibility by using more natural gas for local generation 34	
6.2.1	Security and continuity	34
6.3	The projected sites that can build power plant.....	35
6.3.1	Reuse the old coal and oil fired power plant site for building new nature gas fire power plant.....	35
6.3.2	Utilize reclamation area or close island for future building site.....	37
6.4	Conclusion.....	38
7.	Appendix: Signature of the students on ENVR 5260 Environmental Policy and Management course, HKUST.....	39

List of Tables and Figures

Table 1 Current Power Generation	30
Table 2 Comparison between Option 2 and Option 1.....	38
Figure 1 Total energy consumption in Thailand by type, 2010	23
Figure 2 Fuel Mix for Electricity Generation in Hong Kong, 2009	23
Figure 3 Electricity generation fuel mix of Singapore during 2005 to 2012	31
Figure 4 Primary energy supply of Taiwan in 2002 and 2011	33
Figure 5 Electricity consumption in Guangdong Province and Hong Kong	35
Figure 6 Map of Hong Kong existing power stations.....	35
Figure 7 Satellite plan image of Lamma Power Station.	36
Figure 8 Satellite plan image of Castle Peak Power Station.....	36
Figure 9 Satellite plan image of Shek Kau Chau and nearby islands.	37

1. Reliability

1.1 The importance of reliability

Reliability can be interpreted as the adequacy of supplying the electricity for meeting demand at all times. Reliable energy supply is very important for our daily life and community activities in our modern society. Commercial is the major electricity consumer among the local sectors which captured 63.6% of the total consumption. Domestic users on the other hand consume 26.1% according to the latest release by the Census and Statistics Department. Hence, steady electricity supply can also safeguard our economy development¹.

While we rate reliability between of the two options suggested from the public consultation paper, a wider analysis horizon is suggested.

- The consultation paper quoted from the two electric companies in which Hong Kong enjoys a highly reliable electricity supply at over 99.999%. That is an indication of the system's resilience of the electric companies against any unanticipated system events².
- World Energy Council established the Sustainability Index that ranks countries in terms of their likelihood to provide sustainable energy policies through three dimensions of the energy trilemma - energy equity, energy security, and environmental sustainability³. Both the first two elements should be accounted for reliability.
- Energy equity defines the accessibility of energy supply across the population, which is how reliable the secondary energy supplied to the end users, and coherent to the great reliability performance reported by the electric companies.
- Energy security describes the effectiveness in management of primary energy supply from domestic and external sources, the reliability of energy infrastructure,

¹ "Hong Kong Monthly Digest of Statistics", *Census and Statistics Department, HKSAR*, April 2014.

² "CLP Data Center, Reliability", CLP Power Hong Kong, 2010. Web. 25 Apr. 2014.
<<https://www.clponline.com.hk/myBusiness/DevelopDataCentre/Pages/eng/reliability.html>>

³ "Energy Sustainability Index", *World Energy Council*. 2014. Web. 25.Apr. 2014.
<<http://www.worldenergy.org/data/sustainability-index/>>

and the ability of participating energy companies to meet current and future demand. In other words, it measures how reliable the natural resources are delivered to power plant for further processing. The World Energy Council rated energy security for Hong Kong in 2013 as “D”, the poorest grade, for its lack of domestic energy production plus sole reliance on fossil fuels in power generation.

1.2 Comparison between Option 1 and 2

1.2.1 Reliability of Option 1 – Import electricity through purchase from Mainland power grid

1.2.1.1 Advantages

- According to the consultation paper, China Southern Power Grid Co. Limited (CSG) is already serving under a much larger demand in other Southern provinces including Guangdong, Guangxi, Yunnan, Guizhou and Hainan when comparing the “small” demand of Hong Kong.
- CSG is serving a population of about 230 million and an area of up to 1 million square kilometers. It is expected to provide a stable and reliable supply of electricity to Hong Kong, given that the Mainland is expanding its electricity generating capacity and transmission infrastructure.
- The government assessment suggests that large-scale grid purchase is technically feasible.
- Hong Kong could benefit from the strong support provided by CSG’s entire power grid with multiple sources of supply.

1.2.1.2 Disadvantages

Political unreliability:

- Long scale grid purchase is untested in Hong Kong, the electricity supply in Guangdong and its reliability raised concerns of the public.
- Mainland China can cut off the electricity supply (e.g. Russia and Ukraine) if there is any dispute between Mainland and HKSAR.

Physical unreliability:

- The consultation paper used Macau as example to show the reliability of electricity supply purchased from CSG. However, Macau encountered power blackout for 3 minutes 3 times this year, leaving government departments in the dark⁴. In 2007, Macau suffered its longest power blackout, which left 819 enterprises and banks and thousands of people without electricity for five hours⁵.
- The damage of blackout in Hong Kong would be much enormous than Macau, as Macau only has a population of 0.54 million and the electricity demand is much smaller than Hong Kong. It is extremely challenging for CSG to satisfy the electricity demand of Hong Kong with a population of 7.15 million.
- Referencing from the consultation paper, Hong Kong is an international financial centre, which cannot afford any instability in electricity supply. A reliable energy supply is essential to support economic development and ensure safety of the general public.
- While the consultation paper addressed that the supply reliability concerns can be addressed through “technical solutions, commercial agreements between the supplier and purchaser of electricity and commitments at government level”. The several blackouts in Macau demonstrated that the electricity supply from CSG is not reliable and the problem cannot be addressed through the measures that consultation paper has mentioned.
- During the hot summer, several southern cities in China encountered power shortage for several days, which forced local people to protest for steady electricity supply. The main reason for the power shortage was because the local consumption had exceeded the power supply from CSG.
- Some Guangdong factories had to shut down because of the power shortage during summer peak period.
- According to mainland media reports, CSG’s electricity shortage rate was close to 10%.

⁴丘, 偉華. "黃錦星倡向大陸買電 澳門先例成前車之鑑." *Post852*. N.p., 29 Mar. 2014. Web.

⁵ "Macau Suffers Biggest Power Blackout in 7 Years." *Kinkin's Notebook*. N.p., 23 May 2007. Web.

- CSG achieved a reliability of 99.9657%. In 2011, each household encountered power blackout for 5.2 hours on average according to the China Electricity Council⁶.
- By contrast, CLP and HKE have been achieving a very high standard of reliability which exceeded 99.999%. On average power blackout time per household is 2.3 minutes and less than one minute respectively. The reliability is much higher than the electricity supply in Southern China cities.

1.2.2 Reliability of Option 2 – Uses more natural gas for local power generation

Natural gas, similar to other forms of fossil fuel, is inherently storing energy and converted into electricity by combustion in power plant. Electricity can be flexibly generated for meeting local demand if sufficient supply of the fuel is available. Natural gas is different from coal and fuel oil which on-site storage is impractical unless compressed and liquefied. Instant and smooth delivery via pipelines is thus critical for reliable supply. Nowadays, natural gas is imported from the Mainland China via submarine pipelines to the Black Point, Castle Peak and Lamma Power Stations for electricity generation.

1.2.2.1 Advantages

Taking the past experience into account and the promised support by our motherland, energy equity and security of natural gas in coming future looks reliable apparently:

- Local energy generation had been achieving a very high standard of reliability in terms of energy equity. And there is no foreseeable incidents hindering the energy equity of the fuel.
- In 2008, the Hong Kong SAR Government and the National Energy Administration have signed the Memorandum of Understanding on the supply of natural gas and electricity to Hong Kong. The mainland government supports the China National Offshore Oil Corporation to renew its supply agreement to Hong Kong for a further term of 20 years. It is also agreed to study the feasibility of

⁶馬, 耀森. "南方電網可靠度遠遜港." *Canada Vancouver Chinese Newspaper*. N.p., 21 Mar. 2014. Web.

supplying natural gas to Hong Kong via the Second West-East Natural Gas Pipeline.

- A Liquefied Natural Gas (LNG) receiving terminal jointly built by China and Hong Kong is in the planning stage. Upon its establishment, China and Hong Kong have extra capacity to convert imported LNG into primary energy for local power plants.

