

Environment



CLP is committed to the responsible use of resources and management of the impact of our business on the environment. We have assessed our impacts, and implemented a series of substantive measures in areas which are critical for CLP, our stakeholders and our environment.

Air quality and climate change remain as our top priorities and our initiatives in energy efficiency and renewable energy work to support improvement in these key areas.

Clean Fuel

The type and quality of fuels, as well as technologies we use, ultimately dictate the type and amount of pollutants emitted from

power generation. We recognise the importance of these factors and therefore take great care when making our fuel and technology choices. We are constantly seeking the right balance of fuel mix to manage emissions, while ensuring a reliable and affordable supply of electricity to our customers.

Natural gas is the cleanest burning fossil fuel. We are currently working to bring an LNG receiving terminal to Hong Kong. The EIA for the proposed LNG terminal went through public consultation between 27 December 2006 and 25 January 2007, followed by a 30-day review by the Advisory Council on the Environment. Our LNG website provides more detailed information and updates.

What's happening with natural gas supply in Hong Kong?



Professor William Barron
Institute for the Environment
The Hong Kong University of
Science and Technology

Gas reserves have a finite life. We currently receive our natural gas from the Yacheng gas field, located off Hainan Island, China. There are other small gas fields, which have been discovered in recent years in southern China, but these fields are relatively small and have already been targeted to supply other cities in China. We can only estimate when the field depletes as it will depend on the rate at which we use up the remaining reserve. Current estimates show that the Yacheng gas will be depleted early in the next decade at the rate needed to meet the 2010 emissions reduction targets. This is why it's so urgent to secure a timely replacement gas supply so we can continue to meet the demand for electricity and have environmental improvement in Hong Kong. To achieve this we are actively developing an LNG receiving terminal in Hong Kong so we can import gas from a variety of sources. This is the only option capable of fully meeting our gas supply requirements with respect to timing, security of supply, adequate volume and flexibility, and competitiveness.



Richard Lancaster
Commercial Director
CLP Power Hong Kong

CLP has been at the forefront of CSR, and is very open about what it does, but it remains a fact that even after all the "green measures" you have adopted, you are still the single largest polluter in terms of sulphur dioxide emissions. What steps are CLP taking to reduce emissions?

David Eldon
Chairman
The Hong Kong
General Chamber
of Commerce

Air quality is a regional issue. There is no question that within Hong Kong, power companies and transportation are the two major sources of local pollution. CLP, being the largest power company in Hong Kong, has and will continue to play an active part in cleaning up the air.

Since the 90s, we have introduced nuclear power and natural gas to our power generation, effectively reducing emissions by 50-80% despite an increase in electricity consumption of 80% during the period. Our Castle Peak Power Station was fitted with the best available technology at the time of construction in the 80s and subsequently installed with additional environmental enhancement equipment; and our increased use of ultra low sulphur coal has lowered SO₂ emissions substantially in recent years.

We are progressing with our plan of building an LNG terminal in Hong Kong, and aim to secure all the approvals from the Government within 2007 so that we can complete the facility by 2011. LNG has virtually no SO₂ and is the cleanest fossil fuel available at the moment. Increasing the use of gas to 50% of our fuel mix is therefore a critical step towards meeting Government's 2010 emissions reduction target. In addition, work is underway to retrofit Castle Peak Power Station with emissions control facilities, which will further reduce SO₂ emissions upon completion at the turn of the decade.

We all wish to see blue skies and fresh air, the sooner the better. This vision is achievable only with the collective efforts from all sectors and individuals in the community. CLP's objective in this area is to take forward the aforesaid initiatives actively and responsibly to bring about direct environmental benefits at the operational level. We have also joined other business concerns in Hong Kong in the pledge for the "Clean Air Charter", led by the Business Coalition on the Environment, and will continue with our series of public education programmes, such as the Energy Innovation Fund and PowerWise, to enhance the community's knowledge of energy conservation and innovation.



