CB(1)430/98-99(01)

SUBMITTED TO THE HON. MR. TUNG CHEE HWA

CHIEF EXECUTIVE OF THE HONG KONG SAR

AND

HONOURABLE MEMBERS OF THE LEGISLATIVE COUNCIL

CONCERNING AN

OBJECTION TO LAMMA POWER STATION EXTENSION

AND

REQUEST FOR BEGINNING A PUBLIC REVIEW OF THE REGULATION OF THE POWER SECTOR.

ON BEHALF OF:

Act Now!
Citizens Party
The Conservancy Association
Democratic Party
Friends of the Earth (HK)
Greenpeace
Green Lamma
Green Lantau Association
Green Power
Lamma Island Conservation Society
Safe Alternatives for Food and Environment (SAFE)

6 NOVEMBER, 1998

DEAR MR. TUNG,

Lamma Power Station

On 31 March 1998, the Executive Council advised and the Chief Executive ordered that Hong Kong Electric Co. Ltd. (HEC) should be invited to proceed with detailed investigation of an extension to Lamma Power Station. This does not commit Government to project approval, but we believe it is the wrong direction to be investigating at this time.

The Lamma plant extension is unnecessary because Hong Kong presently has large excess power capacity, and interconnection of HEC and CLP is in Hong Kong's strategic interests, and HEC expansion at Black Point is a better land use decision.

Expansion at Lamma Power Station will economically impact Hong Kong with degraded tourism potential, increased electricity tariffs, and it will continue to promote over-capacity instead of more jobs and economic benefits from energy efficiency.

The Lamma plant extension is environmentally undesirable because AQOs are exceeded in densely populated areas, further delay on a CO_2 strategy is globally unacceptable, hazardous emissions from a co-sited waste incinerator are a completely unjustified risk, and unique qualities of life for Lamma Island residents are permanently lost.

Regualtion of Power Sector

The incentives that are given to electric utilities by the Scheme of Control Agreements (SCAs) no longer match the needs of Hong Kong's changing economy, and are not compatible with Government's goals of sustainable development.

We request the start of a public process to restructure how power is managed in Hong Kong, where all stakeholders are represented. We submit that this can be a win-win situation for the utilities, consumers, and environment. We request a meeting to present our concerns and constructive suggestions on this issue.

YOUR HUMBLE PETITIONERS.

CONTENTS

LAMMA POWER STATION OBJECTION

SUMMARY

LAMMA POWER STATION OBJECTION

[redacted]

A. Hong Kong has seven years of excess capacity at present growth rates.

B. No expansion should be considered until Government's <u>Consultancy Study of Interconnection and Competition in the Electricity Supply Sector</u> is completed and analysed. Full interconnection now avoids unnecessary capacity expansion, it serves Hong Kong's long term energy strategy, and it does not violate the present Scheme of Control Agreements (SCAs) with HEC and CLP.

C. With interconnection, future HEC expansion can use less sensitive sites like Black Point, develop renewable energy sources in south China, or other.

[redacted]

A. HEC tariffs will increase at least 4-8% p.a. to finance Lamma extension.

B. Jobs & economic benefits are being passed over for shareholder interests.

C. Loss of tourism qualities for Hong Kong as a whole, and for Lamma beaches in particular (Hung Shing Yeh, Lo So Shing) will bring economic impacts.

[redacted]

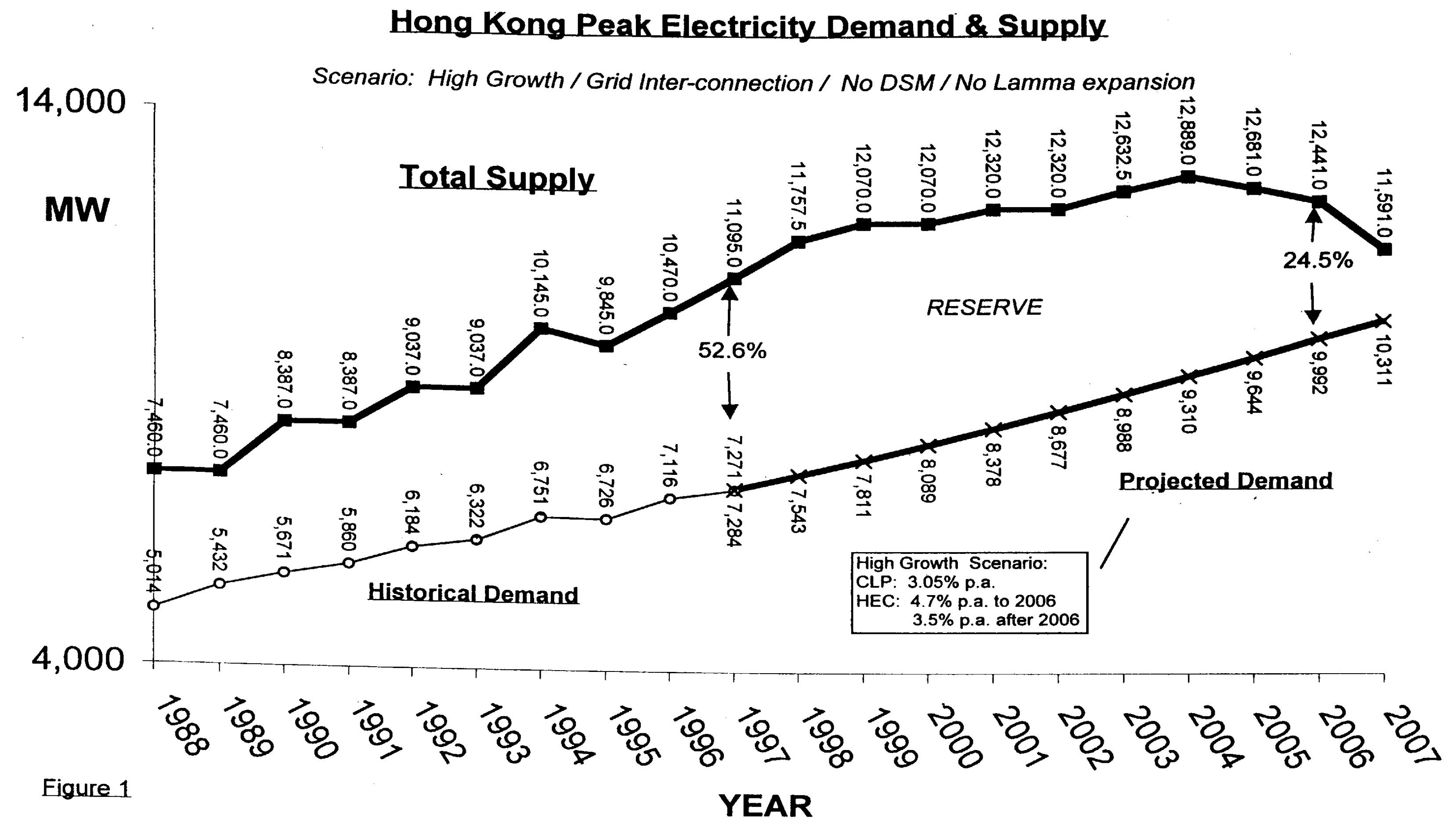
A. The scale of expansion destroys Lamma's unique rural quality for residents.