1.2.2.2 Disadvantages

However, risks of the undermining energy security should not be neglected:

- Supply of natural gas from China/ China National Offshore Oil Corporation is not guaranteed. After all, the signed document is a Memorandum of Understanding rather than a legal contract. Moreover, China herself is also facing deficit of the natural resources. In 2012, China produced 3,811 billion cubic feet of dry natural gas while consumed 5,181 billion cubic feet. China also needed net import of 1,370 billion cubic feet of the resources⁷, even though having the reserve abundance ranked the twelfth country in the world⁸.
- North American Electric Reliability Corporation pointed out the probability of pipeline failures disrupting electric generation, although pipelines are able to operate with temporary supply disruptions provided the gas pressures are maintained within acceptable limits, and major failures are rare⁹.
- Natural gas is a form of non-renewable resources. Though it will not be used up in the recent decades, scarcity problem is growing.

⁷ “International Energy Statistics”, *US Energy Information Administration*, Web 25 Apr. 2014.

<<http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=3&pid=26&aid=1>>,

⁸ “2011 report on oil and gas companies, Promoting revenue Transparency”, *Transparency International*. 2011. Web 27 Apr. 2014

<http://www.transparency.org/content/download/59374/951162/TI_PRT_2011_report_FINAL_EN.pdf>

⁹ “2013 Special Reliability Assessment: Accommodating an Increased Dependence on Natural Gas for Electric Power, Phase II: A Vulnerability and Scenario Assessment for the North American Bulk Power System”, *North American Electric Reliability Corporation*. May 2013. Web. 26 Apr. 2014.

<http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_PhaseII_FINAL.pdf>

1.2.3 Recommendation and Improvements

In the above sections, the advantages and disadvantages of both options for Future Fuel Mix for Electricity Generation were discussed in terms of reliability. Reliability is interpreted as:

- Reliability of electricity supplied by CSG,
- Reliability of electricity supply in Hong Kong,
- Reliability of natural gas supply, reliability of fuel disruption network, as well as
- Reliability of non-renewable resources supply.

Among the discussion in this response, both options have their benefits and concerns.

In our opinion, to ensure reliability, the following should be considered:

- It is better to secure the supply of energy source at the upper stream, by doing so, the Hong Kong Government can have more control on the electricity supply in Hong Kong.
- The consequence and the corresponding back-up action were also taken into account under the comparison analysis.

1.2.3.1 For Option 1

Specifics:

- 30% of electricity will be purchased from Mainland. In case of any incidents happen to CSG, Hong Kong will be in short of one third of the electricity supply which is a significant percentage.
- Although most of the public utility and commercial buildings are installed with emergency power supply, a shortage of one third of electricity supply in several minutes will lead to serious impact especially in the commercial and health sectors, which is not a risk we can take.

Risk:

- The facilities failure in CSG.
- Lack of fuel source supplied to CSG.
- Failure in the power fuel supply distribution network.

Control:

- The control action by Hong Kong Government is limited.

Corrective Actions and Challenges:

- In such situation, power plant in Hong Kong will be required to reserve resource to supplement 30% for normal electricity demand for contingency. However, this involves a large amount of capital investment and hardware support.

1.2.3.2 For Option 2

Risk:

- Reliability of supply of fuel source.
- Reliability of fuel supply distribution network.

Control:

- The risk associated is partially similar to the risk mentioned in Option 1. However, the different is that the Hong Kong Government can at least control the reliability of the power generation facility and the power distribution network within Hong Kong. With the long history of HEC and CLP, their facility and distribution network was well proven to be reliable.

Corrective Actions and Challenges:

- In case of incident which one of the fuel source supply is reduced from its supply, HEC and CLP can still generate power to support Hong Kong by alternative and traditional energy source, the risk is compatibly lower and cost required is less.

1.3 Conclusion

After the studies taken on the Consultation Paper, we find that the government had not consider all the possible methods to introduce fuel mix in electricity generation in Hong Kong, in which there are other possibility to solve the problem. Under the concern of reliability, both options including importing electricity from Mainland and using more natural gas are considered, and we support the option of increasing the proportion of the use of natural gas in local power generation. But of course, we understand that making

such decision require a balance of various aspects beyond just reliability, the government must take consideration on other aspects before making any decision on the policy.

Both options described in the consultation paper involved certain degree of risks. For option 1, additional resources are needed to supplement 30% for normal electricity intended for contingency. However, this involves a large amount of capital investment and hardware support. For Option 2, the risk emerged from the reliability on supply of fuel source and its distribution network, which is similar to the risk mentioned in Option 1. However, the difference is that the Hong Kong Government can at least control the reliability on the plant facility and the power distribution network within Hong Kong. With the long history of HEC and CLP, their facility and distribution is well proven to be reliable. Even in case of incident happens, the fuel source supply is reduced, HEC and CLP can still generate power to support Hong Kong by utilizing alternative or traditional source of resources, the risk and cost implication is therefore lower.

2. Affordability

2.1 The importance of considering affordability

We agree with the government's view that electricity should be provided at a reasonable price as mentioned in the consultation document because electricity services are crucial to all walks of life. Undoubtedly, Hong Kong's electricity tariff rates are competitive compared to other major cities, such as Singapore, Tokyo and Sydney¹⁰. However, income level or purchasing power should be considered in addition to price when we talk about "affordability" since the living standards of different cities vary. Plus, although Hong Kong is a developed city where people generally have high income, the income disparity issue is very serious. The Gini Coefficient of Hong Kong, a measure of income disparity based on household income, has been increasing since four decades ago and hit record high of 0.537 in 2011¹¹ and is the highest in Asia¹². Added, there are about 1.02 million of citizens living below the poverty line set by the government in 2013¹³, who have minimal financial buffer. Thus, the projected increase in electricity tariff will further deprive the poor of their living quality. That is why affordability must be concerned, especially for the poor.

2.2 Electricity affordability in Hong Kong – a critique to the government's analysis

The government's consultation document preliminarily estimated that the price of the unit generation cost will double over the five years. Due to lack of data, government did not to produce a concrete comparison on price. In this section, a detailed analysis of affordability on both options will be offered.

For Option 1, the government is concerned that Hong Kong might become a captive buyer in mainland's electricity market. It may constrain the flexibility of Hong Kong's

¹⁰ "Hong Hong Electricity Industry Overview." *HKEnews*. N.p., 16 Jan. 2014. Web. 21 Apr. 2014. <http://www.hkexnews.hk/listedco/listconews/sehk/2014/0116/02638_1822009/EFW116.pdf>.

¹¹ "Half-yearly Economic Report 2012." *Hong Kong Economy*. N.p., 8 Jan. 2012. Web. 26 Apr. 2014. <<http://www.hkeconomy.gov.hk/en/pdf/box-12q2-5-2.pdf>>.

¹² Lui, Marco, and Patrick Boehler. "Hong Kong's Wealth Gap Widens Amid Aging Population, Inflation." *Bloomberg.com*. Bloomberg, 18 June 2012. Web. 26 Apr. 2014. <<http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a7.igvdrfs5g>>.

¹³ Lam, Carrie. "Hong Kong's First Official Poverty Line - Purpose and Value." *Commission on Poverty*. N.p., 30 Sept. 2013. Web. 26 Apr. 2014. <http://www.povertyrelief.gov.hk/eng/pdf/20130930_article.pdf>.

market and increase uncertainty on the electricity price in Hong Kong. Such consideration is unilateral. Although it is possible that Hong Kong can become a captive buyer, the overall proportion that Hong Kong imports from mainland only takes up to 2% of the overall generated electricity by South China Power Grid in mainland¹⁴. The limited portion can hardly attract great interest from the energy suppliers then make the importing price volatile. Moreover, the political structure of ‘One Country, Two Systems’ has provided benefits to the supplies of electricity and natural gas in Hong Kong. Hong Kong and National Energy Administration in China have signed the Memorandum of Understanding (MoU)¹⁵ to protect Hong Kong’s importing of energy from mainland. The risks of being captive from mainland, therefore, are reduced.