Betty Yuen
Group Director – Managing
Director Hong Kong

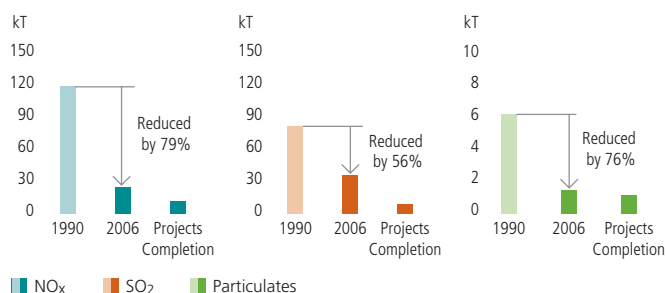
Air Quality

In support of the 2010 emissions reduction targets in Hong Kong, we continue to undertake the following initiatives:

- Retrofit of emissions reduction equipment – Environmental Protection Department issued an Environmental Permit to retrofit SO₂ and NO_x reduction equipment at four Castle Peak Power Station units
- Increased use of ultra low sulphur coal – Castle Peak Power Station will continue using ultra low sulphur coal secured from a five-year contract signed in 2005
- Proposed construction of an LNG terminal – This will help secure a long term supply of natural gas, and contribute to reducing SO₂ and particulate emissions by allowing us to use up to 50% natural gas in our fuel mix in the future.

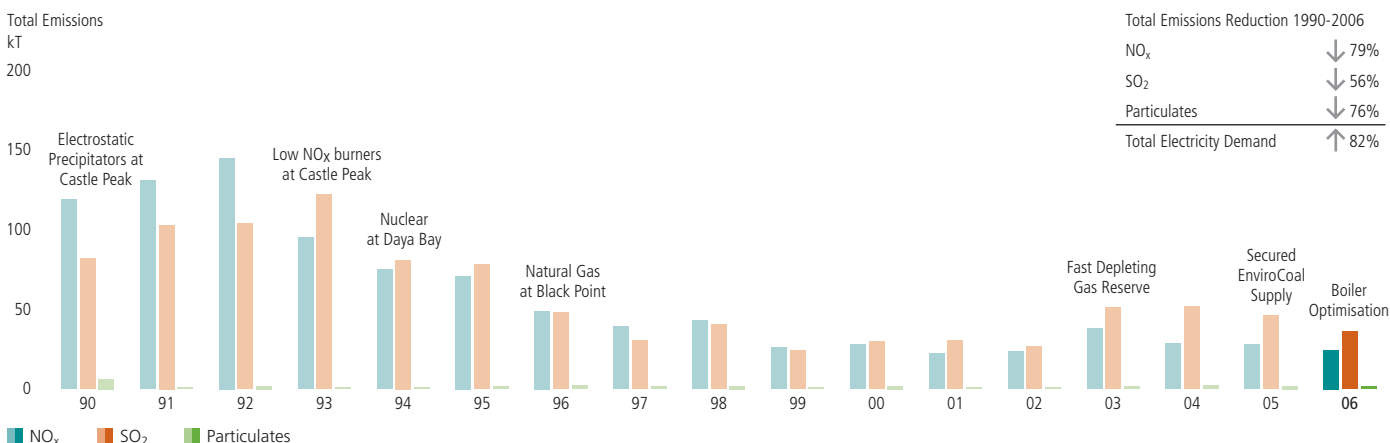
In 2006, our Hong Kong power stations saw an over 20% reduction in both SO₂ and particulates, and over 10% reduction in NO_x. These were due to the increased use of ultra low sulphur coal at our Castle Peak Power Station.

CLP's Air Emission Reductions in Hong Kong



Significant emissions reduction expected upon completion of LNG and emissions reduction projects

Total Air Emissions from CLP Power Hong Kong



What does CLP think of the government's proposal for emissions trading? Will you participate?



