

Legislative Council Panel on Economic Development Panel Meeting 10 December 2013

Information Paper: Development Plan (2014-2018) of CLP/CAPCO¹

1. Background

The current Development Plan approved under the Scheme of Control Agreement (SCA) covers the period October 2008 – December 2013. A new Development Plan was submitted to the Government of Hong Kong in May in accordance with the requirement of the SCA. The Executive Council advised and the Chief Executive ordered that this new Development Plan be approved after the review by the Government. The new Development Plan (Plan) will cover the period January 2014 – September 2018.

2. Meeting the needs of Hong Kong

Hong Kong is a densely populated international metropolitan city. The delivery of reliable electricity is critical to the livelihood and well-being of every fellow citizen in Hong Kong and the competitiveness of the city against others internationally. **Maintaining a safe and highly reliable electricity supply service is a key driving force in this Plan.**

CLP supports the community's call for Hong Kong to reduce pollution with a **clean air environment for us all**. We are playing our parts by bringing down emissions by over 80% while meeting a demand increase of 80% in the past 20 years, there is more that we can do.

CLP is part of Hong Kong and we understand well that the tariffs charged by the power companies have to be reasonable and competitive. One of the key challenges faced by CLP in the Plan is to contain cost pressures. Key drivers are the use of a lot more natural gas in the production of electricity to meet the tightening statutory emissions requirement. Construction costs for the infrastructure development have significantly risen in recent years, which put further pressure on cost. **Ensuring stable and competitive tariffs is a challenge to us and a key commitment to our customers.**

These three factors, reliability, environment and costs, form the so called "*Energy Trilemma*" that



¹ CLP Power Hong Kong Limited (CLP) and Castle Peak Power Company Limited (CAPCO) hereafter referred to collectively as CLP

worldwide utility companies have to manage. Balancing the trilemma is critical and underpins this Development Plan.

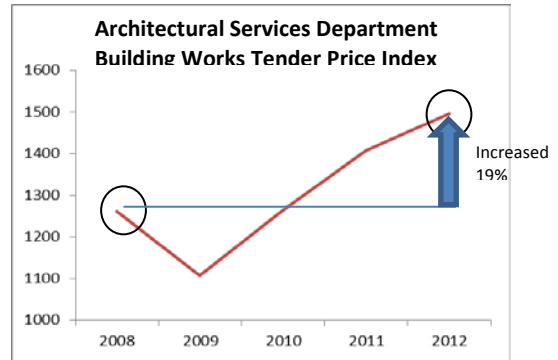
3. Key features of the Development Plan for the period Jan 2014 – Sept 2018

Despite rising construction cost in the local market and high commodity prices in the international market, CLP is able to contain its Basic Tariff increase to a modest level of an average of 1.8% p.a. in the coming 5 years. This is the result of prudent cost management together with a variety of initiatives to improve our work processes.

The total capital expenditure (capex) approved for the Plan period is HK\$34.1 billion, and can be broken down into the following key areas²:

- HK\$10.7 billion in local generation plants (32%), to maintain supply reliability
- HK\$22.6 billion in transmission & distribution networks (66%), delivering power to homes and businesses
- HK\$0.8 billion in Customer and Support Services (2%), for customers

This new Plan represents a reduction in capex of 18% in nominal terms comparing with that in the last Development Plan (2008). This budget is well maintained in the context of rising construction cost and high commodity prices which can be seen in the increases in project costs in infrastructure projects locally. For example, the Architectural Services Department's building works tender price index has shown a steady increase in recent years.



The capital spending focuses in three core and much needed areas:

- a) Supporting local infrastructure development & meeting customer load requirements accounts for 41% of the budget;
- b) Maintaining safety and supply reliability accounts for 52% of the budget; and
- c) Improving environmental performance accounts for 7% of the budget.

² Refer to Annex CLP-A for a more detailed breakdown of the major projects in the 2014 Development Plan

(a) Supporting Local Infrastructure Development and Meeting Load Requirements

Local electricity sales in the Plan period are projected to grow at an overall average annual rate of 2.0%. Against a growth rate of 3.5% in GDP, the implied ratio of electricity growth to GDP growth is about 0.6. An average growth rate of 2.7% p.a. for maximum demand over the Plan period is projected, reflecting the on-going growing trend in demand and the potential impact of extreme weather conditions.