For Option 2, the government thinks that the reliance on natural gas as a single type of fuel can also increase the volatility of the natural gas’ price. Moreover, accidents of natural gas leakage are also big concerns for policy makers¹⁶. The old natural gas pipelines bear high potentials of the gas leakage and thus may cause environmental pollution. Importing more natural gas from China is potentially environmental costly. However, the natural gas imported from China to Hong Kong is derived mainly through the Australian North West Shelf (NWS) projects. The price of natural gas under the NWS project is protected and expected not to exceed 0.083 HKD/KWh (Exchange Rate: 1 USD= 7.75 HKD, Date: 28th, April 2014)¹⁷. This actually marks the price of natural gas competitive. Furthermore, there is no organisation similar to OPEC controlling the price of natural gas, the open competition between potential gas suppliers, for instance Malaysia, Russia, and US, can even push the security of natural gas through negotiation.

¹⁴ "Hong Kong Secretary for the Environment: enter more electricity from the mainland is technically feasible." *Want News*. N.p., 16 Jan. 2014. Web. 21 Apr. 2014. <<http://www.wantinews.com/news-7681623-Hong-Kong-Secretary-for-the-Environment:-enter-more-electricity-from-the-mainland-is-technically-feasible.html> >.

¹⁵ "Memorandum of Understanding between the National Energy Administration and the Hong Kong Special Administrative Region Government on Supply of Natural Gas and Electricity to Hong Kong". *Environment Bureau*. N.p., Web. 28 Apr. 2014.

¹⁶ Robert, Jackson, Adrian Down, Nathan Phillips, Robert Ackley, Charles Cook, Desiree Plata, and Kaiguang Zhao. "Natural Gas Pipeline Leaks Across Washington, DC." *Environmental Science & Technology*. N.p., 16 Jan. 2014. Web. 27 Apr. 2014. <<http://biology.duke.edu/jackson/est2014.pdf>>.

¹⁷ Higashi, Nobuyuki. "Natural Gas in China Market evolution and strategy". *International Energy Agency*. June, 2009.

2.3 Electricity affordability in Hong Kong – a comparison between Option 1 and 2 based on our critique

By comparing Option 1 with Option 2, it is clear that the major difference lies with whether purchase more electricity directly from mainland or produce more locally in Hong Kong. A regional electricity grid in the southern part of China is envisaged for the future. Setting up additional transmission grid may even benefit Hong Kong economically by exporting surplus electricity back to mainland through this regional grid. Moreover, purchasing through power grid fits the trend of electricity market integration. Examples from the UK and the US are successful examples demonstrating national integration of electricity market through steady phases¹⁸. In the future, Hong Kong may need to consider further electricity market integration through cross-border connection and trading. The reason is that with current development mode of hydroelectric power in mainland, it is not clear whether hydropower can be reliable within next five years. Norway, Sweden, Finland and Denmark are good examples of cross-boundary electricity market integration. Nevertheless, there is a potential drawback for the regional electricity market integration for Hong Kong. It requires Hong Kong to keep its competitiveness of economy in the regional market. Otherwise, the inflation in currency exchange rate will encumber Hong Kong's importing of generated electricity from other nations. To produce more electricity locally requires building more power plants locally since some of the plants are going to be abandoned. This may attract investment to diversify the economy structure in Hong Kong and help to secure the energy price in Hong Kong through competition; but on the other hand, such construction projects will increase the overall electricity price, unless such projects are subsidised greatly by the government of Hong Kong. The reasons are, firstly, reaching an agreement of an appropriate location to establish a power plant in Hong Kong will be time and capital consuming. Secondly, the land shortage in Hong Kong is well known. Resulting from it, the land price in Hong Kong is one of the highest worldwide. As a consequence, the housing price in Hong

¹⁸ Wu. "Electricity Market Integration: Global Trends and Implications for the EAS Region" *Energy Strategy Reviews* 2.2 (2013): 138-145. *ScienceDirect*. Web. 27 Apr. 2014.

Kong rose by 24% from 2011 to 2013¹⁹. Not only will the projects of building new power plants be conducted at a high price, but also the electricity generated from the new plants will be sold at a high tariff rate.

Regarding deregulation as a way to achieve affordability, it has not been discussed in the consultation. Cases of the UK and Singapore are positive cases²⁰. However, with the case of Californian Electricity Crisis in 2001, of which the electricity shortage was produced by the market manipulations, it is not clear that the market in Hong Kong is robust enough to provide affordable energy price. Research into Hong Kong's market is needed.

2.4 The possibility to achieve the affordability

To summarise, we think the consultation failed to provide convincing arguments on affordability by omitting a social programme to mitigate the predicted increase in electricity price. As mentioned at the beginning of this section, low-income households spend a substantial share of their income on utility services, including electricity. In recent years, Hong Kong becomes more and more polarised. The numbers of vulnerable poor have dramatically increased. The difficulty of these socially poor consumers to absorb increased price is widely critiqued against price reform. Therefore, the key to fundamentally secure the affordability of electricity lies with offering adequate social programmes to the poor and helping them become affordable to the tariff increase. The consideration for the poor was not presented throughout the government's consultation. This omission has marred the overall quality of this policy consultation on affordability.

¹⁹ Holland, Tom. "Forecast of 30 per cent slump in home prices is about right." *South China Morning Post*. N.p., 29 Oct. 2013. Web. 26 Apr. 2014. <<http://www.scmp.com/business/article/1342170/forecast-30-cent-slump-home-prices-about-right>>.

²⁰ Chang and Lee. "Electricity market deregulation and energy security: a study of the UK and Singapore electricity markets" *International Journal of Global Energy Issues* 29.1/2 (2008): 109-132.

3. Environmental performance

3.1 Emission requirement

3.1.1 Hong Kong

Nowadays, 77% of electricity that we use is generated locally and 23% is imported from Daya Bay Nuclear Power Station (DBNPS). For the local electricity generation, it is mostly generated by coal, which is the most dirty fuel compared with natural gas and nuclear power. The major source of air pollution in Hong Kong is from electricity generation (66% of total greenhouse gases). 47% of Sulphur Dioxide (SO₂), 28% of Nitrogen oxide (NO_x) and 165 of respirable suspended particulates (RSP) were accounted from electricity generation in 2012.

The government issued Third Technical Memoranda (TM) under Air Pollution Control Ordinance (Cap.311) to tight the emission caps for the power sector from 2017 onwards by 39-59% (SO₂: 10399tons, NO_x: 25950tons, RSP: 750tons) as compared with 2010 levels. So far both electricity companies still meet the target. Also, HK has to reduce carbon intensity by 50-60% by 2020 when compared to 2005.

3.1.1 Missing information of Chinese emission target

The purpose of reducing air pollution is to improve air quality and mitigate climate change and extreme weather. However, in the report, it did not mention anything about Chinese emission cap target and the source of electricity generation of China Southern Power Grid Co. Limited (CSG). In fact, some major cities in China are facing much more serious air pollution problem than Hong Kong. Also, the new Chinese emission standard has a much stricter requirement that all coal fire plants will have to achieve emission limit (SO₂: 50mg/m³, NO_x: 100mg/m³, PM: 20mg/m³). Although CSG proposed to increase their green energy to about 15% in one of the CSG report, it did not mention clearly what those energy sources are and how to keep it on track Therefore, it is impossible to shift our emission problem to China without sufficient data to prove CSG is able to provide greener energy and meet the local and global target.

Therefore, it is very important to do a detail assessment on both proposed choices for Hong Kong's future electricity generation before implementation. In the following section, environmental performance of both choices will be discussed in details.

3.2 Assessment of two options

3.2.1 Option 1

3.2.1.1 Fuel Mix of Electricity Import from CSG

The consultation paper proposed to purchase electricity from mainland power grid, and CSG is the preferred option among the mainland power grids since it is already connected to CLP's power grid. The consultation paper then analyzed the fuel mix of CSG and found that 32% of its generation fuel mix are from hydro and wind energy in 2012, and renewable energy generates less pollution than traditional thermal. However, it does not mean that Hong Kong will produce less pollution from purchasing electricity from CSG than that from generating electricity locally from natural gas plant. This is because the type of generation fuel source of the electricity to import is not mentioned in the consultation paper. From Macau's experience, the electricity is imported from CSG without specifying the dedicated generation sources or fuel mix. Without specifying in the agreement, we cannot safeguard the electricity is generated from clean sources and contribute less pollution.

