

Energy Efficiency and Renewable Energy Development in Hong Kong

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Presentation Outline

- ❖ **Energy Efficiency Development in Hong Kong**
- ❖ **Renewable Energy Development in Hong Kong**

Energy Efficiency Programmes in Hong Kong

- **No legislation on energy efficiency & conservation**
- **All initiatives/programmes are voluntary**

Building Energy Codes

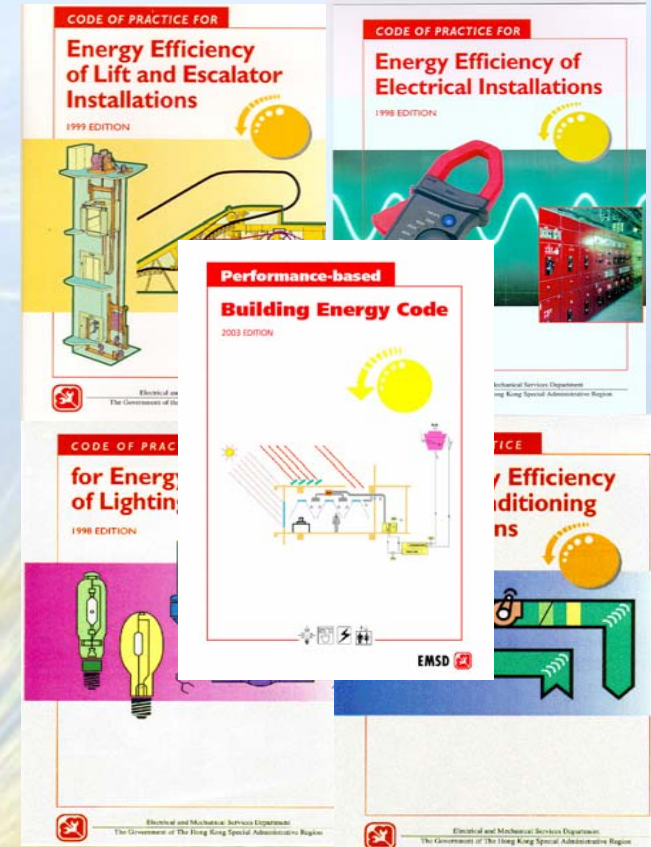
Lighting Code

AC Code

Electrical Code

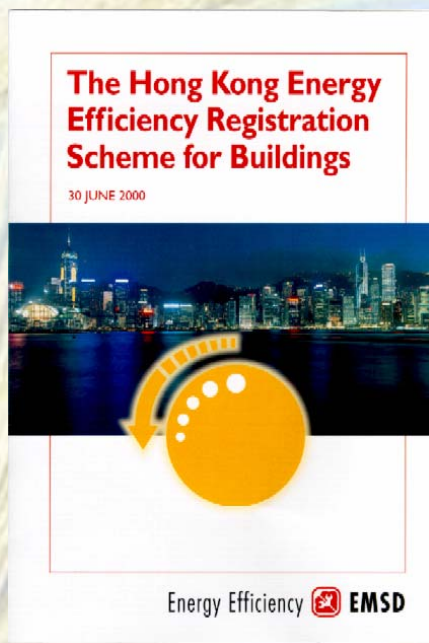
Lifts & Escalators Code

Performance-based Code



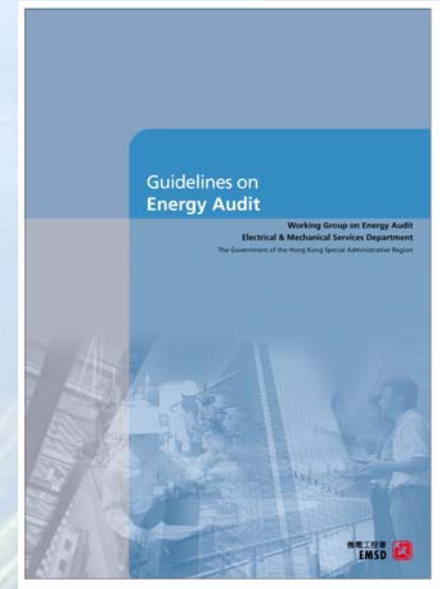
HK Energy Efficiency Registration Scheme for Buildings

1158 Certificates issued for 588 buildings



Promotion of Energy Management

- **Publish Guidelines on Energy Audit, and other general tips on conserving energy**
- **Promote energy management concept**
- **Conduct energy audit**



Pilot Projects on Application of Energy-efficient Equipment

- Pilot projects to evaluate energy savings of innovative energy-efficient equipment
- Examples:-



T5 illumination system



VSD for chilled water pumps



Solar control window film

Energy Efficiency Labelling Schemes

Graded Labels

ENERGY LABEL
能源標籤

Brand 牌子	ABC 某某牌
Model 型號	HK1234
Annual Energy Consumption * kWh/yr 每年耗電量 每年耗電量	1200
Energy Efficiency Grade* 能源效益級別	1
Room Cooler Category * 冷氣機類別	1
Cooling Capacity (kW) 製冷量	2.5
Refrigerant 製冷劑	HFC 123
EEL Registration Number 能源標籤登記號碼	C 96-0001

* The data are provided according to the Hong Kong Energy Efficiency Labelling Scheme for Room Coolers administered by the Electrical and Mechanical Services Department (EMSD), Government of the Hong Kong Special Administrative Region. The registration record can be found at the EMSD website at www.emsd.gov.hk.