With the rapid expansion of Hong Kong's railway network, CLP is required to provide new electric traction supply sources for the Shatin Central Link and the Guangzhou-Shenzhen-Hong Kong Express Rail Link. Closer collaboration with Mainland China also demands more cross border facilities, and CLP is required to provide power to the Hong Kong Zhuhai Macau Bridge Boundary Crossing Facilities by 2016, and to the new border control point to be established in Heung Yuen Wai by 2018. Enhancement of other public facilities, for example, the expansion of the Tai Po Water Treatment Works Plant, also requires infrastructure development.

Network coverage is also required in newly developed areas, for example, the Kai Tak Development Area and the West Kowloon Cultural District. Load growth in existing areas (e.g. Tseung Kwan O Industrial Estate, North Lantau, etc.) and redevelopment areas (e.g. Kwun Tong Town Centre) demand network reinforcements and new supply and network regimes in the areas.

The diagram shows the major work in the electricity supply network of CLP in the coming 5 years.



(b) Maintaining Safety and Supply Reliability

CLP operates with a portfolio of assets of a wide range of ages, from brand new equipment up to some that is over 50 years old (e.g. transformers, switchgear). Regular maintenance and periodic refurbishments are required to maintain reasonable operating conditions and safety and reliability standards. Proactive implementation of preventive measures is also required, for example, the installation of condition monitoring facilities to monitor performance and conditions of critical equipment, and the reinforcement of 400kV high voltage overhead line towers to prepare for adverse climate conditions like super typhoons, etc. Cyber and IT security will also need to be upgraded to protect customer interests, data security and our daily operation.

There are over 17,000 substations of different voltage levels in service in our supply area covering 80% of our population. They are connected by over 24,000 km of cables, hanging securely in the air by overhead line towers or hidden underground. If these cables were in a single line, they would easily link up North Pole to the South Pole. Considerable maintenance work is required to keep them in good and safe operating conditions. Safety is our utmost priority as most of these assets are in public areas close to our customers.

There is no new generation plant built in this Plan. All our generation plants would be assessed for their condition and planned for appropriate life extension. This will help reduce pressure on tariff and allow us to make the best use of assets for our customers. The generating fleet is 5 years older than the time the last Development Plan was submitted and 90% of the units have now past the midpoint in terms of asset life. Refurbishment of the generating units has to be undertaken to ensure that safety and reliability can be maintained in the Plan period.

At the same time, improvement work will be carried out to improve the efficiency of our plants, making the best use of our gas and bringing down fuel costs.

(c) Improving Environmental Performance

Improving environmental performance can be implemented on the supply side by reducing emissions, and also on the demand side by conserving electricity consumption.

To reduce emissions, three of our gas turbines at our Black Point Power Station will be upgraded to bring about improved emission performance. The upgrade work can also improve the cycle efficiency and lead to saving in fuel. Longer run, it also reduces

maintenance costs and contributes to the long term reliability of the units. Other measures to reduce emissions include converting our Castle Peak units to adopt the use of ultra-low sulphur diesel (ULSD) to help mitigate sulphur oxide (SOx) emission and to fulfill the latest statutory environmental requirements. To support Government's initiatives on road side air pollution, a small budget is provided for the implementation of Electric Vehicle Charging Infrastructure to support and promote the use of Electric Vehicles in Hong Kong.

On the demand side, an Automatic Demand Response system will be implemented - this is a system where CLP can initiate a signal to those industrial and commercial customers who have joined our scheme to reduce the amount of electricity they consume during peak demand periods. This can reduce the electricity load at peak demand periods, and defer capital investment in generation facilities, saving customers the cost of new investment. Separately, a two-year pilot programme on smart meters was launched in mid-2013 to a group of residential and small to medium sized business customers to identify the benefits, costs, and challenges of implementing smart metering in Hong Kong. The project allows customers to better manage their electricity consumption by providing incentives and timely consumption information together with usage advices. Initial results of the pilot programme are encouraging, and in this Plan we will develop further this pilot programme. Furthermore, CLP will continue to run its Energy Efficiency Exhibition Centre and "Eco Home" (an exhibition centre showcasing the latest energy efficiency and conservation trend and products) to provide updated information and technology support to our customers. The new Energy Efficiency Fund set up following the Interim Review under the Scheme of Control Agreement also demonstrates CLP's commitment in this area to the community.