A. AQOs exceeded for ground level SO_2 in the Western Harbour area.

B. AQOs exceeded for ground level NO_2 in the Victoria Peak area.

D. Hazardous emissions from proposed co-siting of a waste incinerator.

E. Further delay of action on CO_2 reduction is globally unacceptable.


Hong Kong Peak Electricity Demand & Supply
Scenario: High Growth / Grid Inter-connection / No DSM / No Lamma expansion
14,000
MW
4,000
Total Supply
RESERVE
52.6%
24.5%
Historical Demand
Projected Demand
High Growth Scenario:
CLP: 3.05% p.a.
HEC: 4.7% p.a. to 2006
3.5% p.a. after 2006
7,460.0
7,460.0
8,387.0
8,387.0
9,037.0
9,037.0
10,145.0
9,845.0
10,470.0
11,095.0
11,757.5
12,070.0
12,070.0
12,320.0
12,320.0
12,632.5
12,889.0
12,681.0
12,441.0
11,591.0
5,014
5,432
5,671
5,860
6,184
6,322
6,751
6,726
7,116
7,271
7,284
7,543
7,811
8,089
8,378
8,677
8,988
9,310
9,644
9,992
10,311
1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
YEAR
Figure 1

A. Hong Kong has seven years of excess capacity at present growth rates.

- Under the existing SCAs, neither HEC nor CLP have exclusive franchises.
- The SCAs were intended to benefit all Hong Kong consumers, therefore the supply and demand of power should be evaluated for the whole SAR.
- It can be noted from Figure 1 that even without peak load reduction programs, Hong Kong has reserve power within international norms (25%), to 2006.

Please see Figure 1, next page.

(Data set below in Table 1, assumptions in Appendix A)

HK Demand			**HK Supply**	
Hong Kong Demand Historical (MW)	HK Demand Projected (MW) **(*1)**	YEAR	Installed Capacity (MW)	Reserve Margin (%)
5,014		***1988***	7,460.0	48.8
5,432		***1989***	7,460.0	37.3
5,671		***1990***	8,387.0	47.9
5,860		***1991***	8,387.0	43.1
6,184		***1992***	9,037.0	46.1
6,322		***1993***	9,037.0	42.9
6,751		***1994***	10,145.0	50.3
6,726		***1995***	9,845.0	46.4
7,116		***1996***	10,470.0	47.1
7,271	7,284	***1997***	11,095.0	52.6
	7,543	***1998***	11,757.5	55.9
	7,811	***1999***	12,070.0	54.5
	8,089	***2000***	12,070.0	49.2
	8,378	***2001***	12,320.0	47.0
	8,677	***2002***	12,320.0	42.0
	8,988	***2003***	12,632.5	40.5
	9,310	***2004***	12,889.0	38.4
	9,644	***2005***	12,681.0	31.5
	9,992	***2006***	12,441.0	24.5
	10,311	***2007***	11,591.0	12.4

Table 1. (***1**: High growth scenario, see Appendix A)

B. No expansion should be considered until Government's Consultancy Study of Interconnection and Competition in the Electricity Supply Sector is completed and analysed. Full interconnection now avoids unnecessary capacity expansion, it serves Hong Kong's long term energy strategy, and it does not violate the present Scheme of Control Agreements (SCAs) with HEC and CLP.

- CLP's grid is fully interconnected with the Guangdong grid.