Simon H. Y. Lee
Vice President
Morgan Stanley,
Hong Kong

We welcome the government pilot emissions trading scheme as one of the options to facilitate air quality improvement in the region. We have exchanged views with the HKSAR Government on the implementation framework, details of which have recently been announced to the public, and we will work with the Government to explore the way forward. We understand a joint government management panel will be established to assist in further developing and administering working requirements that are most critical to the success of any fair and effective trading scheme. We have maintained an open and supportive stand throughout the development of the pilot scheme. Up to the present stage it is difficult to predict the volume of tradable credits and the smoothness of the process given it is still an initial experiment for cross boundary trading. Meanwhile, we as a responsible company have to take all prudent steps to ensure we are in compliance with the law in our emissions from generating plants. We have been progressing well with our programme to retrofit our coal-fired power station at Castle Peak with new emission control facilities which are targeted to come on stream during 2009-2011. These facilities will give us more direct control of the capability to reduce local emissions and contribute to the regional air quality goal. We shall make a further assessment later to determine when and how to make use of our available options, including a serious consideration of voluntary participation in emissions trading, to better serve our environmental goal and obligation for the benefit of the HKSAR.



S. H. Chan
Planning Director
CLP Power Hong Kong

Emissions from CLP's other power stations in 2006 were generally similar to the previous year. GPEC retrofitted new burners on one of its gas turbines, which lowered its NO_x emissions initially by approximately 50%. We plan to progressively upgrade the burners in the other two gas turbines based on outage opportunity.

There were two exceedances of licence limits of sulphur oxides at Ho-Ping. These exceedances occurred as a result of the use of coal straight from the ship without the opportunity of mixing with lower sulphur coal, due to rain conditions and prior damage to the coal domes. One of the coal domes is currently under reconstruction while the tenders for the other two domes have been issued.

There was one licence limit exceedance of particulate emissions at Yallourn, which was mitigated within 30 minutes.

To mitigate the exceedance of the licence limit for sulphur oxides emissions at Guizhou CLP Power, we awarded a contract for the Guizhou CLP Power FGD upgrade and started construction of the two units in 2006. The FGD upgrade is scheduled to be completed by the end of 2007.

Among our minority share facilities, we also experienced SO₂ and NO_x exceedance at Panshan. We will commence the retrofitting of FGD at Panshan in 2007. At Yire, we completed the installation of low NO_x burners to two of the four boilers at the power station. The remaining work will continue into 2007 to further combat the exceedance in NO_x. In Shandong, FGD retrofit works commenced at Shiheng II and we plan to issue tenders for retrofitting the other 3 power stations in 2007.

Climate Change

Climate change poses environmental, social and economic threats to our planet. There is strong evidence that climate change is

largely attributed to human activities and could have serious consequences such as sea level rise and greater frequency and severity of extreme weather events.

