

For discussion on  
23 April 2007

**LEGISLATIVE COUNCIL  
PANEL ON ENVIRONMENTAL AFFAIRS**

**Conservation of Energy**

**PURPOSE**

This paper reports the progress of various energy conservation initiatives proposed in the motion passed by the Legislative Council on the subject in December 2005.

**ENERGY CONSERVATION POLICY**

2. Total energy consumption at end-use level in Hong Kong grew at an average rate of 1.2% per annum in the last decade. In 2006, the total electricity consumption in Hong Kong was 40,300 Gigawatt hours (GWh).

3. Our policy objective is to increase and sustain conservation of energy in order to reduce the growing trend of energy use. To achieve this objective, the Energy Efficiency Office was set up under the Electrical and Mechanical Services Department (EMSD) in 1994 to spearhead and coordinate Government's efforts to promote energy efficiency and conservation. Government bureaux and departments have been taking the lead in energy conservation. We have also developed standards and guidelines and implemented different programmes to promote our community's understanding and awareness and to take appropriate action in achieving energy saving.

**ENERGY EFFICIENCY OFFICE OF THE ELECTRICAL AND MECHANICAL SERVICES DEPARTMENT**

4. Over the past 13 years, the Energy Efficiency Office of the EMSD has been implementing a range of programmes and initiatives to promote energy saving, including -

(a) implementing a number of voluntary energy efficiency registration schemes such as the Hong Kong Energy Efficiency Registration Scheme for Buildings and the Energy Efficiency Labelling Scheme (EELS);

- (b) promoting effective energy management methods, such as conducting energy audits, implementation of energy saving management measures and use of energy saving equipment;
- (c) introducing energy saving technologies to the public;
- (d) promoting water-cooled air-conditioning systems;
- (e) establishing energy end-use database and energy consumption benchmarks and indicators to monitor energy uses in Hong Kong and to assist in the formulation of energy conservation initiatives and public education programmes; and
- (f) organizing various public education and promotional activities.

5. The Government has also established an Energy Efficiency and Conservation Sub-committee under the Energy Advisory Committee since 1996 to advise the Government on energy conservation initiatives. The Sub-committee is chaired by a non-official member and its membership comprises representatives from the relevant government departments, two power companies, academic, and architectural, surveying and engineering sectors.

6. According to the statistics of the Asia-Pacific Economic Cooperation, the per capita electricity consumption in Hong Kong is lower than many countries at a similar stage of economic development (Annex). However, there is no room for complacency and we must continue our efforts to further enhance energy efficiency in Hong Kong. The following sections provided more details on the different initiatives we have implemented to promote energy conservation.

## **ENERGY EFFICIENCY WITHIN THE GOVERNMENT**

7. The Government has pledged to reduce our power consumption by 6% between 2002/03 to 2006/07 (i.e. 1.5% per year). With the concerted efforts of bureaux and departments, we have already reduced our electricity consumption by 5.6% between 2002/03 and 2005/06, which is equivalent to an electricity saving of 120 GWh and a reduction in carbon dioxide emissions of 84,000 tonnes annually. We are well on our way to meet the 6% target in 2006/07.

8. In the 2005/06 Policy Address, the Government has further pledged that all Government office buildings should achieve a 1.5% reduction in electricity consumption starting from January 2006. Based on preliminary data, the electricity consumption of major Government office buildings has reduced by 2.9% in 2006.

9. Since 1993, Government departments have appointed Green Managers to coordinate green management matters, including energy conservation initiatives. In addition, energy wardens have also been appointed to oversee and ensure the implementation of various energy saving measures within their departments. Green management workshops and a web-based bulletin board are also used to disseminate energy saving information and facilitate experience sharing. An internal circular was issued in July 2006 to further promulgate green management practices within the Government.

10. To demonstrate our commitment to improve air quality, the Government endorsed the Clean Air Charter initiative led by the business community. An internal circular was promulgated in January 2007 to provide guidance to bureaux and departments on fulfilling the Charter's commitments, including the requirement to adopt energy efficient measures in their operations. Departments are required to report progress of their initiatives in their annual environmental reports.