- Full interconnection of CLP and HEC's grids is a long term benefit to the Hong Kong SAR's energy strategy.

SHORT TERM

- In the short term, full interconnection allows CLP's large excess capacity to be balanced with HEC's more impending need for capacity (see Appendix A).

- Ratepayers should not be required to pay for excess capacity on both sides of Victoria Harbour indefinitely, as this is against the spirit of using benefits of scale in the consumer's best interest, which is Government's objective in upholding the SCA's on behalf of consumers.

LONG TERM

- In the longer term, full interconnection is needed to develop future energy strategies such as de-coupling of generation from distribution services, common carrier transmission, distributed generation technologies like renewable energy and cogeneration, connection to pumped energy storage systems, and large scale renewable energy plant development in south China, to name a few.

- The Economic Services Bureau (ESB) contends that full interconnection is too expensive to be used for only a few years while there is an imbalance between HEC and CLP's reserve margins (LegCo Brief, ref. ESBCR 6/4576/93(98), para. 3(b)). We believe this to be an extremely short sighted view that ignores the long term imperative for a regionally integrated energy system.

C. With interconnection, future HEC expansion can use less sensitive sites like Black Point, develop renewable energy sources in south China, or other.

- In the site search completed by HEC's consultant, Black Point could not be discounted as a viable expansion area for HEC's operations (Figure 2, below).
- Black Point has an over-supply of piped natural gas, the area is already degraded by power plants, WENT landfill, and proposed Tuen Mun Port expansion, and it is closer to possible land based receiving facilities for natural gas in Guangdong.
- With interconnection, future expansion by HEC outside its present territory has better options of siting, more energy choices, and more regional benefit.

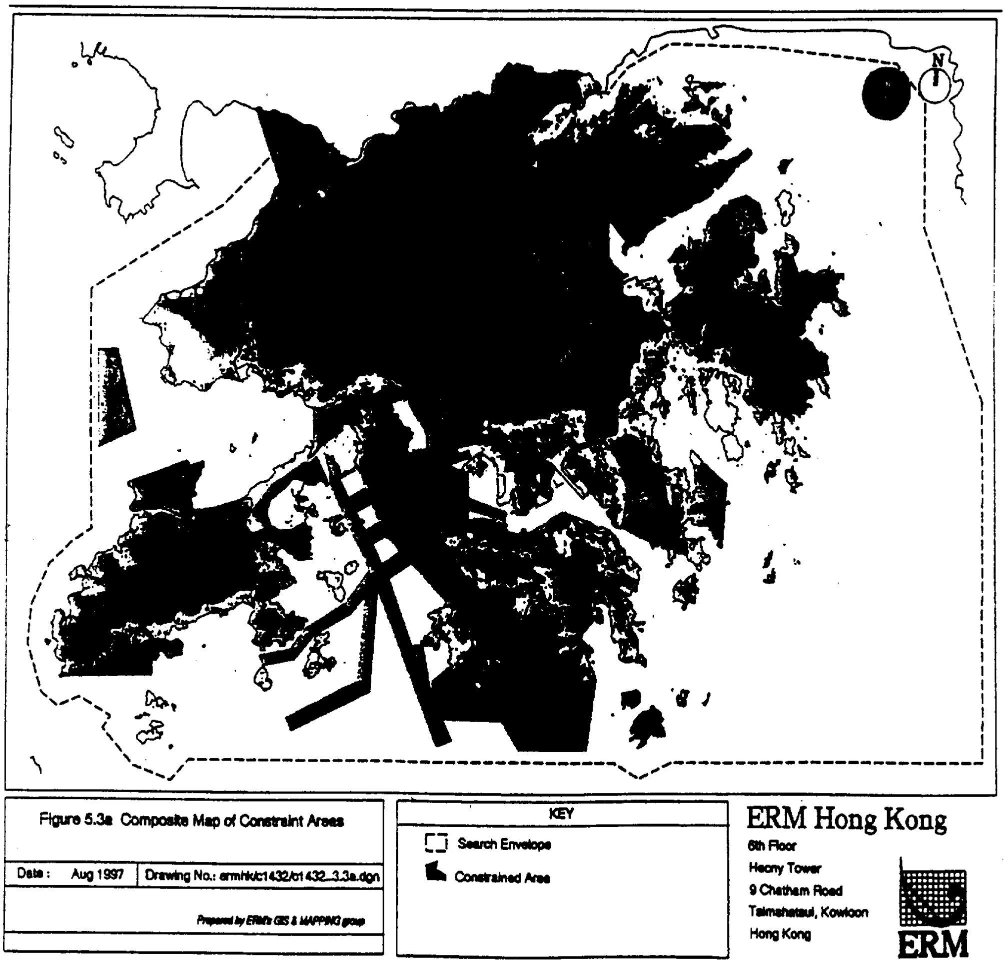


Figure 2.
IN: (Figure 5.3a, Stage 1 EIA for a New Power Station: Stage 1 EIA Report Volume 1. Hong Kong Electric Co. Ltd., ERM Hong Kong Ltd., November 1997)

A. HEC tariffs will increase at least 4-8% p.a. to finance Lamma extension.

- The direct relationship between capital expansion and tariff increases was last seen in CLP's Black Point building program (Figure 3, below).
- Based on prevailing conditions of operating costs, fuel costs, etc., HEC's proposed HK$ 20+ billion Lamma Power Station extension will give consumers a 4 to 8% annual increase in tariffs, depending on construction scheduling.
- With unemployment problems, Hong Kong should promote jobs in the energy efficiency sector, rather than burden the economy with capital investments and energy waste.