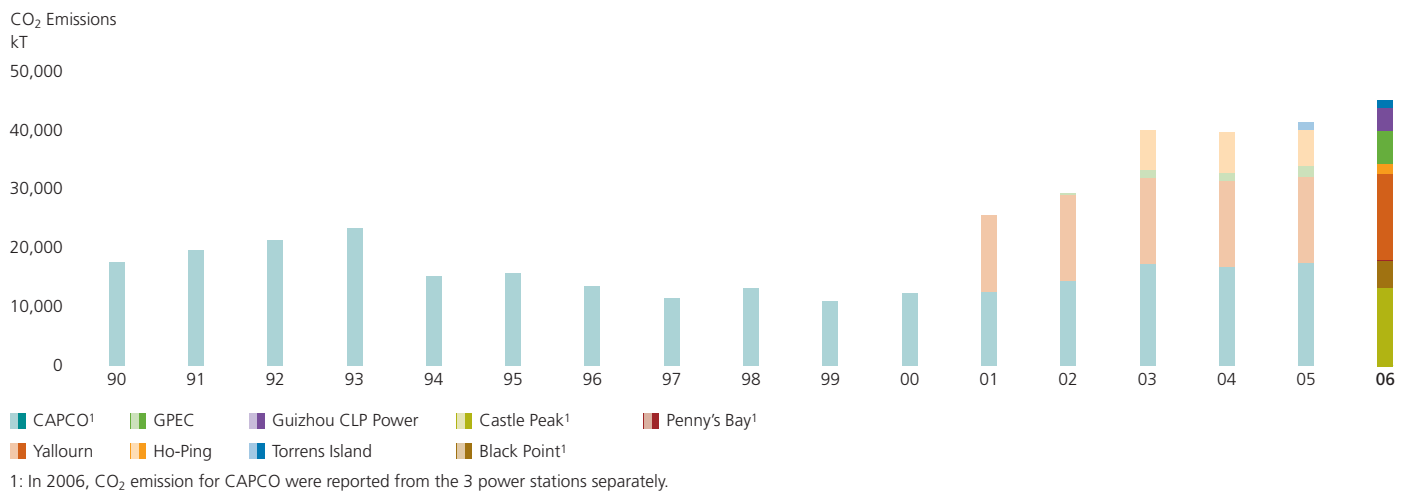
Climate change also poses risks to the energy sector. The electricity business may face interruptions to power supply networks due to floods and storms, higher insurance costs, and more stringent regulations. For example in Australia, the availability of cooling water, which is essential for operating our power stations, may be impacted by water scarcity and droughts, either directly as existing water resources are diminished, or because of reallocation by governments to urban uses.

CLP's Board of Directors approved a Climate Strategy framework for the Group in December 2005. In implementing this framework in 2006, we:

- conducted a climate risk assessment for every investment we considered
- increased the capacity of our renewable energy in our power generation portfolio from 1.4% in 2005 to 2.6% in 2006
- committed as the majority investor in the 330MW Jiangbian hydro project in Sichuan in the Mainland
- applied high-efficiency power generation technologies in new project proposals
- progressed plans to use lower-emitting fuels in our existing operations, such as the planned LNG receiving terminal in Hong Kong
- launched our Group-wide greenhouse gas inventory
- received approval from the United Nations Executive Board to register a Guangdong Nanao wind project as a Clean Development Mechanism (CDM) project and started the process of formal validation audit by a United Nations designated entity for another 4 projects
- continued our active participation in climate-related discussions and debates.

We report our major greenhouse gas emissions annually. Our reported Group total CO₂ emissions in 2006 from fuel combustion increased as a result of the addition of Guizhou CLP Power, reporting its CO₂ emission for the first time. In Hong Kong, CLP's emissions of CO₂ per kilowatt hour(kWh) electricity sold in 2006 (including imported nuclear power) was 0.53kg CO₂/kWh.

CLP Group CO₂ Emissions from Direct Combustion (1990-2006)



In 2006, as a part of our climate strategy, a Group-wide greenhouse gas emissions inventory reporting guideline was developed to follow internationally recognised reporting and calculation methods, including "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard". We are now monitoring all Scope 1 and Scope 2 emissions from our power generation, gas storage and transmission and distribution facilities. Starting in 2007, we will also include emissions from our retail businesses.

We expanded our GHG inventory to include methane (CH₄), nitrous oxide (N₂O) and sulphur hexafluoride (SF₆) in 2006. Our inventory also includes fugitive emissions as well as emissions from our vehicle fleet and our use of electricity in offices. We do not include hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) because we do not emit significant quantities of these gases.

The world is waking up to climate change. CLP's target for 5% renewable energy capacity doesn't seem like enough. What about the other 95%?