Besides, the current generation fuel mix of CSG may not be the same as their future fuel mix. It is no doubt that the demand of electricity in mainland will increase largely given the rapid growth in the population and economy, and the purchase from HK adds further pressure to it. The current CSG's facilities may not be able to meet the future demand and they have to build new power plant and change the fuel mix to solve the problem. If CSG increases the production by using more fossil fuel, purchasing from them means that more pollution is generated than that from generating electricity locally from natural gas. Moreover, there is also pollution from the construction of new power plant.

Therefore, securing the fuel mix is critical for considering Option 1, we suggest Government to explore its feasibility before making decision.

3.2.1.2 Air Pollutant Emissions of CSG

It is also important to know the environmental performance of CSG in order to compare it against the local natural gas option. The consultation paper does not address this. We visited the CSG websites²¹, however we cannot find any performance reports or statistics

²¹ Websites in Chinese and English languages contain different information. Both languages are visited.
<http://eng.csg.cn/> <http://www.csg.cn>

about the pollution emitted from CSG. Moreover, even on the same fuel source, CSG and CLP could generate different amount of pollution as it is varied by the facilities installed. There is a lack of comparison or statistics proving CSG generates electricity with less pollution than Hong Kong. Therefore, we suggest the government to perform further analysis on it.

We also found that the information sharing on CSG website is very limited, unlike CLP which has detailed and audited reports on the pollution emission and sustainability posted to the website. It also raises a question about the transparency of CSG and how Hong Kong could manage the pollution.

We suggest the government to perform further analysis of the environmental performance of CSG and compare the overall pollution (in local and mainland) between Option 1 and 2.

3.2.2 Option 2

According to the consultation, the option to continue to rely on local generation primarily natural gas is less preferred due to technological difficulties. Since the prospect of any further significant improvement in environmental performance brought by the new generation facilities may be rather limited over their expected lifespan. However, there is no information given explaining the technological difficulties. Therefore, here comes to a question whether the consultation includes a consideration of investing on technology to improve or replace local gas fired facilities. In fact, local power companies plan to increase the usage of gas when more gas becomes available, thus the government should give full support to the power companies to explore and extend more natural gas supply. Cutting local air emissions by importing resources from Mainland does not mean local air quality will improve. As most of the air pollutant comes from Guangdong, relying on local generation primarily gas would ensure “cleaner burning” locally. Even though the consultation suggests that Option 1 would achieve the upper bound of air quality while Option 2 would only achieve the lower bound, the air pollutant emissions caused by the imported electricity would still affect Hong Kong in a way that we cannot predict, since there is no clear and effective standards for regulating the emissions across the boundary.

It is important to have a clear vision on the possible environmental impacts brought by the two options for Hong Kong, in order to enhance the public understanding of the two options and assist discussions.

3.3 Conclusion

From the perspective of environmental performance, we believe that Option 2 would better ensure cleaner air in Hong Kong. Since relying most of the fuel mix on local generation would enable us to control our fuel mix and regulate the emission more effectively. More importantly, it is worrying to see that there is no proposed plan about utilizing more renewable energy in the consultation. We should pursue relying more on renewable energy sources in the future, in order to achieve a blue sky in the long term. Nonetheless, minimizing local environmental impact and carbon emissions always requires cooperation between the government and power companies. Thus, we hope to see the government to try working with local power companies on expanding current power facilities before considering importing electricity.

4. Implication on the post-2018 electricity market

Implication on post-2018 electricity market for both Option 1 and Option 2 are analyzed as follows:

4.1 Post-2018 market implication of Option1

For Option 1, since more electricity is imported from mainland grid, the amount of electricity generated locally will be reduced. Concerns will be raised about the efficiency of the designed power plant equipment and its operation cost per unit of electricity. Also no data reveal that there will be interaction or competition between two local power grids once option 1 is adapted. The market price will not be competitive but controlled by mainland government, which involves political issues.

4.2 Post-2018 market implication of Option 2

4.2.1 Possibility of introducing new electricity supplier (open the electricity market)

In Hong Kong, the electricity is supplied by either CLP or Hong Kong Electric. When Option 2 is implemented, more natural gas is needed for electricity generation. This would increase the possibility of introducing new electricity suppliers, which generate electricity mainly by natural gas. Introducing of new suppliers may bring competition among the power grids and result in the decrease in market price. The government can open the electricity market and let the public to choose their own electricity supplier, similar to choosing the mobile phone service provider. By this, the suppliers need to forecast their customers demand for electricity and expand their power plant if necessary. Opening the electricity market can theoretically bring competition among suppliers and lower the electricity price. However, deregulation on electricity was proved to be a failure in California, US as it ended up with an electricity crisis.

4.2.2 Electricity deregulation in California

California's deregulation policy was promoted as a means of increasing competition, which the utilities needed to buy the electricity from the producer through the central market, for their own retailed customers. However, some electricity producer increased the wholesale price to manipulate the market, while the utilities had to maintain the retail price as it was capped by the government. This situation leads to bankruptcy of utilities

(PG&E) and nearly bankruptcy of SCE.²²

There was then a shortage of electricity supply in California caused by market manipulations, illegal shutdowns of pipelines by wholesaler and capped retail electricity prices. The state suffered from multiple large-scale blackouts.

4.2.3 What we should do

Introduce one or two more electricity suppliers, leading and monitoring by the government, but not deregulating (like the TV broadcast licensing). Competition among the suppliers will lower the market price. Customers can choose the least expensive electricity supplier. However, the problem becomes how to attract investor to be one of the electricity suppliers, as the cost of infrastructure of new power plant is extremely high.

4.2.3.1 Attract new investor

In Option 2, it puts strong emphasis on introducing new suppliers. In the current situation, new investors cannot enter the industry as the production of electricity requires infrastructure. If the new natural gas plants are built, it is possible for the new suppliers to join the industry.

²² California electricity crisis [online] available at http://en.wikipedia.org/wiki/California_electricity_crisis