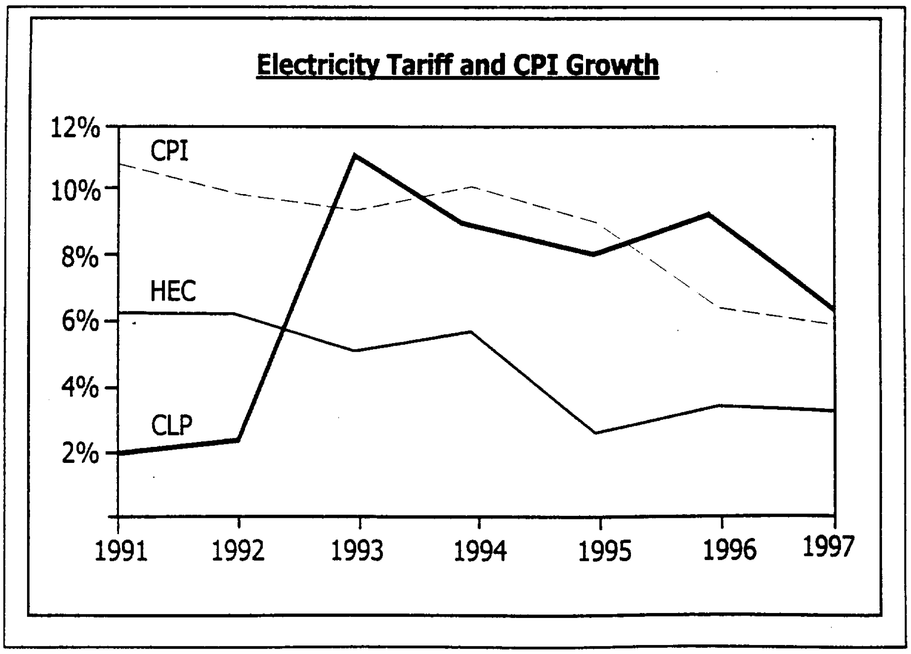


Figure 3.

IN: (Paribas Asia Equity – Sector Research, Hong Kong Utilities, March 1998, page 28)

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B. Jobs & economic benefits are being passed over for shareholder interests.

- Installed generating capacity per person in Hong Kong is 25% more than Germany and 35% more than the U.K. Hong Kong's power development has brought us through rapid growth, but now faces a different reality.
- Greater power intensity no longer equates to greater economic productivity. Hong Kong also has a legacy of poor energy efficiency in buildings and related systems. Many options exist for saving energy more cheaply than wasting existing energy, but this requires people with skills rather than massive capital programs. Finally, Hong Kong has rising unemployment of its skilled work-force.
- Under these conditions it is indefensible for the ESB to perpetuate capital expansion incentives for a minority of utility shareholders instead of stimulating jobs and economic benefit for a majority of society with energy service incentives.

EXPERIENCE...

"The Sacramento Municipal Utility District's (SMUD's) energy efficiency programs have helped to stimulate the local economy. ...the School of Business Administration at California State University, Sacramento, found that in 1992, SMUD's energy efficiency investments, $59 million on specific measures and $131 million in loans, had increased regional income by $124 million, created 878 jobs in the air conditioning, insulation, lighting, and other energy efficiency related industries in the Sacramento region, and added $22 million in wages to area households."

(Smelnoff, E., and Asmus, P. Reinventing Electric Utilities. 1997. Island Press, p. 56)

(Photo credits: Testo Ltd., The Informative Catalogue 1996, pp.74, 109.)

C. Loss of tourism qualities for Hong Kong as a whole, and for Lamma beaches in particular (Hung Shing Yeh, Lo So Shing) will bring economic impacts.

- Lamma Island has an attractive environment, quiet isolation, and proximity to the Central Business District that is valuable to Hong Kong's competitiveness.

ATTRACTING BUSINESS

- Hong Kong SAR is more likely to attract resident business people if convenient day-trips to rural retreats like Lamma are available to balance the urban landscape.

TOURISTS

- As shown by tourism growth before and decline after the 1997 Handover, tourists visit because of unique qualities, and Hong Kong is now struggling to identify what makes it unique to international travellers. Hong Kong's co-existence of urban and natural areas is unique, it is under-promoted, it is increasingly rare in Asia, and it is valuable for a sustainable tourist industry.

- Expansion of Lamma Power Station will completely dominate a significant length of the West Lamma Coastline with unsightly industry (Figure 4, below). The loss of tourism qualities will be a long term economic loss for Hong Kong.

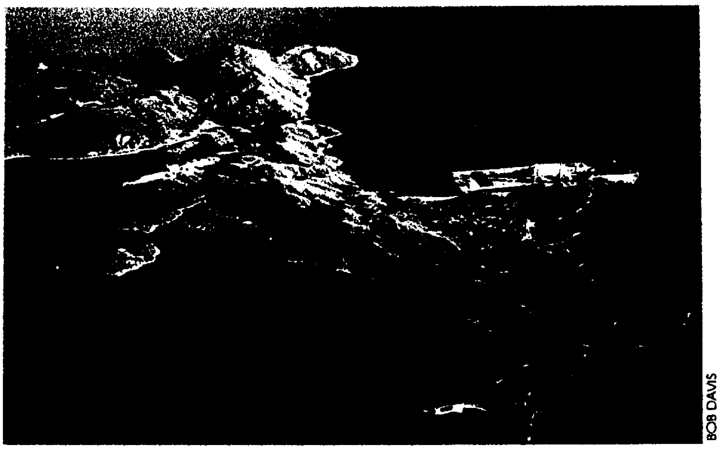

Figure 4. Lamma Island. Ash lagoon and proposed extension in red. Note that expansion area could be larger due to incinerator requirements, see point 3(D).