Luciana Wong
Immediate Past Chairman of The Chartered Institution of Water and Environmental Management Hong Kong and Member of The Strategy Sub-committee, Council for Sustainable Development, HKSAR Government

Climate change is indeed one of the biggest challenges to sustainable development. The World's leaders are struggling to find a solution to limit the extent of global warming. The Kyoto Protocol is perhaps the most significant step to be taken so far, with the general objective of a 5% reduction below the level of emissions in the reference year 1990. Signatories are struggling to meet that target and it is already evident that some will miss it. But the Kyoto Protocol is the first step in broad international engagement to solve the global problem of climate change.

CLP's voluntary renewable energy target is our first step on that journey which brought a whole new dimension to our business. But we envision much more. Energy efficiency for example is an underutilised resource. And new technology, some of which is still on the drawing board today, will allow us to use fossil fuels with dramatically lower emissions. I also believe nuclear power has to be back on the table.

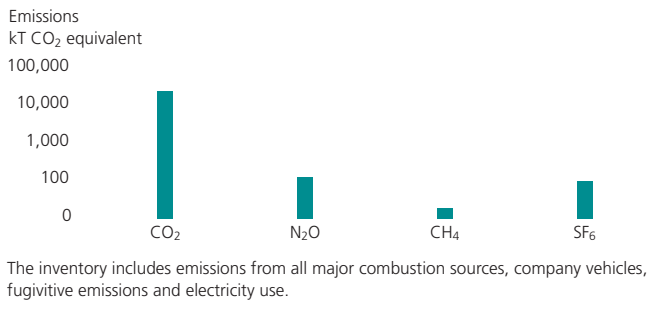
In order for all of this to happen, there must be a policy framework, a "post-Kyoto agreement", that will recognise the value of avoiding emissions, and that will address the inequities between developed and developing countries. Economies that have benefited from huge quantities of unregulated emissions in the past should bear a greater share of the responsibility for controlling emissions in the future.

Managing climate change requires collective efforts. In the CEO's Review of our Annual Report, I have talked in greater detail about how CLP plays its part. [AR](#)



Andrew Brandler
Chief Executive Officer

CLP Group Greenhouse Gas Inventory 2006



While climate change is a significant threat to the industry, being pro-active on the issue can create new market opportunities for CLP. Customers show an increasing interest in purchasing renewable energy and in utilising energy efficiency services. Through TRUenergy in Australia, we offer a range of greenhouse gas-friendly retail electricity products, accredited under the "GreenPower" accreditation scheme. At the end of December 2006, there were approximately 24,500 residential and 1,000 commercial customers on TRUenergy green power products. During 2006, TRUenergy Green sales amounted to more than 23,000 MWh.

We recognise that this is just the start of our efforts to address the issue of climate change. We will continue to apply our climate strategy across our business operations.

Renewable Energy

CLP is committed to developing renewable energy and see it as an important component of our future business. In December 2004, we announced our Group target of increasing the capacity of renewable energy in our power generation portfolio to 5% by 2010.

To deliver on this target, CLP Renewables, a separate entity dedicated to developing CLP's renewable energy portfolio, partnered with China Huaneng Group and Guangdong Electric Power Development Company to develop wind farms in China. CLP also entered into a 50/50 joint venture with Hydro Tasmania in 2005 to form Roaring 40s, to develop renewable energy projects across the Asia Pacific region.

To date, most facilities in CLP's small renewables portfolio are developed as greenfield projects. Thus CLP is making a direct contribution to an increase in the total renewable capacity in the region.

In 2006, we increased our investment in small renewables, adding 118.6MW to our portfolio, bringing our total to 285.7MW on an equity basis. As at year end 2006, 241MW (Gross) of CLP's renewables portfolio have been commissioned for regular operation, with a further 368MW (Gross) committed for construction. As at end of 2006, our renewables portfolio reached 2.6% of our total generating capacity.

- (Left) Huaiji Hydro power project in China
- (Right) Erection of wind turbine at Weihai Wind Farm in China



With increasing public demand for action on climate change, what is TRUenergy doing to promote the switch to clean, renewable energy sources?