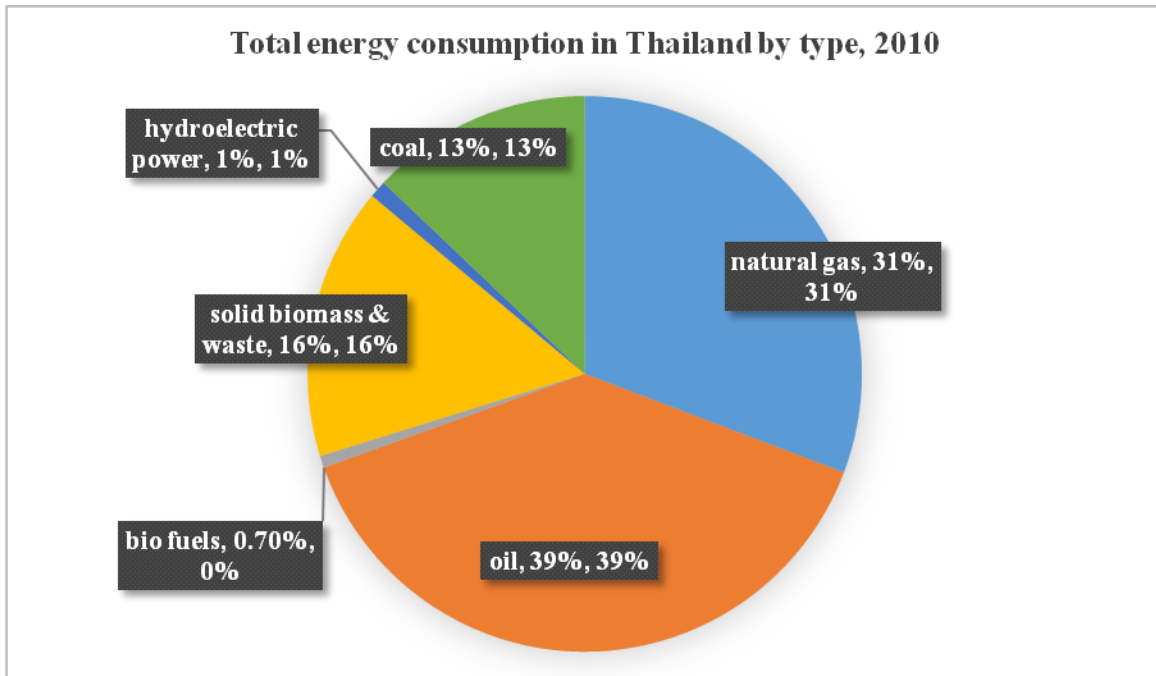


Figure 1 Total energy consumption in Thailand by type, 2010 ²³

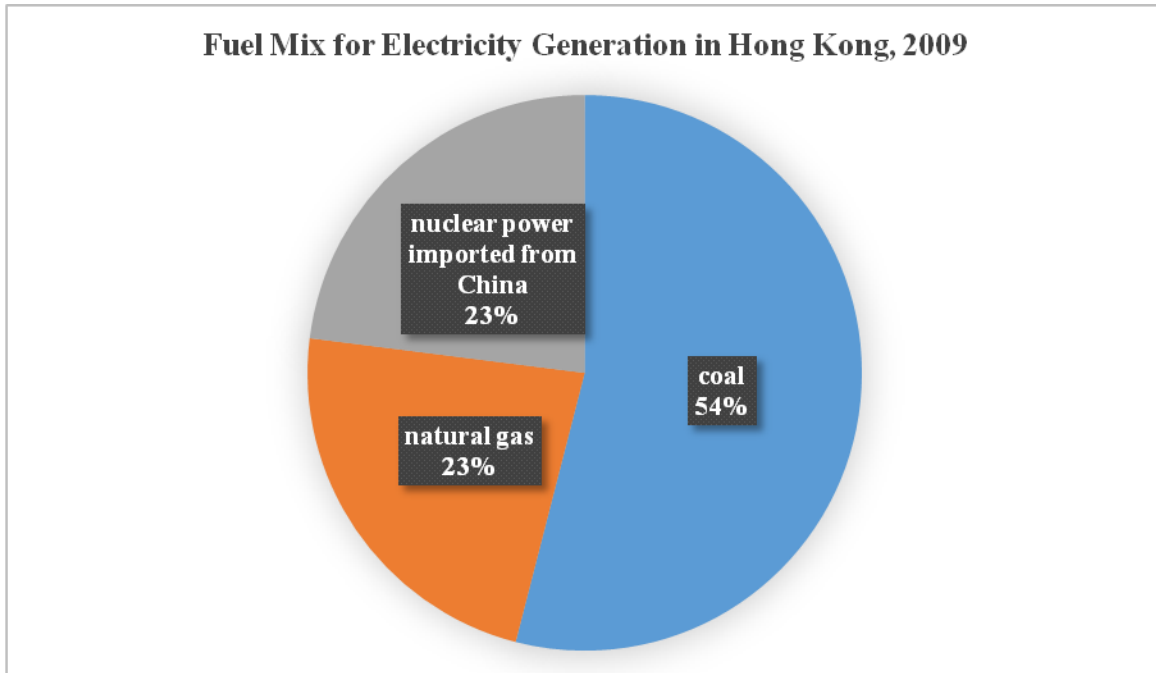


Figure 2 Fuel Mix for Electricity Generation in Hong Kong, 2009²⁴

²³ EIA International Energy Statistics

We may refer to the Thailand's situation. Thailand is a country that heavily relies on imported oil and wants to boost the local production of natural gas and oil. Similar to Hong Kong²⁵, about 70% of electricity of Thailand is generated from fossil fuel²⁶. However, Thailand enjoys multiple suppliers for the electricity market while Hong Kong does not. In addition, the Thai government puts effort in promoting biomass. From 2006 to 2011, the production of biomass increased about four-fold.²⁷

The Thai government has achieved a situation of multiple suppliers by encouraging foreign companies to come for investment. For example, the government is willing to sell the government-owned national oil company so the foreign companies trust that the electricity market is a free market. For the oil sector, foreign companies produce up to 70% of the oil and condensate.²⁸

Apart from making policy in favour of foreign companies' investment, Hong Kong government could learn from Thailand to actively lead the construction of new infrastructure such as oil refineries factory and pipelines. This approach will encourage more investors to join the market because of the strong initiative from the government.

We believe that by choosing Option 2, more investors will join our electricity industry so that the regional monopoly situation in Hong Kong can change. With more suppliers and competition, lower prices and better service can be delivered.

4.2.3.2 Operation of new power plants

Like the Netherlands noted for itself in 2011, there is no market for energy within Hong Kong as such. Gas and electricity have to be transported, in many cases over increasingly greater distances²⁹. This requires close collaboration between national network administrators, supervisory bodies and governments. In this regard, the government will have to take basic steps:

²⁴ Environment Bureau, HKSAR

²⁵ (2013). Fuel Mix in Hong Kong. [ONLINE] Available at: https://www.clpgroup.com/nuclearenergy/eng/energy/energy2_4.aspx. [Last Accessed 29/04/2014].

²⁶ (2013). Country Analysis-Thailand. [ONLINE] Available at: <http://www.eia.gov/countries/cab.cfm?fips=th>. [Last Accessed 29/04/2014].

²⁷ (2013). Country Analysis-Thailand. [ONLINE] Available at: <http://www.eia.gov/countries/cab.cfm?fips=th>. [Last Accessed 29/04/2014].

²⁸ (2013). Country Analysis-Thailand. [ONLINE] Available at: <http://www.eia.gov/countries/cab.cfm?fips=th>. [Last Accessed 29/04/2014].

²⁹ Energy Report 2011, Ministry of Economic Affairs, Agriculture and Innovation, Government of Netherlands

- Aggressively promote the augmentation of capacity of West - East Gas Pipeline (WEPII), for which approvals have been granted³⁰
- Tap into alternative gas markets may also have to be looked at for options, like Malaysia and Russia, using the existing networks that the Mainland government already has in place³¹.

In order to do that, regulations would have to be suitably amended after a thorough evaluation into the regulations in place for the same. In particular, attention shall be paid by the government to ensure that the private energy supplier is paid at tariff rates that can lead to reasonable profit. Considerable thought needs to be put into ideas like Tariff Stabilization Fund³² so that they can be flexible enough to allow for the re-introduction of Demand Side Management, an idea that was in existence till 2003³³. That does not intend to say that the risk sharing mechanisms should be completely eliminated or undermined. Indeed, with multiple risks in a public-private partnership that neither party can bear fully, the burden will have to be shared with the public to an extent³⁴. Of course, an alternative that also exists lies in the option of asset reallocation by the government. Concession agreements in line with that of the West Rail Line of Hong Kong MTR Limited is certainly an option. Land allotted for commercial space could be given in exchange for a lower tariff burden on consumers. Alternatively, the land allotted to the power utility in picture may be given at a lower than market rate for lowering the capital expenditure. Ensuring the benefits are passed on will have to be enshrined in the scheme of control agreements that are signed with the utility or utilities in picture and enforced.

³⁰ CLP and CAPCO Welcome Second West - East Gas Pipeline Gas Supply Approval, https://www.clp.com.hk/ourcompany/news/currentrelease/Documents/20121221_en.pdf

³¹ Russia signs US\$85b deal to supply oil to China, and agrees gas price formula, South China Morning Post, October 23, 2013, viewed at <http://www.scmp.com/news/china/article/1337432/china-russia-agree-us85b-oil-supply-deal>

³² Scheme of Control Agreement entered into by the Government of Hong Kong Special Administrative Region and the following companies: The Hong Kong Electric Company, Limited, and Hong Kong Electric Holdings Limited, January 7, 2008, viewed at http://www.enb.gov.hk/sites/default/files/en/node66/SCA_of_HEC_Eng.pdf

³³ "Agreement." *Environment Bureau*. N.p., n.d. Web. 13 May 2014. <http://www.enb.gov.hk/en/resources_publications/agreement/index.html>.