3) Expansion at Lamma Power Station is environmentally [illegible]

A. The scale of expansion destroys Lamma's unique rural quality for residents.

LOCAL IMPACT

- Whereas the existing power plant creates an uneasy balance of rural and industrial uses, further extension will destroy this balance (Figure 5, below).
- Reclamation from expansion will reduce water circulation in the Ha Mei Wan and potentially reduce the water quality of the surrounding gazetted beaches.
- With the road connection and growing urbanisation of Lantau Island, the unique rural quality and accessibility of Lamma Island is increasingly rare and valuable.
- It is unreasonable to lower the quality of life for Lamma Island residents when less socially and environmentally destructive alternatives to Lamma Power Station expansion are available.

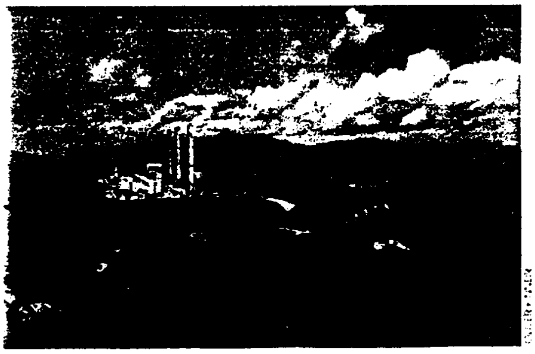

Figure 5.

B. AQO exceeded for ground level SO_2 in the Western Harbour area.

- Maximum hourly-averaged ground level concentrations of SO_2 are predicted to exceed the AQO (305 ppb) by over 29% (394 ppb) in the Western Harbour area due to the existing Lamma Power Station alone in 2012. Addition of a gas fired extension would not change the SO_2 emissions significantly.

- Addition of a coal fired extension to Lamma Power Station is predicted to add 13 ppb to the existing (394 ppb) SO_2 emission, resulting in a 36% (417 ppb) exceedence of the AQO in the Western Harbour area (Figure 6, below).

Figure 6. Contour levels are 10, 50, 100, 150, 200, 250, 300, 400 ppb SO_2.

Worst-case 2012 ground level concentrations of SO_2 (ppb) for coal fired option at Lamma Island Extension (LIE). Existing Lamma Island Plant (LIP) contributes 97% (394 ppb) of the total maximum (417 ppm) IN: (Figure 7.2b, Stage 1 EIA for a New Power Station: Stage 1 EIA Report Volume 1. Hong Kong Electric Co. Ltd., ERM Hong Kong Ltd., November 1997)

3. Expansion at Lamma Power Station is environmentally undesirable

C. AQO exceeded for ground level NO_2 in the Victoria Peak area.

- Maximum NO_2 concentrations are predicted to exceed the 24-hour-averaged ground level AQO (80 ppb) by 12% (90 ppb) in the Victoria Peak area due to the existing Lamma Power Station and a new gas fired extension (Figure 7, below).
- Since the total NO_x affecting Victoria Peak will be several hundred ppb, and the conversion of NO to NO_2 is variable (depending on cloud cover, mean temperature, and background ozone), total NO_2 could be higher than predicted.

Figure 7. Contour levels are 10, 100, 200, 300, 400, 500 ppb NO_x.

Worst-case 2012 ground level concentrations of NO_x (ppb) for gas fired option at Lamma Island Extension (LIE).

IN: (Figure 6.2c, Stage 1 EIA for a New Power Station: Stage 1 EIA Report Volume 1. Hong Kong Electric Co. Ltd., ERM Hong Kong Ltd., November 1997)

D. Hazardous emissions from proposed co-siting of a waste incinerator.

- A Waste to Energy Incineration Facility (WEIF) of one million tons per year is proposed in the Stage 1 EIA to be sited at Lamma Power Station extension. This concept is undesirable for three main reasons.

- Even modern incinerators release polychlorinated dioxins and furans, for which there are no "safe" levels because these chemicals bio-accumulate in the food chain. As seen in the dispersion models (point 3B and 3C), these pollutants would blow over densely populated areas. For this risk, only about 50 MW of power would be produced, an insignificant 0.28% of the proposed 1,800 MW expansion.

- As a Potentially Hazardous Installation (PHI) the incinerator needs further spacing from the adjacent power plant, which increases the site area and reclamation.

- As a PHI, the incinerator would cause restricted use of surrounding lands on Lamma Island due to requirements for buffer zones. This is because incinerators with multi-stage pollution controls (Figure 8, below) still emit pollutants to the surroundings: dioxins, furans, heavy metals, hydrochloric acid, SO_x, NO_x, and dust.