Geoff Mabbett
Chief Executive
Sustainability Victoria,
Australia

TRUenergy recognises its responsibility to promote energy and resource efficiency in our operations and is passionate about helping Australians make a switch to clean, renewable energy sources. We offer a range of green energy products, all of which are accredited and are independently verified by the National GreenPower accreditation scheme. This guarantees we will purchase clean, renewable energy on our customer's behalf. Following extensive consumer research, we have also recently released a new product, "TRUenergy Go Green", a competitively priced electricity plan that provides households with the option of switching to 100% renewable energy at no extra cost.

TRUenergy is one of the few Australian energy retailers to offer only "GreenPower" accredited products. In 2006, a survey by national environmental groups rated our TRUenergy Wind product as a market leader.

In 2006, we also partnered with leading environmental action group, Easy Being Green, in a joint climate change awareness scheme to encourage householders and businesses to significantly reduce their greenhouse gas emissions. Following the promotion, nearly one million New South Wales residents agreed to install energy efficient light bulbs and shower heads and a further 3,000 residents agreed to switch to 100% renewable energy.

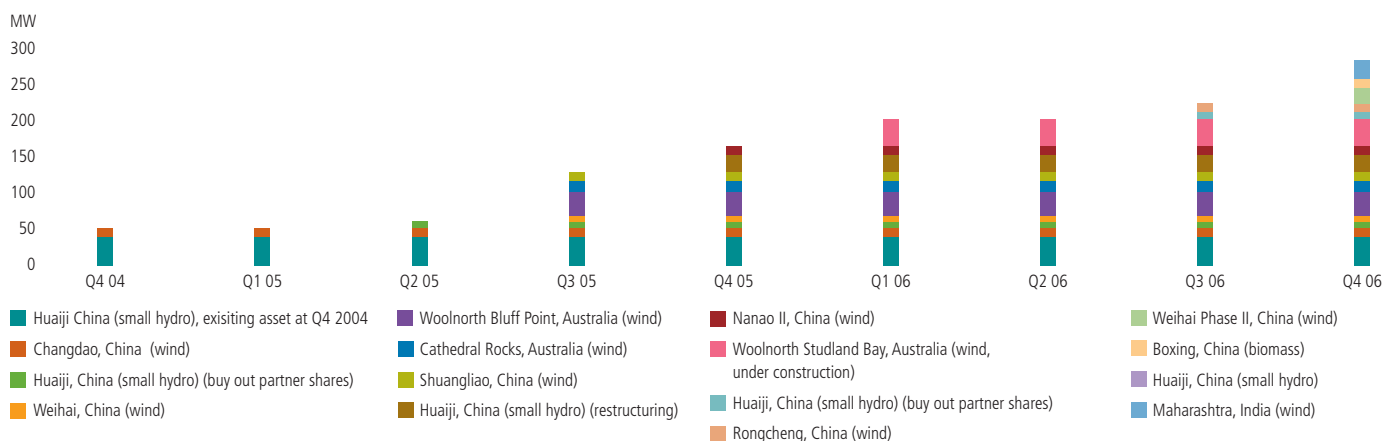


Richard McIndoe
Group Director –
Managing Director
Australia

Growth of CLP's Renewable Energy Portfolio

- Q1 2006
 - Began work on the feasibility study for a potential 180MW wind farm off Sai Kung, Hong Kong in collaboration with UK wind farm developer Wind Prospect. The EIA commenced upon receipt of the study brief from the Government in May 2006.
 - Commenced construction of a 75MW wind farm at Woolnorth Studland Bay in Tasmania.
- Q2 2006
 - Started commercial operation of the 27MW Changdao wind farm in Shandong province on 1 May 2006. The wind farm is connected to the Shandong provincial grid serving Yantai City.
- Q3 2006
 - Further increased our interest in Huaiji to 84.9% through a successful restructuring of the Huaiji shareholding with the local partner.
 - Established a joint venture with Guohua Energy for the development of a 49MW Greenfield wind power project at Rongcheng City in Shandong province.
 - Obtained approval for Guangdong Nanao 45MW wind project co-owned with China Huaneng Group as a CDM project.
- Q4 2006
 - Completed construction works and erection of wind turbines of the 20MW Weihai Phase I wind farm. Commenced test and commissioning with operation of the wind farm targeted for 2007.
 - Commenced construction works of 49MW Weihai Phase II wind farm.
 - Signed a joint venture agreement for a 6MW plus 75tonnes/hr (steam) combined heat and power biomass project in Boxing, Shandong. CLP holds 79% interest.
 - Signed a development agreement with Enercon India for the development of a 50MW wind farm in Maharashtra, India. The project will be 100% owned by Roaring 40s.

