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Notable Energy Developments – Hong Kong, China

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46th APEC Energy Working Group Meeting
Statement on Notable Energy Developments

Hong Kong, China

(1) **Building Energy Code**

The Electrical and Mechanical Services Department of the Hong Kong Government has been running the Hong Kong Energy Efficiency Registration Scheme for Buildings to encourage voluntary compliance with the Building Energy Code (BEC) since 1998. The BEC provides for the minimum energy performance standards on four key building services installations, namely lighting, air-conditioning, electrical and lift & escalator installations, and also a performance-based approach to allow innovative design of energy efficient installations in buildings as an alternative for compliance with the prescriptive requirements. With the enactment of the Buildings Energy Efficiency Ordinance (BEEO) which came into full operation in September 2012, the relevant building services installations in newly constructed buildings and existing buildings undergoing major retrofitting works are required to comply with the BEC (2012 edition). It is expected that for new buildings, it will result in energy savings of 2.8 billion kWh, or reduction in carbon dioxide emission of 1.96 million tonnes, in the first decade. The BEEO also requires commercial buildings to carry out energy audits in accordance with the Energy Audit Code every ten years.

(2) **Energy Efficiency Labelling Schemes**

The voluntary Energy Efficiency Labelling Scheme (EELS) currently covers 20 types of household and office appliances including refrigerators, room coolers, washing machines, electric clothes dryers, non-integrated compact fluorescent lamps, electric storage water heaters, electric rice-cookers, dehumidifiers, televisions, multifunction office devices, photocopiers, printers, LCD monitors, electronic ballasts, computers, domestic gas instantaneous water heaters, fax machines, bottled hot/cold water dispensers, LED lamps and induction cookers. This voluntary scheme also covers Petrol Passenger Cars. As of end September 2013, more than 1,730 models have been registered under the voluntary EELS managed by the Government.

To further encourage the use of energy-efficient products, the Energy Efficiency (Labelling of Products) Ordinance was enacted in May 2008 to implement a mandatory EELS. The mandatory scheme currently covers room air conditioners, refrigerating appliances, compact fluorescent lamps, washing machines and dehumidifiers. These five types of prescribed products under the mandatory EELS are required to be listed models with reference numbers and bear energy labels.

(3) Energy End-use Database

The Government has been maintaining and updating its energy end-use database. The database provides a useful insight into energy consumption patterns of different sectors, sub-sectors and end uses in Hong Kong. The Hong Kong Energy End-use Data 2013, using 2011 basic data, is available for public access on the website of the Electrical and Mechanical Services Department (<http://www.emsd.gov.hk>). From 2012 edition, local energy consumption of renewable energy is included.

(4) Renewable and Clean Energy

To support the development of renewable energy (RE) in Hong Kong, the Government has put in place provisions under the “Scheme of Control Agreements” of the two power companies to encourage the adoption of RE and investment in RE facilities. In the Agreements, the power companies will enjoy a higher permitted rate of return of 11% for their investment in RE facilities as contrasted with 9.99% for ordinary investment. They will also be offered a bonus in the range of 0.01 to 0.05 percentage point in permitted return depending on the extent of RE usage in their electricity generation. One of the power companies commissioned in July 2010 its photovoltaic systems at Lamma Power Station. Its system capacity is 1MW. The other power company commissioned in 2012 its commercial scale RE system on Town Island, with a capacity of up to 200kW. Both power companies are studying the feasibility of developing offshore wind farms.

To promote wider use of RE in the community, the Government has been providing tax incentives for RE installations since 2008. To help the public better understand the technical issues and the application procedures in respect of grid connection of RE power systems with rating up to 1 MW, the

Government has published on its website a set of technical guidelines. It has also launched a thematic website "HK RE Net" to provide technical details and information about RE.

The Government signed a Memorandum of Understanding (MoU) on energy co-operation with the National Energy Administration in August 2008 to ensure continuous supply of natural gas and nuclear electricity to Hong Kong for the next two decades. The implementation of the MoU on energy co-operation ensures the provision of more clean energy for Hong Kong, which will contribute significantly to the improvement of air quality and the reduction of carbon dioxide emissions.

Furthermore, the Government promotes turning waste to energy. The sludge treatment facility under construction, for instance, will be equipped with facilities to turn thermal energy generated from incineration into electricity. Apart from meeting the electricity demand of the treatment facility, the surplus electricity will be uploaded to the power grid.

(5) District Cooling System at Kai Tak Development

The Government has implemented its first-of-its-kind district cooling system (DCS) at the new Kai Tak Development area as one of the measures to promote energy efficiency. It has a designed cooling capacity of up to 284 Mega-watt and will supply chilled water to non-domestic developments in the area for centralised air-conditioning. The project is being developed in phases, and commenced operation in early 2013.

(6) Wider Use of Fresh Water in Cooling Towers for Air-conditioning Systems

Water-cooled air-conditioning systems using fresh water cooling towers are generally more energy-efficient than air-cooled systems. A voluntary Fresh Water Cooling Towers Scheme has been launched since 2000 to promote wider use of fresh water in evaporative cooling towers for air-conditioning systems of non-domestic buildings in designated areas in Hong Kong. As at end August 2013, 482 cooling towers installations (involving 1,614 nos. of towers) have been completed and put into operation. It is estimated that these installations could save up to 305 million kWh of electricity consumption and reduce carbon dioxide emission up to 213,000 tonnes per annum.