4. Tariffs

CLP's tariff is made up of two major components:

- (a) Basic Tariff to cover the cost of service to customers for facilities, investments and operating costs necessary for the supply of power to meet customers' demand and the standard fuel cost for each unit of electricity generation, and
- (b) Fuel Clause Charge which is either a surcharge or rebate to cover the difference between the actual cost of fuel used for generating electricity and the standard fuel cost collected through the Basic Tariff. According to the Scheme of Control

Agreement, the actual cost of fuel use for electricity generation is directly passed through to customers. Such fuel costs are recovered from customers on an actual basis.

The SCA also sets out the roles of two balancing funds – the Tariff Stabilisation Fund (TSF) and the Fuel Clause Recovery Account (FCA), which are designed to act to smooth out volatility in adjusting both the Basic Tariff and the Fuel Clause Charge.

Basic Tariff

The table below summarises the proposed Basic Tariff between 2014 – 2018 of the Development Plan.

Year	2013	2014	2015	2016	2017	2018	Average increase
Basic Tariff (¢/kWh)	84.2	88.4	87.2	88.4	90.0	92.1	1.8% p.a.

In the past year, CLP has worked hard to freeze the Basic Tariff with subsidisation from the Tariff Stabilization Fund (TSF). However, with the TSF depleting at the end of 2013, which serves its function well of reducing tariff pressure, the Basic Tariff has to be increased to an appropriate level so as to cover the costs required and continue with the investment needed. Basic Tariff in 2014 will be adjusted to 88.4 cents/unit. Details can be found in Section 5 on 2014 Tariff Components and Changes below.

The Basic Tariff over 2014-2016 would be quite stable and is expected to experience no increase, followed by a small increase in 2017 and 2018. The average Basic Tariff increase from 2014 to 2018 will be at about 1.8% per annum.

To achieve such a competitive basic tariff rates over the years, CLP manages to contain costs through optimizing our capital and operating expenses, increased automation, implementing comprehensive procurement strategies, systematical introduction of best practice and benchmarking with overseas utilities, and where appropriate adopting best practices as well as extending the useful life of equipment and assets based on technical assessment such that service levels are not compromised.

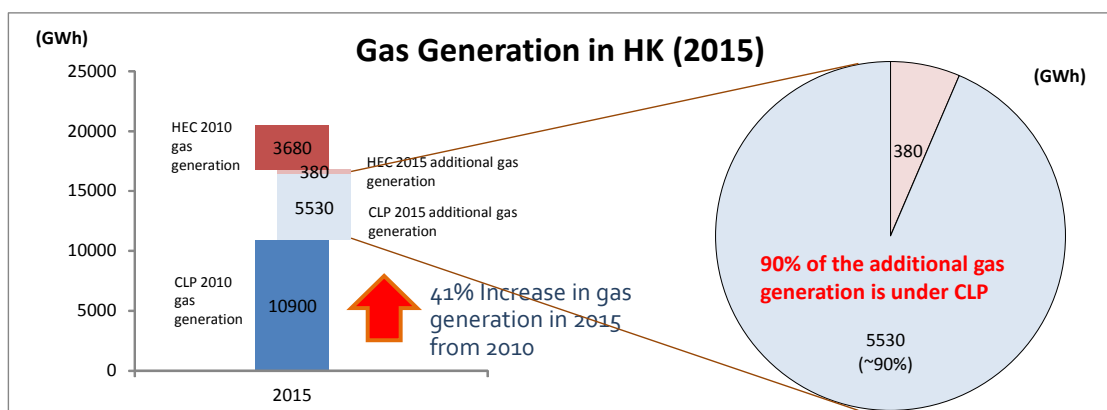
The Fuel Cost Challenge – Fuel Clause Charge

The table below summarises the projected Fuel Clause Charge (FCC) between 2014-2018 covered by the 2014 Development Plan:

Year	2013	2014	2015	2016	2017	2018
FCC (¢/kWh)	22.4	22.4	36.7	45.3	52.6	56.4

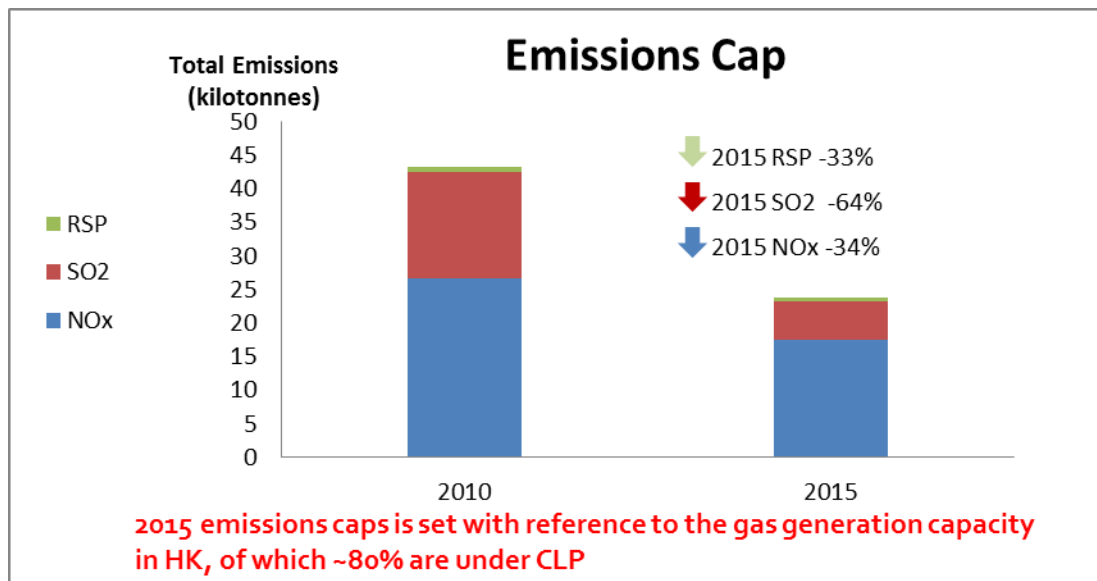
Hong Kong has no indigenous energy sources and all its energy needs to be imported. CLP has for many years adopted a balanced fuel mix comprising natural gas, coal and nuclear import from Daya Bay, and this diversified portfolio provides reliable electricity supply to Hong Kong whilst meeting ever-tightening environmental standards at a reasonable cost.

In setting the emissions caps for 2015, the Government presented a paper to the Legislative Council on 22 September 2010 which had already envisaged that both power companies have to make the full use of their respective gas generating units, of which CLP accounts for about 80% of the total local gas generation capacity. Based on that, the total gas burn level will need to increase from 14,580 GWh to 20,490 GWh for Hong Kong as a whole, which represents an increase of around 41%. This means that CLP and its customers have to shoulder about 90% of the required increase in natural gas generation in order to fulfill the emission requirement for the whole Hong Kong.

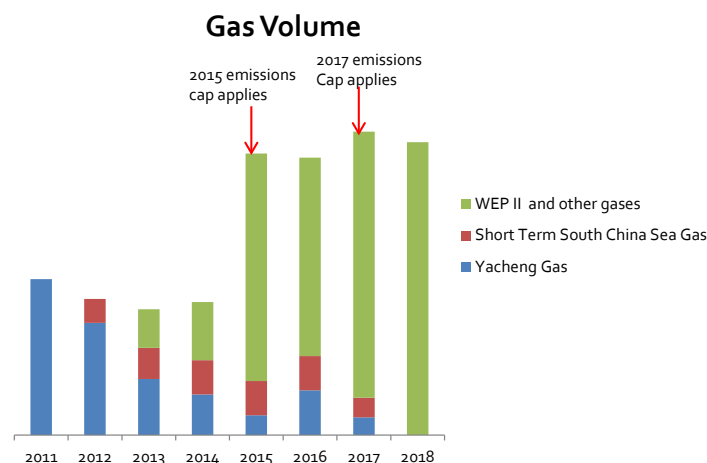


Source: Paper presented to the Legislative Council Panel on Environmental Affairs on 22 September 2010

To meet the new 2015 and 2017 emissions caps, which are significantly more stringent than those applying now as shown in the following chart, CLP is required to change the current fuel mix towards much more natural gas.