CLP Renewable Energy Equity Profile



In Hong Kong, we commenced EIA and hardware procurement for a commercial scale wind power demonstration project in 2006.

We believe that hydro power is an important renewable energy resource. In 2006, CLP committed as the majority investor in the 330MW Jiangbian hydro project in Sichuan province in Chinese Mainland. Through CLP's indirect ownership interest in EGCO, CLP's renewables portfolio also includes a 2.8% equity interest in the 1,070MW Nam Theun 2 transbasin hydro project currently under construction in Laos¹.

CLP and investment partners are assessing the opportunities to take forward renewables as Clean Development Mechanism (CDM) projects under the Kyoto Protocol. CDM projects can create Certified Emission Reduction credits (CERs) between now and 2012. CERs can be sold to countries which have binding obligations to reduce their greenhouse gas emissions. CERs therefore can contribute to the sustainability of our renewables projects as well as to the mitigation of global climate change.

In 2006, a Guangdong Nanao 45MW wind project (co-owned with China Huaneng Group) was approved as a CDM project by the UN Executive Board.

Our renewable energy projects in China submitted and pending CDM approval include:

- Guangdong Xinwan 16MW hydro project (co-owned with a local enterprise, Huilian)
- Shandong Changdao 27.2MW wind project (co-owned with China Huaneng Group)
- Shandong Weihai 19.5MW wind project (co-owned with China Huaneng Group)
- Jilin Shuangliao 49.3MW wind farm (co-owned with Datang through Roaring 40s)

We also have plans for a biomass project in Shandong Boxing to be developed as a CDM project.

¹ Large hydro projects are not being counted towards our 5% target because we did not include large hydro capacity in our benchmarking when we set the target.

“TRUenergy Go Green”

We offer our residential customers a “TRUenergy Go Green” 100% renewable energy package which features green energy at no extra cost. Green energy is made up of 10% GreenPower from accredited “new” renewable sources and 90% from “existing” renewable sources. We also offer 100% accredited renewable energy from wind power, as well as other blends of renewables.

Energy Efficiency and Conservation

Energy efficiency means doing more with less. In our business, it can save fuel and avoid unnecessary emissions. CLP undertakes projects every year to improve energy efficiency and/or conserve water and other resources. We will continue our efforts in achieving higher fuel efficiency by using new technology.

“Easy Being Green”

TRUenergy participated in the “Easy Being Green” initiative to distribute free Climate Change Starter Packs which contain energy saving light bulbs and a water-saving showerhead for electric boilers. By installing these packs, recipient households are able to save A\$150 on both their electricity and water bills and an average of 21,000 litres of water annually. One tonne of greenhouse gas emissions is also avoided.

TRUenergy also launched in 2006 new education and counselling initiatives to help around 18,000 customers reduce their energy use and save on bills.

Combined Cycle Gas Turbine

Combined Cycle Gas Turbine (CCGT) technology is recognised as being safe, efficient and clean. CCGT uses natural gas as the primary fuel to drive the gas turbine to produce electricity. Energy in the gas turbine exhaust is transferred to a steam cycle producing additional electricity. The thermal efficiency of CCGT (42–50%) is significantly higher than that of conventional pulverized coal power plants (32-37%). CLP was a pioneer in bringing CCGT to Hong Kong in our Black Point Power Station. We also use CCGT at GPEC in India and will install it for our Tallawarra power plant, now under development in Australia.