(7) **Energy Consumption Indicators and Benchmarks**

The energy consumption indicators and benchmarks were developed for different domestic flats in residential sector, hospitals, clinics, universities, schools, hotels, offices and different commercial operation premises in the commercial sector, as well as private cars and light, medium and heavy goods vehicles in the transport sector. The periodically updated indicators and benchmarks enabled stakeholders to compare their energy efficiency performance among themselves in the same energy consuming group, and hence to identify and implement improvement measures. The indicators as well as on-line benchmarking tools are available at the Electrical and Mechanical Services Department website.

(8) **Energy Saving Programmes in Public and Private Sectors**

The Government continues to promote environmental protection and energy conservation in government buildings. To this end, the Government promulgated a comprehensive target-based green performance framework (the framework) for new and existing government buildings in April 2009, and set targets on various aspects of environmental performance. The Government also aims to achieve a 5% saving on the total electricity consumption in government buildings from 2009-10 to 2013-14 after discounting activity changes, using the electricity consumption in 2007-08 as the baseline. In 2011-2012, the saving in electricity consumption in Government buildings on this basis reached 8.3 per cent, which exceeded the original target.

The Government has allocated from 2009-10 a sum of \$450 million to improve the green performance of government buildings such as installation of energy efficient lighting systems, retrofit plumbing with water saving devices and incorporate energy efficient features in air-conditioning, lift and escalator systems. Furthermore, the Government has allocated an additional \$130 million in 2009-10 to carry out works to enhance energy efficiency in government buildings and public facilities.

Moreover, with an allocation of \$450 million from the Environment and Conservation Fund, the Buildings Energy Efficiency Funding Schemes were launched in April 2009 to promote building energy efficiency by providing building owners with subsidies on a matching basis to carry out energy-cum-carbon audits and projects to upgrade the energy efficiency

performance of building services installations. The 3-year schemes, which ended on 7 April 2012 as scheduled, have been well received by the community and have created business opportunities to electrical, mechanical, building services and environmental and related industries. Over 6,400 buildings, or more than one seventh of the total building stock in Hong Kong, have received subsidies under the Schemes. The estimated annual energy saving by the energy efficiency projects is about 180 million kWh, equivalent to a carbon dioxide emission reduction of about 126,000 tonnes.

(9) Alternative Fuel Vehicles

In Hong Kong, almost all the diesel taxis had been replaced by liquefied petroleum gas (LPG) models. In August 2002, the Government launched a voluntary incentive scheme to encourage owners of existing diesel public and private light buses to replace their vehicles with LPG or electricity models. The scheme was completed in end 2005. As at September 2013, there are about 3,500 LPG light buses in operation, representing about 51 percent of all public/private light buses in Hong Kong. Taking the leading role in the use of green vehicle, the Government has introduced in 2005 petrol-electric hybrid vehicles in its vehicle fleet. In addition, the Government is continuously identifying possible ways to encourage vehicle owners to use cleaner alternative fuel vehicles.

The Financial Secretary announced in the 2010-11 Budget Speech a host of measures to promote the use of electric vehicles in Hong Kong. As at September 2013, there were 520 electric vehicles on Hong Kong roads and over 1000 charging stations across the territory for public use, of which 500 charging stations were installed in government car parks. The 10th quick charger will also be put into service in late 2013. A number of electric vehicle models have been rolled out on the market. Subject to the availability of suitable models on the market and the operational needs of bureaux and departments, the Government will give priority to electric vehicles when replacing government vehicles. As at August 2013, 138 electric vehicles were employed in the Government fleet.

(10) Carbon Auditing

Energy consumption at buildings accounts for over 60% of the total

greenhouse gas (GHG) emissions in Hong Kong. To facilitate users and managers of buildings to calculate the amount of GHG emitted as a result of the operations of their buildings and to assist them in identifying rooms for improvement, a set of carbon audit guidelines for buildings in Hong Kong was launched in July 2008. At the same time, the Government commenced the "Green Hong Kong • Carbon Audit" campaign to engage the community to conduct carbon audits on their buildings. So far, 320 organizations from various sectors have joined as "Carbon Audit • Green Partners".

To further demonstrate the Government's determination in reducing the local carbon footprint, we are taking the lead in carrying out energy-cum-carbon audits at about 120 government buildings and public facilities in the three financial years from 2012-13 and 2014-15. In 2013, audits were conducted for 58 government premises, such as public markets, swimming pools, sports centres, and government schools. Funding support is also being provided by Environment and Conservation Fund to engage the business sector in a "CarbonSmart" campaign, which includes a funding scheme to incentivise some 200 local companies to conduct energy-cum-carbon audits. To encourage private sector companies to adopt regular carbon auditing practice, the Government is setting up a dedicated webpage to facilitate listed companies to disclose their carbon audit findings and to share their carbon management experiences and practices.