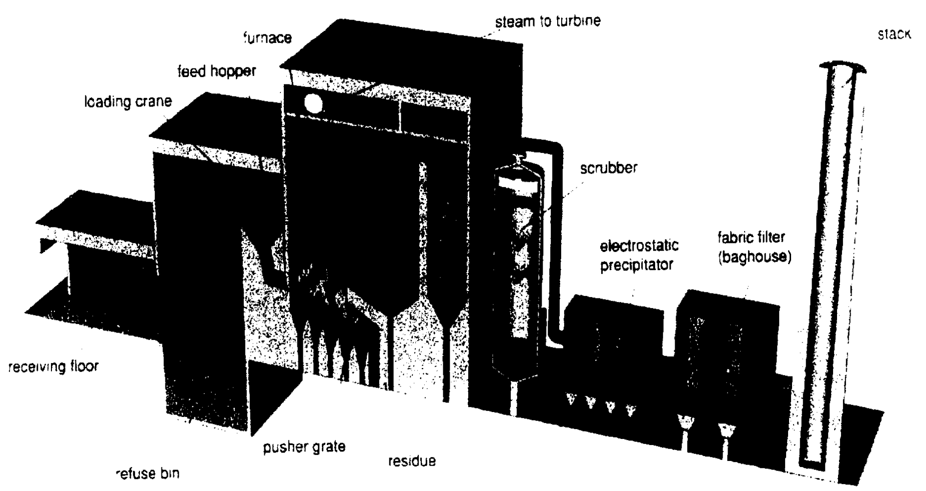

Figure 8. (American Scientist, Vol. 86, No. 4, p.368)

E. Further delay of action on CO_2 reduction is globally unacceptable.

- Hong Kong has no policy for greenhouse gas (GHG) control, although the U.K. signed the Framework Convention on Climate Change (FCCC) in 1992, and China signed in 1993.
- Hong Kong has the power capacity levels of other developed countries and has a wide range of cost effective tools to reduce CO_2 intensity. Yet lack of action will lead to 1990 CO_2 levels being exceeded by 9.6 million tons (26%) in 2012, even if gas replaces coal generation and waste is not incinerated (Figure 9, below).
- If the widely accepted externality costs of US \$25 to \$30 per ton of carbon(note 1) emission were applied to Hong Kong's CO_2 exceedence margin of 1990 levels in 2012, the cost would be HK\$ 51.5 billion to \$60.9 billion annually.

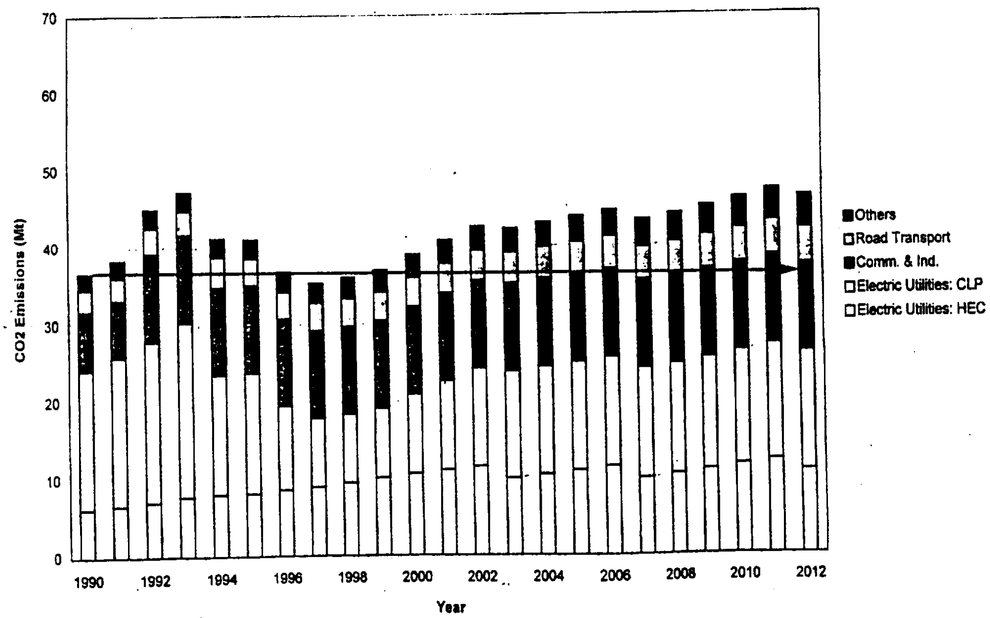

Figure 9. Low CO_2 Scenario: population 7.52 million in 2012, all future generators gas fired, no waste incineration.

IN: (Figure 3.4a, Stage 1 EIA for a New Power Station: Stage 1 EIA Report Volume 1. Hong Kong Electric Co. Ltd., ERM Hong Kong Ltd., November 1997)

NOTES

Note 1.

The costs of CO_2 emissions have been estimated based on the negative effects that increasing CO_2 has on climate. Two widely accepted estimates are:

A. Frankhauser, S., and D.W. Pearce. 1994. "The Social Costs of Greenhouse Gas Emissions." IN: "The Economics of Climate Change", Paris, Organisation for Economic Co-operation and Development (OECD) -- International Energy Agency.