- (Left) Wan Po Road energy efficient substation in Hong Kong
- (Right) Solar panel for rainwater recycled irrigation system on the rooftop of Wan Po Road Substation in Hong Kong





→ (Left) Skywoodland model for Hong Kong
 → (Right) Fangchenggang supercritical plant under construction in China

Energy Efficient Substations

Energy conservation is the main theme for the design of our green substations in Hong Kong. The elimination of mechanical ventilation fans and the use of energy efficient lighting designs reduce operation and maintenance requirements for power. With this approach, the ventilation and lighting energy consumption at Wan Po Road Substation is 30% lower than existing conventional substations.

Our energy efficient substations include the following environmental features:

- Low noise transformers with natural cooling design
- Oil free cables and switchgears
- Wind catch roof to enhance natural ventilation for transformer heat dissipation – devised using the Computational Fluid Dynamics Modeling technique
- Utilisation of daylight by installation of window glazing throughout the building where practical
- Landscape roof top and design to blend in with the environment
- Best practice in green design and construction based on Life Cycle Analysis – an optimal design and assessment tool that appraises life cycle cost and environmental performance of building materials and components.

We have developed green substations at Wan Po Road, Sham Mong Road, So Kwun Wat and Mai Po. Our Wan Po Road substation has an integrated system of solar powered rainwater recycling for irrigation.

“Go Greening” Initiative

As part of our effort to promote energy conservation and greening, we are collaborating with the University of Hong Kong to develop the first Skywoodland on the rooftop of the equipment building at

the Sham Mong Road substation. The tree-lined rooftop will reduce temperature significantly and save energy. This innovative project is scheduled to be completed in 2008.

Torrens Island Reverse Osmosis Plant

In April 2006, TRUenergy announced the A\$300,000 water treatment plant upgrade at Torrens Island power station that will reduce wastewater discharged from the Torrens Island power station into Barkers Inlet by 90%. Torrens Island Power Station in Australia saves both money and town water by treating underground bore water for use in our facility. Town water costs A\$1/ kilolitre (kl) more than bore water, but we can only utilise bore water if it is pre-treated. The upgrade of our reverse osmosis water treatment plant not only allows us to use bore water at all times, but will produce a higher quality of water and further reduces chemical use and the amount of effluent discharged.

Fangchenggang Supercritical Plant

We are using high-efficiency supercritical steam technology for our coal-fired power station now under construction at Fangchenggang in the Chinese Mainland. It utilises advanced materials to withstand the higher supercritical temperature, which results in higher plant efficiency. The two 600MW steam turbine generating units will have specific fuel consumption of 296.8 g/kWh. The plant’s auxiliary power consumption represents only 5.86% of generation (including consumption by desulphurisation equipment). Thus the overall energy efficiency of the plant, 41.87%, will be well above that of traditional pulverised coal power stations.

Energy Conservation Charter

In July 2006, we signed the “Energy Conservation Charter 2006 – Suitable Room Temperature” in Hong Kong, pledging to save energy in our offices and to adhere to the principle of “Use if Required, Save if Possible”.

Awards and Recognition

Corporate Developer of the Year (Renewables), *Euromoney and Ernst & Young*

One of the “Best in Class” in Carbon Leadership Index, *Global FT500 Carbon Disclosure Project Report*

Best Green Power Project in Asia (Wan Po Road Substation, Hong Kong), *Asian Power Magazine*

One of the Best GreenPower Providers (TRUenergy), *Annual Green Electricity Watch Report, Australia*

Project Award for Environmental Monitoring (Anshun), *Guizhou Province Economic and Trade Commission, China*

Resources Conservation Environmentally Friendly Corporation (Sanhe), *Sanhe Municipal People’s Government*