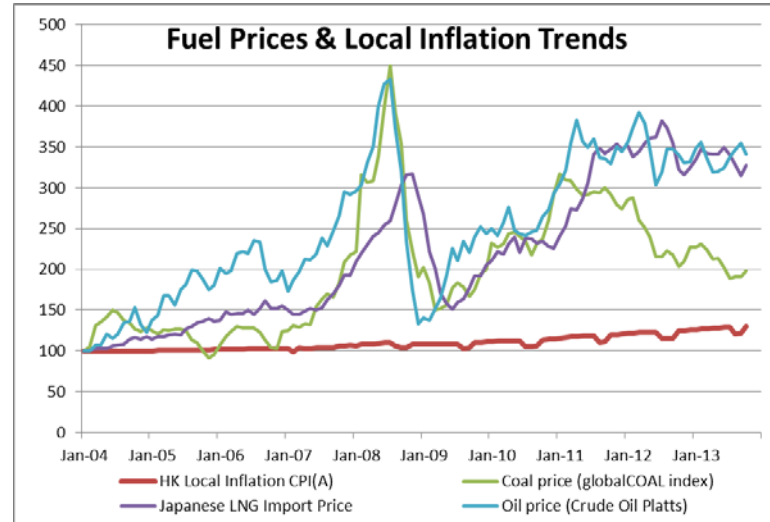


This creates two separate challenges. First, gas consumption volume in 2015 will be double that of 2014. This is because the principal alternative to burning coal is to burn gas. The chart below illustrates the change in gas volume profile required in order to meet our environmental obligations.

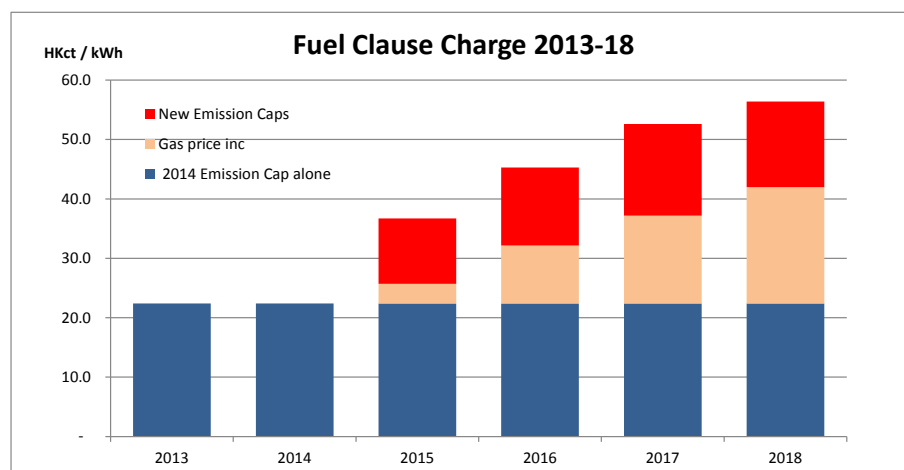


Secondly, CLP's main supply for the last two decades has been the Yacheng Y13-1 field in the South China Sea off Hainan Island. This depleting reserve needs to be replaced by new sources of supply. To replace our Yacheng Y13-1 supply, a new supply from the West-to-East Pipeline project phase II (WEP II) has been secured from

the Mainland, under the Government to Government Memorandum of Understanding on energy cooperation signed in 2008. This gas is priced in line with the current international market benchmarks, which is about three times the Yacheng gas price, a gas contract which was signed 20 years ago when oil was only around US\$20/barrel.



To put these two forces into context, the chart below shows their impact respectively to the Fuel Clause Charge (FCC). Increases in FCC as a result of the 2 tightened emission caps in 2015 and 2017 are on average about HK¢ 14 per unit in the coming years while that of gas price increases are about HK¢ 12 per unit. The tariff impact as a result of emission is higher in early years, while the lower priced supply from Yacheng is still available. When Yacheng runs down further, the tariff impact gets higher.