VALUES: (per ton of Carbon)

US$	Period
$20.4	1991 - 2000
$22.9	2001 - 2010
$25.4	2011 - 2020
$27.8	2021 - 2030

B. The California Public Utilities Commission (CPUC) undertook a Biennial Resource Plan Update (BRPU) to allow a competitive bidding process for the acquisition of new power supplies and to allow energy policymakers to better understand the environmental impacts of different types of power plants. However, coming up with a dollar value for specific pollutants proved controversial. A compromise was reached that allowed for the use of clean air bonus payments and penalties as part of the competitive bid process.

VALUES:

	south California	north California
NOx	$28,524 per ton	$8,272 per ton
SOx	$21,306 per ton	$4,060 per ton
PM	$6,171 per ton	$2,380 per ton
Reactive Organic Gas ROG	$20,374 per ton	$1,180 per ton
Carbon	**$30 per ton**	**$30 per ton**

HK SUPPLY / CLP SUPPLY

YEAR	HK MW Installed	Hong Kong Reserve %	CLP SUPPLY Installed MW CLP	NEW Capacity (MW)	DECOMMISSIONED Capacity (MW)	CLP Reserve %
1968	1,067.0	35.6	662.0			24
1969	1,247.0	40.0	782.0	120 (Tsing Yi A)		27
1970	1,335.0	31.8	870.0	120 (Tsing Yi A)	12+20 (Hok Un A)	23
1971	1,566.0	36.6	1,110.0	2x120 (Tsing Yi A)		38
1972	1,831.0	47.8	1,250.0	120 (TY A)+20 (Hok Un B)		44
1973	2,011.0	45.3	1,370.0	120 (Tsing Yi A)		43
1974	2,264.0	56.5	1,612.0	200+42 (Tsing Yi B)		60
1975	2,589.0	67.4	1,812.0	200 (Tsing Yi B)		67
1976	2,883.0	64.6	2,012.0	200 (Tsing Yi B)		63
1977	3,114.0	58.3	2,212.0	200 (Tsing Yi B)		60
1978	3,082.0	38.2	2,152.0		3x20 (Hok Un A)	37
1979	3,263.0	32.1	2,208.0	56 (Hok Un C)		24
1980	3,476.0	25.3	2,416.0	56 + 2x76 Hok Un C)		22
1981	3,710.0	25.3	2,650.0	4x60 (Castle Peak A)		26
1982	4,441.0	38.7	3,006.0	350 (Castle Peak A)		32
1983	4,916.0	41.0	3,356.0	350 (Castle Peak A)		36
1984	5,349.0	43.9	3,664.0	350 (Castle Peak A)	42 (Tsing Yi B)	38
1985	5,609.0	40.8	3,924.0	350 (Castle Peak A)	3x30 (Hok Un B)	38
1986	6,046.0	38.0	4,361.0	677 (Castle Peak B)	4x60 (Hok Un B)	40
1987	6,693.0	38.9	4,778.0	677 (Castle Peak B)	4x60 (Hok Un C) 20 (HUB)	39
1988	7,460.0	48.8	5,455.0	677 (Castle Peak B)		51.8
1989	7,460.0	37.3	5,455.0			40.1
1990	8,387.0	47.9	6,132.0	677 (Castle Peak B)		51.1
1991	8,387.0	43.1	6,132.0			46.7
1992	9,037.0	46.1	6,432.0	3x100 (Penny's Bay)		47.4
1993	9,037.0	42.9	6,430.0	352+150 (PB?)	504 (?)	45.1
1994	10,145.0	50.3	7,540.0	1380 (days) 3x150 (gps)	6x120 (Tsing Yi)	59.4
1995	9,845.0	46.4	6,890.0	150 (GPS)	4x200 (Tsing Yi)	46.0
1996	10,470.0	47.1	7,515.0	625 (Black Pt 1+2)		50.4
1997	11,095.0	52.6	8,140.0	625 (Black Pt 3+4)	*(2x75 + 2x56 Hok Un C,*	66.8
1998	11,757.5	55.9	8,452.5	312.5 (Black Pt 5)	*3x60 + 60 CP A)*	61.9
1999	12,070.0	54.5	8,765.0	312.5 (Black Pt 6)		62.9
2000	12,070.0	49.2	8,765.0			58.1
2001	12,320.0	47.0	8,765.0			53.4
2002	12,320.0	42.0	8,765.0			48.9
2003	12,632.5	40.5	9,077.5	312.5 (Black Pt 7)		49.6
2004	12,889.0	38.4	9,334.0	312.5 (Black Pt 8)	56 (Hok Un C)	50.2
2005	12,681.0	31.5	9,126.0		56 + 2x76 (Hok Un C)	45.7
2006	12,441.0	24.5	8,886.0		4x60 (Castle Pk A)	41.4
2007	11,591.0	12.4	8,536.0		350 (Castle Pk A)	32.1
2008			8,186.0		350 (Castle Pk A)	23.3