³⁴ Ana Cravinho Martins, Rui Cunha Marques, Carlos Oliveira Cruz, Public-private partnerships for wind power generation: The Portuguese case, *Energy Policy*, Volume 39, Issue 1, January 2011, Pages 94-104.

5. Diversification

5.1 The aim of fuel mix diversification

Public concern about climate change is bringing new demand for environmentally friendly products and services to meet future energy needs. The current fuel mix in Hong Kong is about 55% mainly come from coal-fired power plant. Hong Kong government is committed to reduce the carbon emission action agenda in 2010 in order to improve our air quality, both locally and regionally. Moreover, the electricity demand in the future is increasing continuously. The existing infrastructure and fuel mix plan are not able to sustain the great demand of electricity. For the existing fuel mix, basically, the raw materials come from mainland China. The natural gas is supplied via pipeline from the Yacheng gas field off Hainan Island and the nuclear power comes from power plant located at Daya Bay in Guangdong and the coal is also come from mainland China and transported to Hong Kong for coal-fired power plant³⁵.

Hong Kong has only two electricity supply companies, namely, The Hong Kong Electric Company, Limited (HKE) and Castle Peak Power Company Limited (CLP). A few years later, some of the power generating units will be retired and it may lead to insufficient electricity generation if still no fuels mix review. The diversification includes the building new power plants to sustain the power generation. The primary advantage of diversification is that it reduces the risk. The more type of energy source represent the power supply did not rely on specific type. For example, if maintenance is required for the power generation from nuclear (DBNPS), the power generation can be shifted to other types in order to sustain the power supply. The second advantage is it allows the policy maker to minimize the electric cost on their portfolio. It may also be that a specific sector of the portfolio has been performing poorly. The evaluation process allows the policy maker to re-balance the portfolio to get out of poorly performing sector and move into options that have the potential to perform better and have stable power generation. For example: Hydropower generation is seasonal, the policy maker can change to other options in the period of poor performance. Another advantage of diversification is that it allows the policy makers to reallocate or re-diversify their portfolio as their goals change

³⁵ Environment Bureau, HKSAR

over time³⁶.

5.2 Comparison of Option1 and 2 regarding their fuel mix diversification

5.2.1 Reduction in local electricity generated by coal

Fuel Mix	% of Coal
Existing (2012)	55%
Option 1	10% (45% Reduction)
Option 2	20% (35% Reduction)

According to the proposed fuel mix options, both Option 1 and 2 have a significant reduction in local electricity generated by coal. Since coal is the most polluted energy source (In Hong Kong, electricity generation coal-fired units accounted for 50% of total SO₂ emissions, 22% of NO_x, 14% of RSP and 50% of GHG in 2010), the reduction of coal combustion for electricity generation will help Hong Kong reduce its GHG emissions and achieve carbon reduction targets.

5.2.2 Dependence on imported sources

Fuel Mix	Imported Electricity	Imported Fuel	% of Total Imported Sources
Existing (2012)	23%	77%	100%
Option 1	50%	50%	100%
Option 2	20%	80%	100%

Since Hong Kong does not have any indigenous resources for electricity generation, the existing fuel mix relies heavily on imported fuel sources. Both proposed options do not seek to increase electricity generation from potential local resources (i.e. waste-to-energy incinerators) and remain 100% dependent on imported sources of electricity or fuel for local electricity generation. As the energy and fuel market prices (especially natural gas price) can be fluctuated widely, both proposed options will make electricity consumers in Hong Kong highly exposed to energy and fuel market price volatility and create uncertainty.

³⁶ Fuel Diversity in the New York Electricity Market
http://www.nyiso.com/public/webdocs/markets_operations/documents/ARCHIVE/white_papers/ARCHIVE/fuel_diversity_11202008.pdf

5.2.3 Reliance on a single fuel type

Fuel Mix	% of Natural Gas
Existing (2012)	22%
Option 1	40% (18% Increase)
Option 2	60% (38% Increase)

The existing fuel mix relies heavily on a single fuel type (i.e. 55% of coal) for local electricity generation. The proposed options intend to reduce electricity generated from coal and increase dramatically the usage of natural gas that could produce relatively less pollutants and CO₂. However, both options will remain highly reliant on a single fuel type (more than one third of electricity generated from natural gas). The current natural gas supply of Hong Kong Electric and CLP Power are from Australia's North-West Shelf and Turkmenistan respectively. If the supply is not diversified, Hong Kong's electricity system will be vulnerable to disruptions that may be caused by extreme weather, natural disasters, operating mishaps, strikes or political instability.

5.2.4 Diversification of option 1

Fuel Mix	Nuclear power	Hydro-power & others	Natural gas	Coal
Existing (2012)	23%	0%	22%	55%
Option 1*	21.7%	9.6%	40%	28.7%
Option 2	20%	0%	60%	20%

* Predicted fuel mix after grid purchase from CSG

In 2012, CSG generated 62.4% of power from coal, 31.24% from hydro-power, 5.75% from nuclear power, and 0.61% from wind power and others. Grid purchase of Option 1 allows Hong Kong to gain access to low-carbon fuel sources such as hydro-power but it will also lead to a higher usage of coal and nuclear power than Option 2.

Hydro-power (mainly from Yunnan province) contributed to nearly one-third of the total electricity generation. The consultation paper suggests that grid purchase will allow Hong Kong to tap into clean fuel sources otherwise not available to us. However, Option 1 with grid purchase may not necessarily be a greener and more diversified fuel mix because hydro-power is unreliable due to seasonal flow variations. The hydro-power generation

capacity dropped when there were severe droughts in Yunnan Province in the fall of 2012, winter of 2012-13, and spring of 2013. During drought, hydro-power may need to be replaced by the highly polluted coal generating electricity and the GHG emissions in Hong Kong will be shifted to the mainland China.

5.3 Our suggestions and why it is better than Option 1 and 2

As mentioned before, diversification can be discussed from three angles - Fuel, Distribution, Power Companies. Grid purchase may allow Hong Kong to gain access to a more diversified fuel mix since part of the installed capacity of CSG is generated from non-fossil fuel. However, if electricity is imported directly from CSG which is already connected to CLP's power grid, the distribution is not further diversified. From the view of diversification, grid purchase is not a good choice. To develop a diverse power system, we suggest some modifications should be made to Option 2.

A balanced mix of fuels helps the electric system address issues such as price volatility, fuel availability and the requirements of public policy. The three main type of fuel currently used in Hong Kong are nuclear, natural gas and coal. In Option 2, use of coal & RE is suggested providing 20% of demanded electricity. Within this 20%, new energy source should be developed to diversify the energy source. Considering the local constraint such as lack of natural resources and land, generate electricity from waste by incineration and in form of biomass is one of the possible options.

Adopting advanced incineration with energy recovery can supply about 480 million kWh of surplus electricity every year and as the same time reduce the quantity of municipal solid waste. Although there are some disadvantages of incineration of waste such as producing dioxins and possibly leading to abandonment of the waste reduction plan, incineration is effective on reducing volume of waste and can provide some amount of electricity.

Various waste management facilities utilizing biomass energy has been developed in Hong Kong in the past decades. Most of them are in small scale or in testing phase. Examples of the projects in Hong Kong utilizing biomass energy from waste are Biogas generated in Shek Wu Hui Sewage Treatment Works and several on-site use of landfill gas including Shuen Wan Landfill in town gas production. Despite energy generated from

these plants is not in a large amount, the amount is enough for a small local area. Therefore, we suggest that several small-scale biomass gasification power generation plants can be built in different districts to supply energy to a local area.