We know that these rising costs and increased gas consumption, necessary to meet emissions standards, will lead to higher tariffs for customers. To alleviate the impact of the increased cost of fuel, CLP takes a variety of measures as far as practical, to ease the burden on customers. In this Plan, we have included measures to minimize the

consumption of more expensive gas. For example, the implementation of the gas turbine efficiency improvement project will mean that after the upgrade the same amount of electricity can be generated with less gas. Furthermore, in 2012, we were able to obtain a short term supply of gas from another field near Yacheng, which is less expensive than the WEP II gas though still at a price higher than the original Yacheng gas contract.

We will continue to offtake as much as we can from Yacheng in the coming years, so that we can make the best use of the lower cost gas. In addition, we also work with the Yacheng supplier trying to secure more gas over our contractual right. We will also continue to maximize the use of environmental friendly coal, enhance the operational performance of our generating units and improve our Respirable Suspended Particulate (RSP) removal efficiency so as to reduce gas consumption, and to continue to search for other potential alternative gas sources.

In the course of the Development Plan discussions, CLP and Government discussed the feasibility of a small amount of additional import from Daya Bay in order to alleviate tariff pressure due to increased gas consumption and gas prices. CLP is working on this temporary, short-term energy import arrangement with the Daya Bay Nuclear Power Station. Daya Bay has been serving Hong Kong safely and reliably for the past 20 years. This arrangement requires no additional investment on new infrastructure, nor does it require Daya Bay to increase new generation capacity.

FCA is designed to smoothen out tariff volatility. The heavy burden in fuel cost starting 2015 can be ameliorated if a proper scheme of FCA can be deployed. While there is surplus in the FCA in 2013, it would allow us to make use of it to absorb the steep rise in fuel cost in 2015 partially. We also plan to run down the FCA to a very high level of deficit to further reduce the increase in FCC in 2015. With this arrangement, the FCC charge can be brought down significantly in 2015. This is only our projection of the volatile fuel prices and we would try every effort to reduce fuel cost as much as we can and avoid going to such a high level of deficit.

With all these measures, the FCC still faces significant increase pressure. Where possible, therefore, the above measures will be stepped up to further contain the impact.

The table below summarises the projected net tariff within the Plan period.

Year	2013	2014	2015	2016	2017	2018	Average
Total Tariff (¢/kWh)	106.6	110.8	123.9	133.7	142.6	148.5	
Increase		3.9%	11.8%	7.9%	6.7%	4.1%	6.9% p.a.

For 2014, the Basic Tariff will be increased to 88.4 cents/unit, as explained earlier, and the Fuel Clause Charge will remain unchanged at 22.4 cents/unit, giving a net tariff of 110.8 cents/unit, representing a 3.9% increase from 2013.

5. 2014 Tariff Components and Changes

Basic Tariff

The Basic Tariff was last increased in January 2012 and remains frozen throughout 2013. Despite local inflation, leading to rises in operating costs, the projected average increase per annum of CLP's total non-fuel operating expenses over the two year period 2012-2014 is around 3.9%.

A combination of lower than expected local electricity sales from the cooler weather, lower sales to Mainland China, continued cost pressures and investment to meet supply reliability and customer demand has contributed to the rapid depletion of the remaining funds in the Tariff Stabilisation Fund (TSF) balance, which is designed in the SCA to accumulate to provide funds to ameliorate tariff increases. By the end of 2013, this is forecast to contain just \$8m. For these reasons, we will increase the Basic Tariff by an average of 4.2 cents/kWh to 88.4 cents/kWh with effect from 1 January 2014.

The following table gives a summary of the factors that affect the 2014 Basic Tariff and their associated impact:

Factors affecting Basic Tariff for 2014		Tariff Impact (¢ / kWh)
(a)	Average Net Fixed Assets Investment to meet supply reliability and customer demand	+1.1
(b)	Increase in operating expenses	+2.0

	Including Depreciation, Government Rent & Rates, Nuclear Purchase, Material & Services costs etc, many of which are set through contract or accounting policies	
(c)	Increase in local electricity sales	-2.5
(d)	Decrease in sales to Mainland	+0.2
(e)	Tariff Stabilisation Fund	+2.5
	Discontinue depletion of TSF due to insufficient revenues to cover costs in 2014	+1.1
(f)	Maintain the TSF balance below 1% of the annual total revenue	
	Others (Change in Interest and Taxation etc)	-0.2
	Basic Tariff Adjustment:	+4.2

Fuel Clause Charge

CLP has worked hard to optimize the fuel cost while maintaining the safe and reliable supply service to our customers. We managed to bring the deficit forecast of HK\$ 1billion of the Fuel Clause Recovery Account (FCA) to a surplus of HK\$ 1.26 billion at the end of 2013, for the first time since 2006. This is result of lower coal price, more use of environmental coal, more gas supply from the depleting Yacheng gas supply and efficiency of our generating units.