HEC SUPPLY

YEAR	Installed MW HEC	NEW Capacity (MW)	DECOMMISSIONED Capacity (MW)	HEC Reserve %
1968	405.0	60 (Ap Lei Chau)		61
1969	465.0	60 (Ap Lei Chau)		70
1970	465.0			53
1971	456.0		9 (North Pt)	33
1972	581.0	125 (Ap Lei Chau)		57
1973	641.0	125 (Ap Lei Chau)	3x15 + 1x20 (North Pt)	52
1974	652.0	10 (ALC) 1 (North Pt)		48
1975	777.0	125 (Ap Lei Chau)		69
1976	902.0	125 (Ap Lei Chau)		74
1977	902.0			54
1978	930.0	125 + 55 (ALC)	5x30 + 2 (North Pt)	41
1979	1,055.0	125 (Ap Lei Chau)		53
1980	1,060.0	125 (Ap Lei Chau)	2x60 (North Pt)	33
1981	1,060.0			24
1982	1,435.0	2x250 (Lamma)	125 (ALC to Lamma)	54
1983	1,560.0	0.5x250 (Lamma)		54
1984	1,685.0	0.5x250 (ALC to Lamma)		58
1985	1,685.0			47
1986	1,685.0	55 (ALC to Lamma)	55 (ALC to Lamma)	34
1987	1,915.0	350 (Lamma)	2x60 (ALC)	39
1988	2,005.0	350 (Lamma)	2x125 (ALC to L) 10 (ALC)	41.1
1989	2,005.0	4x125 (ALC to Lamma)	4x125 (ALC to Lamma)	30.2
1990	2,255.0	2x125 (ALC to Lamma)		39.8
1991	2,255.0			34.2
1992	2,605.0	350 (Lamma)		43.2
1993	2,605.0			37.8
1994	2,605.0			28.9
1995	2,955.0			30
1996	2,955.0	350 (Lamma)		39.5
1997	2,955.0			34.0
1998	3,305.0	350 (Lamma)		43.1
1999	3,305.0			36.7
2000	3,305.0			30.6
2001	3,555.0	250 (Lamma)		34.2
2002	3,555.0			28.2
2003	3,555.0			22.4
2004	3,555.0			16.9
2005	3,555.0			11.7
2006	3,555.0			6.6
2007	3,055.0		2x250 (Lamma)	-12.0
2008				

[---------------------- CLP DEMAND --------------]

YEAR	CLP Local Energy Sold (GWh)	CLP Actual Energy Growth (%)	CLP Local Actual Peak (MW)	CLP Actual Peak Growth (%)	^CLP Projected Peak (MW)	CLP Projected Growth (%)
1988	15,743		3,593	4.4		
1989	16,616	5.5	3,892	8.3		
1990	17,577	5.8	4,058	4.3		
1991	18,993	8.1	4,180	3.0		
1992	19,822	4.4	4,365	4.4		
1993	21,401	8.0	4,432	1.5	^CLP will not state its demand growth projections. 3.05% p.a. growth is the average from CLP's last five fiscal years, 1992 - 1997.	
1994	21,033	-1.7	4,730	6.7		
1995	21,954	4.4	4,720	-0.2		
1996	22,445	2.2	4,998	5.9		
1997	23,171	3.2	5,066	1.4		
1998					5,221	3.0
1999					5,380	3.0
2000					5,544	3.0
2001					5,713	3.0
2002					5,887	3.0
2003					6,067	3.0
2004					6,252	3.0
2005					6,442	3.0
2006					6,639	3.0
2007					6,841	3.0
2008					7,050	3.0

[-- HEC DEMAND --]

YEAR	HEC Local Energy Sold (GWh)	HEC Actual Energy Growth (%)	HEC Local Actual Peak (MW)	HEC Actual Peak Growth (%)	HEC (*1) Projected Peak (MW)	HEC Projected Growth (%)	HEC (*2) Projected Peak (MW)	HEC Projected Growth (%)	HEC (*3) Projected Peak (MW)	HEC Projected Cumlative DSM (%)
					(*1) HEC's projection made in 1996 and approved by Burns & Roe, confirmed by HEC to FoE in February 1998. <u>PROJECTION</u>: 4.7% p.a. 1997-2006, and 3.5% p.a. growth from 2007 onwards. Less than 1% DSM savings in 3 years 1998-2000.		(*2) ESB's projection made in January 1998. Stated in ESB's answer to LegCo question #9, 15 July, 1998. <u>PROJECTION</u>: Growth basis not stated. DSM basis not stated.		(*3) HEC's projection made in January 1998. Stated as *Annex A* of ESB's LegCo brief of 1 April, 1998. <u>PROJECTION</u>: Peak shown is without DSM. Right column is cumulative peak MW reduction from unknown DSM program.	
1988	5,681		1,421	3.0						
1989	6,096	7.3	1,540	8.4						
1990	6,557	7.6	1,613	4.7						
1991	6,938	5.8	1,680	4.2						
1992	7,215	4.0	1,819	8.3						
1993	7,751	7.4	1,890	3.9						
1994	8,257	6.5	2,021	6.9						
1995	8,380	1.5	2,006	-0.7						
1996	8,873	5.9	2,118	5.5						
1997	9,079	2.3	2,205	4.1	2,218	4.7				
1998					2,322	4.7	2,330	5.7	2,331	0.0
1999					2,431	4.7	2,436	4.5	2,459	0.2
2000					2,545	4.7	2,559	5.0	2,588	0.6
2001					2,665	4.7	2,673	4.5	2,696	0.9
2002					2,790	4.7	2,737	2.4	2,821	1.3
2003					2,921	4.7	2,826	3.3	2,970	1.6
2004					3,058	4.7	2,897	2.5	3,087	1.9
2005					3,202	4.7	2,980	2.9	3,201	2.4
2006					3,353	4.7	3,088	3.6	3,320	2.9
2007					3,470	3.5	3,167	2.6	3,438	3.3
2008					3,591	3.5	3,258	2.9	3,558	3.7