There are 5 Power Stations in Hong Kong and 2 of those are in relatively small-scale (Table 1). A diverse power distribution network can help reduce chance of power interruption. Building an additional power point to further decentralize the source of power supply is a means to diversify the power distribution. Developing a smart grid is another way to achieve a diverse power distribution. The concept of smart grid encompasses a diverse set of technological solutions. A smart grid uses communication technology and IT to link all components of the power grid, including generating stations, distribution facilities, transformers, businesses, and households. It is a system intended to enable the stable supply and efficient usage of electrical power. The latest technology is used to give "intelligent" functions to the entire power distribution grid, making it a "smart" grid capable of reducing emissions of greenhouse gases and boosting energy efficiency.

Table 1 Current Power Generation

Power Plant	Fuel	Company	Capacity(MW)
Black Point Power Station	Gas	CLP Group	2500
Castle Peak Power Station	Coal; Oil-Gas	CLP Group	4108
Lamma Power Station	Coal; Oil-Gas;	Hong Kong Electric	3736
Lamma Winds	Wind	Hong Kong Electric	0.8
Penny's Bay Power Station	Diesel-Gas	CLP Group	300
DBNPS(Not in HK boundary)	Nuclear	CLP Group	3750

CLP and HKE have long been the only two power supply companies in Hong Kong. If an additional power plant is planned, it is suggested that the new plant should be built and operated by a third company to increase the market competition.

Considering diversification of power source from three mentioned angles, we suggest the below should be added to Option 2:

- Build an incinerator power station
- Invest in other potential green energy, e.g. small-scale biomass gasification power generation plants in different districts
- Encourage another company to build and operate an additional power plant
- Develop Smart Grid power system

5.4 Case studies

The situation of Singapore is similar to Hong Kong, where Singapore does not contain any indigenous energy resources. All the energy of Singapore is imported from other countries in order to support the large energy needs. Singapore imports different energy products to generate power which includes petroleum products and natural gas. Natural gas contributed the largest part in Singapore's fuel mix, which shared 80% of the fuel mix as shown in Figure 3. Due to the uncertainty of single energy source, Singapore government tried to diversify the energy sources, in order to enhance energy security³⁷.

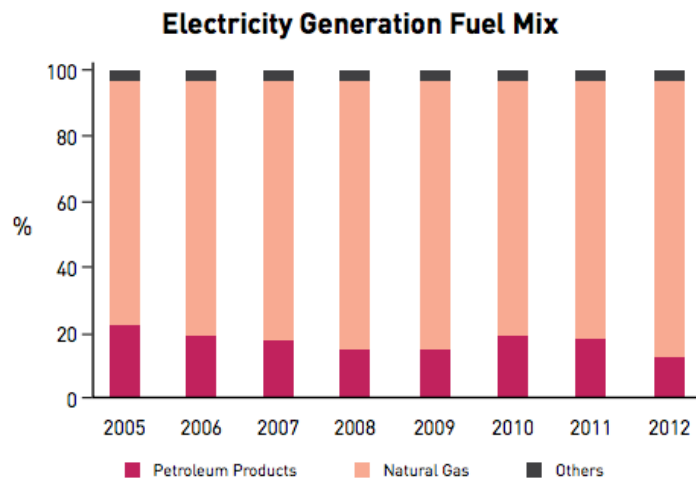


Figure 3 Electricity generation fuel mix of Singapore during 2005 to 2012

For liquefied natural gas (LNG), Singapore government built a terminal for importing

³⁷ "Energising Our Nation", Singapore Energy Statistics 2013, Energy Market Authority, Singapore

LNG in 2013 in order to increase the choice of LNG sources and reduce the reliance on Malaysia and Indonesia. For solar PV, the government conducted pilot projects to examine the efficiency of solar energy in Singapore. The projects were funded by the Clean Energy Research & Test-bedding (CERT) grants. The projects successfully demonstrated to generate 220kWh of electricity per day. The Housing Development Board (HDB) will undertake the installation of solar panels on the rooftops of residential blocks and multi-storey car parks in 30 public housing precincts by 2015. Singapore also considered nuclear power, therefore, it conducted a pre-feasibility study on nuclear to investigate the possibility to use nuclear energy. However, the urban density in Singapore is relatively high so it is not yet suitable to build nuclear power plant. Singapore also uses waste to generate electricity. There are currently four incineration plants including Keppel Seghers Tuas Waste-to-Energy Plant, Senoko Waste-to-Energy Plant, Domestic Solid Waste Management Centre, and Greater Manchester Energy-from-Waste Plant. About 2% of total electricity generation is generated by the incineration plants each year. Taiwan also mainly relies on importation of energy sources to generate power which contribute 99.33% of energy supply of Taiwan. Crude and petrol products were predominated in 2011 with share of 45.3%, as shown in Figure 4. There are different energy sources using in Taiwan which includes conventional Hydropower, wind power, solar PV, biogas, incinerator, solar water heaters and biofuels. Although there are lots of energy sources using in Taiwan, the electricity produced by them are only 0.5% of the supply^{38, 39}.

³⁸ “Notable Energy Developments Since EWG43 Singapore”, 44th APEC Energy Working Group Meeting, Washington DC, 7 – 8 November 2012

³⁹ “Waste to energy: Singapore’s experience”, The Jakarta Post, Environment, May 2013

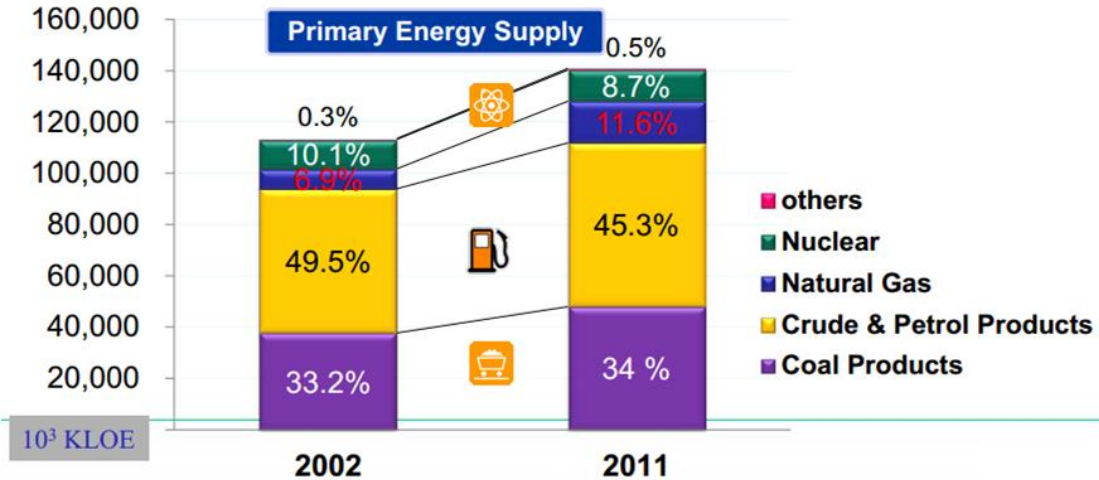


Figure 4 Primary energy supply of Taiwan in 2002 and 2011

Taiwan try to expend the electricity produced by renewable energy. It planned “million solar roofs project” to install solar PV on the rooftops at private homes, government buildings and buildings followed by ground installation. The solar PV can contain capacity of 3,100MW by 2030. Also, it planned the “1000 on- and off-shore wind turbines” project to increase capacity of wind energy. It planned to build 450 onshore and 600 offshore wind turbines to reach a capacity of 4200MW. Both Singapore and Taiwan have tried their best to diversify their energy sources in order to secure the energy supply without relying on a single source. Thus, it is the responsibility of Hong Kong government to diversify not only the fuel but also the supply chain and power companies for a stable energy supply. Energy from waste is a possible way in Hong Kong since it can solve the domestic waste problem in Hong Kong and generated power to support its needed⁴⁰.

⁴⁰ Huei-Chu Liao and Sih Ting Zhou, “Taiwan’s Severe Energy Security Challenges”, Brookings, Sep 2013

6. Flexibility in scaling up future supply

6.1 Why do we need to consider the flexibility in scaling up future supply?

As discussed, Hong Kong needs a safe and stable environment of electricity supply. Although Hong Kong nowadays has a steady electricity supply, the government should also pay attention to the possibility of booming up of electricity consumption in a long-term perspective in case of the electricity shortages that will disrupt people's lives and the operation of industries.