## **BUILDING ENERGY EFFICIENCY**

11. The Government has conducted energy audits and re-audits in over 200 major Government venues. Energy saving projects (such as retrofitting of energy efficient lightings, installation of automatic lighting on/off control systems, installation of variable speed drives, replacement of air-cooled air conditioning systems with water-cooled ones) have been implemented to reduce the electricity consumption in these buildings as far as practicable. In addition, we have issued a technical circular in November 2005 to require all works departments to apply energy efficient features in new Government buildings and retrofit projects where feasible. All new Government buildings and retrofit projects are also required to fully comply with the Building Energy Codes issued by EMSD.

12. Planting on the rooftop could attenuate urban heat island effect, improve the effectiveness of heat insulation facilities, and hence reduce the energy consumption for air-conditioning. Rooftop planting would also enhance visual amenity. The 2006/07 Policy Address stated that the

Government would adopt the concept of green roofing whenever practicable in the design of new buildings. Since 2001, about 50 Government buildings have already incorporated rooftop planting or flat roof landscaping while another 30 projects are under planning or construction. Architectural Services Department has recently completed a consultancy study on Green Roof Application in Hong Kong. A seminar was held on 9 March 2007 to share the findings with professional institutes.

13. The Housing Department also initiated in 2001 the application of Micro-climate Studies in the planning and design of public housing developments using latest proven technologies. The studies cover core topics on wind environment, natural ventilation, daylight and solar heat gain, as well as other special topics such as urban heat island effect, pollutant dispersion, etc. Through these studies, a holistic approach could be adopted to optimize the development potential and enhance the built environment in public housing developments. Over 25 public housing projects have adopted the studies so as to provide cleaner and greener environment for public housing tenants.

## **MANDATORY ENERGY EFFICIENCY LABELLING SCHEME**

14. To further encourage the use of energy efficient products, we propose to introduce a mandatory EELS by way of legislation. The Energy Efficiency (Labelling of Products) Bill would be tabled to the Legislative Council for first reading and commencement of second reading debate on 18 April 2007.

15. Three types of electrical appliances, namely room air conditioners, refrigerating appliances and compact fluorescent lamps, will be included in the initial phase of the mandatory scheme. Manufacturers or importers of the three specified products are required to conduct tests on their products' energy efficiency performance and submit the relevant product information to EMSD. All suppliers (including wholesalers and retailers) can only supply the three specified products that bear the energy labels.

16. With the implementation of the mandatory EELS for the three specified products, EMSD estimates that an additional electricity saving of 150 GWh per year can be achieved. This is equivalent to a monetary saving of \$135 million in electricity bill per year and an annual reduction of carbon dioxide emissions of 105,000 tonnes. We will continue to expand the scope of the mandatory EELS to cover other electrical

appliances, taking into account the results of the initial phase of the mandatory EELS and the corresponding energy consumption reduction achievement. We will consult the community and the relevant trade on our future expansion proposals.

## **COMPUTER DATABASE ON ENERGY CONSUMPTION OF PRODUCTS**

17. Energy efficiency and performance information of the products registered under the voluntary EELS is currently available in the website of the EMSD. Public can access the information of over 3,000 product models covering 18 energy-using household and office appliances and vehicles. Following the implementation of the proposed mandatory EELS, a more comprehensive database on the energy performance of the specified products covered under the mandatory scheme will be set up to help the public choose more energy efficient products.

18. In addition, EMSD has set up an interactive website, the “Energyland”, that provides a wide range of information on energy conservation, including energy saving tips, new energy conservation technologies, and guidelines on the selection of energy efficient household appliances and office equipment, etc.

## **DEMAND SIDE MANAGEMENT**

19. In the 2005/06 Policy Address, the Chief Executive called on the power companies to implement demand side management to promote energy efficiency and conservation. We have proposed in the Stage II Consultation Paper on the Future Development of the Electricity Market in Hong Kong that financial incentives be provided to the power companies under the post-2008 regulatory regime to improve their performance in energy efficiency and conservation.