For 2014, we maintain the level of FCC at current level. Any surplus of the charge over fuel costs would be credited to the FCA to prepare for the large surge in fuel gas required to meet the statutory emissions requirement.

The following table gives a summary of the factors that affect the 2014 Basic Tariff and their associated impact:

Factors affecting Fuel Clause Charge for 2014		Tariff Impact (¢ / kWh)
(a)	Increase in Fuel Price	+4.4
(b)	Correction for the over-/under-recovery of fuel cost in 2013	-4.9

(c)	Change in the Fuel Clause Account balance	+0.5
	Fuel Clause Charge Adjustment:	0.0

Rent & Rates Rebate

CLP made a commitment in 2011 to return to customers any repayments made by Government to CLP with respect to a claim of overcharging of rent and rates. CLP completed the return on 16th October 2013 of all the interim refunds received from Government by way of a special rebate at HK 2.1¢ /unit.

Overall Change

In summary, the overall 2014 tariff adjustment is an increase of 3.9%, below the current level of inflation, as the following table shows.

Tariff Component (¢/kWh)	2013 Tariff	Change	2014 Tariff
Average Basic Tariff	84.2	+4.2	88.4
Fuel Clause Charge	22.4	-	22.4
Average Total Tariff	106.6	+4.2 (+3.9%)	110.8

6. Tariff Structure

CLP currently has four tariff classes: Domestic Tariff, General Service Tariff, Bulk Tariff and the Large Power Tariff. Our long-standing policy is for our tariffs to reflect the actual cost of supply to each tariff group of customers and therefore to avoid cross subsidies. It is important to stress that tariff structure design has no effect on the profit to CLP shareholders and on the adjustment to Average Net Tariff each year.

CLP continuously consults with its customers and other key stakeholders on the design & operation of our tariffs. We consider a wide range of views, as well as international best practice appropriate for Hong Kong conditions. We expect this process to continue in 2014.

In responding to changing circumstances and feedback from customer groups and others, CLP has in the past amended the structure of its tariffs when the average tariff level is adjusted annually. For example, in 1996 we introduced an inclining block structure for domestic tariffs whereby higher consumption would be charged at a progressively higher unit rate. This was to encourage the efficient use of energy and also the lower blocks were used as a way of providing some protection for the smaller domestic customers with lower household incomes. Inclining tariff structures for domestic customers are now common in many modern cities world-wide.

In response to the Hong Kong community's opinions that a stronger message for energy saving is necessary, we have included in our 2014 Tariff Review a proposal to add a 7th block to our Domestic Tariff starting from 2100 units per month to steepen the incline of our tariff structure.

For the larger commercial customers in our Bulk Tariff and Large Power Tariff classes, we do not propose any change to the tariff structure in 2013. These customers have dedicated CLP Account Managers to provide specialist advice on better managing their energy consumption. In addition, Time-of-Use (TOU) and Demand Charges schemes are already provided to these customers for their active management of their usage and demand for electricity.

Support for Customers in Managing Electricity Costs

CLP will increase the new Energy Saving Rebates introduced in 2013 for low-consumption domestic & small business customers. These will continue apply to consumption of not more than 400 units per bill, with the size of the rebate being inversely linked to the size of the billed consumption level, to help reduce tariffs for this group of customers and encourage energy saving.

Total consumption per bill	Rebate level
1 to 200 kWh	13.8 cents per kWh
201 to 300 kWh	12.8 cents per kWh
301 to 400 kWh	11.8 cents per kWh

Some 33% (or about 700,000 in number) of residential customer bills and 43% (or about 133,000 in number) of small business customer bills are expected to qualify for this rebate. Depending on their consumption, these customers will not see an increase in 2014 tariff and may enjoy savings in their electricity bills.