In other words, flexibility in scaling up future supply is the capacity of the supply electricity can increase in a short time.

6.2 Issues of ensuring the flexibility by using more natural gas for local generation

6.2.1 Security and continuity

There is no doubt that the security and electric continuity can be guaranteed if local power plants could supply electricity for Hong Kong citizen absolutely. In fact, 23% of electricity is imported through a dedicated transmission line from the Daya Bay Nuclear Power Station in the Mainland. In the future, if Hong Kong needs more electricity to support population growth, there might be some potential troubles behind, which are discussed below.

Until now, all the imported electricity of Hong Kong is from Guangdong province. Guangdong province is the most developed province in China. Its electricity consumption increased rapidly from 2005 to 2012, compared to the electricity consumption of Hong Kong, as illustrated by Figure 5. It is very probable that Guangdong province's electricity consumption will reach 50 billion KWh or even higher, which means Guangdong province may lack electricity in the future. Actually, a similar case happened in Zhejiang province in 2005. During that time, electricity supplied to factories even some remote residents in the daytime was limited. So if Guangdong province lacks electricity, it will not hesitate to stop exporting electricity to Hong Kong immediately. That is the potential risk of importing electricity from mainland.

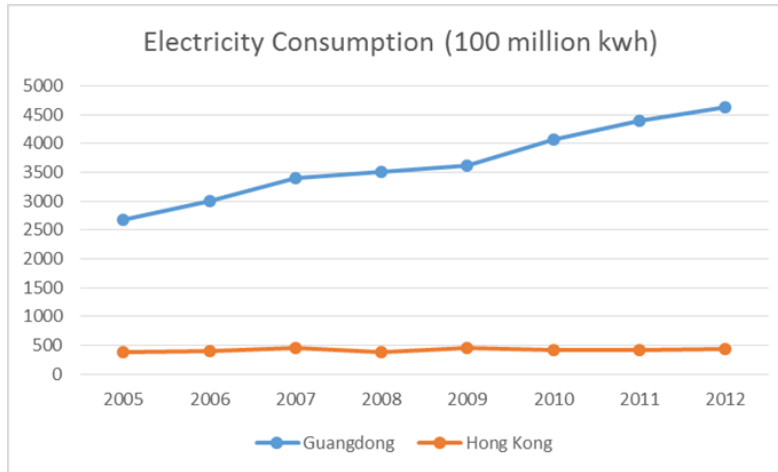


Figure 5 Electricity consumption in Guangdong Province and Hong Kong

6.3 The projected sites that can build power plant

6.3.1 Reuse the old coal and oil fired power plant site for building new nature gas fire power plant.



Figure 6 Map of Hong Kong existing power stations

Figure 6 and Table 1 above show the locations and types of existing active power stations in Hong Kong. According to Table 1, Castle Peak Power Station, Lamma Power Station, and Penny's Bay Power Station use coal or oil as part of or all of their fuel materials. Upgrading or rebuilding these power stations and turn them into nature gas or other cleaner energy sources will be a convenient option for future scaling up Hong Kong's electricity production.



Figure 7 Satellite plan image of Lamma Power Station.

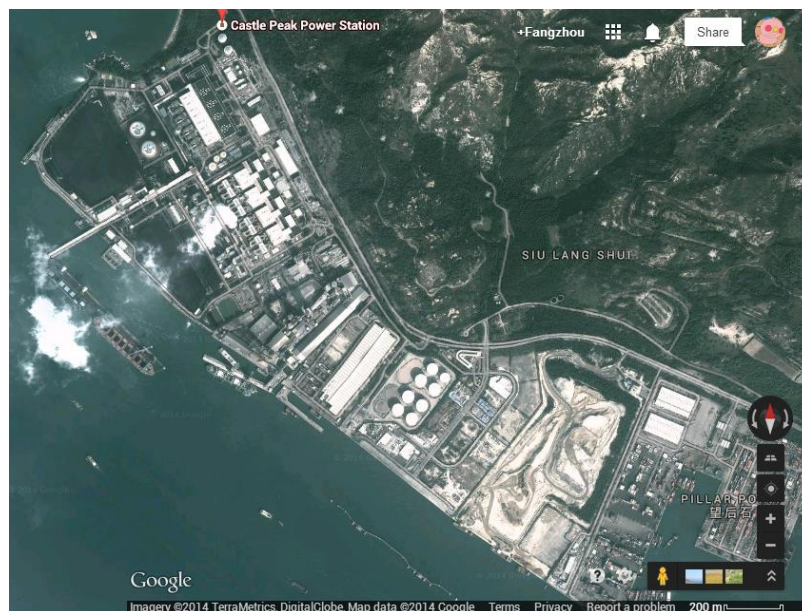


Figure 8 Satellite plan image of Castle Peak Power Station.

Giving two examples as shown above by Figure 7 and Figure 8, there are still some bare areas which can be used for building new or upgrading power plant. Also the enclosed sea area such as that shown in Figure 7, has already lost its ecological value thus can be reclaimed for building power station.

6.3.2 Utilize reclamation area or close island for future building site.

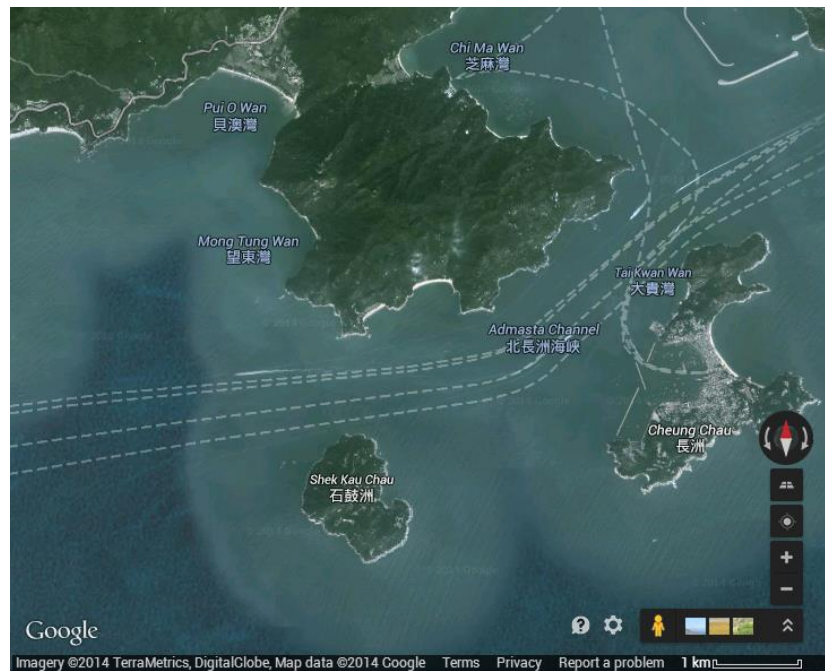


Figure 9 Satellite plan image of Shek Kau Chau and nearby islands.

Hong Kong government is planning to build an incinerator beside the Shek kau Chau island on a planned reclamation area. In the future base on the prediction of increasing electricity consumption, similar island or site can be selected to build the necessary power station.

6.4 Conclusion

By comparing these two options, Option 2, to use more natural gas for local generation, is more benefit, for the issues of security and continuity. Moreover, we believe that there are still some available space for building up new power plants.

Table 2 Comparison between Option 2 and Option 1

	Option 2	Option 1
Cost (Land, Time)	High	Low
Continuity and Security	High	Low
Economic and social effect	Increase revenue and employment	Decrease revenue and employment
Environmental Pollution	Significant	Moderate/Significant
Potential political risks	No	Yes
Social Biodiversity (Local specialist)	Advantage	Disadvantage
Consistency for Education and Career	Advantage	Disadvantage

Although the cost to build up or upgrade a new power plant is high, for the other factors, Option 2 has more obvious advantages, which are not negligible in a long-term perspective.