## **RENEWABLE ENERGY**

20. Renewable Energy (RE) offers proven alternatives to the burning of fossil fuels for power generation. The Government is committed to the development of RE in Hong Kong with a view to further improving our air quality. In the First Sustainable Development Strategy for Hong Kong promulgated by the Government in May 2005, we, after considering the local social, economic and environmental conditions, and

having regard to the outcome of the public engagement process undertaken by the Council for Sustainable Development, have set the target of having 1-2% of Hong Kong's total electricity supply met by RE by 2012.

21. The two power companies have committed to setting up pilot commercial-scale wind turbines. Hongkong Electric Company's wind turbine commenced operation in February 2006 and CLP Power (CLP) has already completed their Environmental Impact Assessment (EIA) for the construction of a wind turbine at Hei Ling Chau. CLP's EIA report states that the indicative date for the operation of the wind turbine is in 2008. We have also proposed in the Stage II Consultation Paper on the Future Development of the Electricity Market in Hong Kong to provide incentives to power companies (including higher rate of return for RE infrastructure) to promote the use of RE. Currently, the two power companies are conducting EIA studies for building off-shore commercial wind farms in Hong Kong waters.

22. The Government will continue with our on-going effort to promote the use of RE in public works projects. The technical circular issued in 2005 (see paragraph 11 above) also calls for works departments to incorporate RE technologies in all works projects as far as practicable. So far, the Government has implemented 39 RE projects in various government premises, with another eight projects under planning. For example, the Housing Department recently announced that as a pilot, a grid-connected photovoltaic (PV) system of 35 kW capacity will be installed at the public housing redevelopment project at Lam Tin Phase 7 & 8. The project is scheduled for completion in early 2009. The system is equipped with data logging facilities to collect data for continuous monitoring and evaluation of the actual performance in order to explore the possibility of wider and more effective use of RE in housing estates.

## **PUBLIC EDUCATION**

23. Since 1998, EMSD has developed various energy efficiency guidelines, including Guidelines on Performance-based Building Energy Code and Guidelines on Energy Audit, to promote energy conservation in commercial properties. EMSD has also launched the Energy Efficiency

Registration Scheme for Buildings to promote voluntary implementation of Building Energy Codes. As of December 2006, 1,783 certificates were issued to 718 building venues covering 2,003 installations.

24. The Building Energy Codes were revised and updated in end 2006 to reflect the advancement in energy saving technologies and the prevailing good design practices. The Energy Efficiency Registration Scheme has also been extended to cover existing buildings with good energy performance. We will continue to promote the adoption of the Building Energy Codes to various professional bodies and other relevant stakeholders.

25. The Government launched the “Action Blue Sky” campaign in July 2006 to mobilize the community to take action at personal level to help improve air quality, including adopting energy saving measures. In addition, EMSD launched the Second Hong Kong Energy Efficiency Awards in November 2006 to promote sustainable energy use, and to recognize good energy saving practices. Property management agents, household and tenants under management of the Hong Kong Housing Authority, Hong Kong Housing Society, the Link Management Limited and Urban Renewal Authority were invited to join the competition. Over 1,000 entries were received and the competition would last for eight months from January to August 2007. The results of the competition will be available in end 2007.

26. EMSD and the Environmental Protection Department will continue to organize public education activities to promote energy conservation.

## **ADVICE SOUGHT**

27. Members are invited to note the progress of various energy conservation initiatives mentioned above.

**Environmental Protection Department  
April 2007**

## Annex

### Electricity Consumption Per Capita

Countries/Cities	Electricity Consumption per capita (kWh)
Hong Kong	5,700
Singapore	7,800
Japan	7,900
Canada	15,700
Australia	9,900
Korea	7,000
USA	12,400

All data from Asia-Pacific Economic Cooperation Energy Statistics (Year 2004)