Domestic Customers

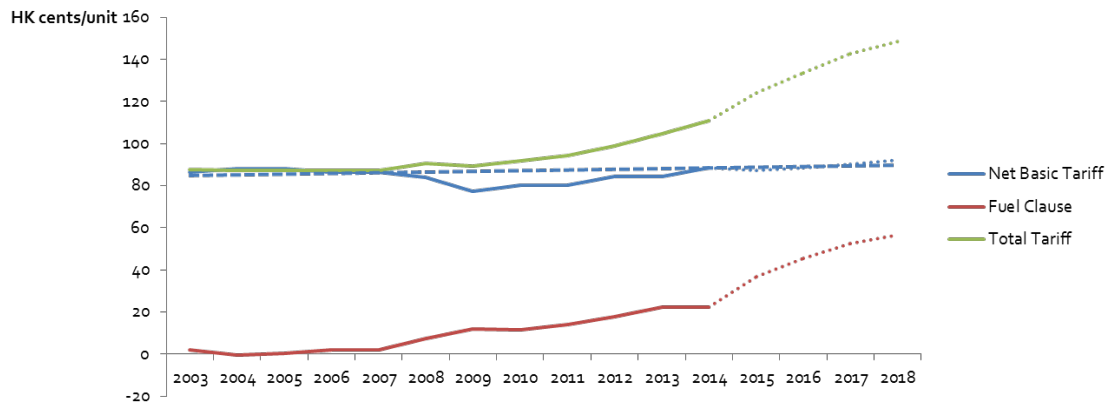
Customer per bill (kWh)	Tariff Impact (\$/month)	Approximate% (No. of customers)
0 – 400	No change or a reduction up to \$2	33% (700,000)
401 – 834	Increase no more than \$20	37% (800,000)
> 834	Increase more than \$20	30% (600,000)

Small Business Customers

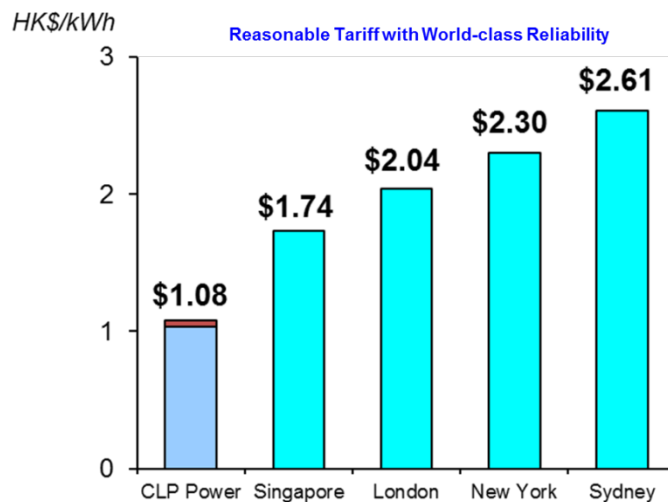
Customer per bill (kWh)	Tariff Impact (\$/month)	Approximate% (No. of customers)
0 – 400	No change	43% (133,000)
401 – 1,400	Increase no more than \$68	27% (84,000)
> 1,400	Increase more than \$68	30% (93,000)

Tariffs

We have made tremendous efforts to contain tariff increase. The average Basic Tariff increase within the Plan period is about 1.8% per annum. Fuel cost is a challenge which we all will need to face in exchange for a better environment.



Our tariff is competitive when compared with other metropolitan cities, and CLP will continue to explore further measures to mitigate tariff impact to customers to ensure the competitiveness of our tariff rates.



Remarks:
Comparison based on average monthly domestic consumption of 275kWh
Tariff and exchange rate at November 2013

■ CLP 2014 tariff adjustment

Meeting the challenge of the “Energy Trilemma” will continue well beyond this Plan and into the coming decades. CLP is confident that our Plan is the essential next step to ensure that we continue to work together to meet the concerns of the Government and the community at large.

Annexes

Annex A : Information related to the Development Plan

Annex B : Information related to Tariff Adjustments

Annex C : Fact Sheet (1) - CLP Energy Efficiency & Community Care Programmes

Annex D: Fact Sheet (2) - Generating Capacity & Reserve Margin

Annex E : Fact sheet (3) - Timeline for CLP importing Natural Gas

CLP POWER HONG KONG LTD

10 December 2013