資料根據香港特別行政區政府機電工程署推行的香港冷氣機能源效益標籤計劃的規定列出。有關註冊記錄可查閱網址 www.emsd.gov.hk。

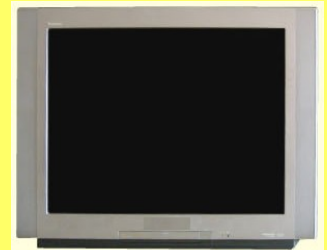
機電工程署 EMSD



Recognition Labels

ENERGY LABEL
能源標籤

機電工程署 EMSD



Energy Efficiency Labelling Schemes

More than 2,600 labels issued for :

- 11 types of household electrical appliances
- 5 types of office equipment
- petrol passenger car

ENERGY LABEL
能源標籤

市內行車
Urban
18.3
(L/100 km)

估計每年耗標油量*
Estimated Annual Fuel Consumption*

1,242
(litres)

公路行車
Highway
8.5
(L/100 km)

Make (商標): ABC
Model (型號): XXXXX-R1234567

The data are provided according to EMSD's approved criteria and testing methods. Actual fuel consumption depends on factors such as traffic conditions, vehicle conditions and how you drive.

* Based on 10,000 km travelled per year, and urban/highway ratio of 60%/40%.
* 以每年行車一萬公里計算，其中四成為市內行車，另外六成為公路行車。

Fuel (標油): Petrol
Transmission (傳動系統): Automatic
Engine Size (引擎容量): 3,387 cc

所選於資料內經機械電工程署所認可的準則及測試方法制定。實際燃料消耗量會受交通狀況、車輛狀況以及駕駛方式。

機電工程署
EMSD

ENERGY LABEL
能源標籤

機電工程署
EMSD

ENERGY LABEL
能源標籤

Brand 牌子	ABC 某某牌
Model 型號	HK1234
Annual Energy Consumption * kWh/yr 每年耗電量 每年耗小電	1200
Actual consumption depends on where the appliance is located and how it is used. Based on 1200 hrs/yr operation. 其耗電量視乎冷氣機的安裝地點及使用方式。耗電量每年使用率為1200小時。	
Energy Efficiency Grade* 能源效益級別	1
Among the five grades, Grade 1 is the most energy efficient. 在五級級別中，第一級最為省電。	
Room Cooler Category *	冷氣機類別
Cooling Capacity (kW)	製冷量
Refrigerant	製冷劑
EEL Registration Number 能源標籤登記號碼	C 96-0001

* The data are provided according to the Hong Kong Energy Efficiency Labeling Scheme for Room Coolers administered by the Electrical and Mechanical Services Department (EMSD), Government of the Hong Kong Special Administrative Region. The registration record can be found at the EMSD website at www.emsd.gov.hk.

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機電工程署
EMSD

Public Consultation on Mandatory Energy Efficiency Labelling Scheme

- New legislation will be introduced
- A 3-month public consultation has been conducted
- Refrigerators, room coolers and compact fluorescent lamp will be included in the initial phase
- Estimated electricity saving is 150 GWh per year

強制性能源效益標籤計劃
公眾諮詢

Public Consultation on
Mandatory Energy Efficiency
Labelling Scheme



諮詢期：二零零五年七月廿九日至十月三十一日
Consultation Period : 29 July 2005 to 31 October 2005

諮詢文件可於各民政事務處索取，或於下列網址下載：
The consultation document is available at the District Offices
and at the following website:
<http://eels.emsd.gov.hk>

請內頁附便交件的意思：
Please send your views to:

郵遞 by Post : 香港灣仔稅務大樓和樓地庫環境保護處資料
部(諮詢及聯絡及資料部) 灣仔區辦事處
Conservation Division, Environmental Protection Department, 46/F, Revenue Tower, Wan Chai, Hong Kong
Subject: Consultation on Mandatory Energy Efficiency Labelling Scheme

電郵 By E-mail : web_consult@epd.gov.hk
傳真 By Fax : (852) 2116 1104
如欲查詢，請致電熱線：1623
For any enquiries, please call hotline: 1623



Brand	Model	ATC	Energy Class
Brand	Model	ATC	Energy Class
Brand	Model	ATC	Energy Class

環境保護署
機電工程署
EMSD

Water-cooled Air Conditioning Systems

- **Energy Saving (compared with air-cooled)**
 - **Cooling tower scheme – up to 20%**
 - **Central seawater scheme – up to 28%**
 - **District cooling scheme – up to 35%**

Pilot Scheme on Wider Use of Fresh Water in Evaporative Cooling Towers for Energy Efficient A/C System

No. of Application: 191

Gross floor area of the applications: 5,804,215m²

Designated area: 75

No. of completed installations: 39

Anticipated annual electricity saving: 24.3M kWh

Estimated Reduction of CO₂ emitted from power plant: 16,200 tonnes

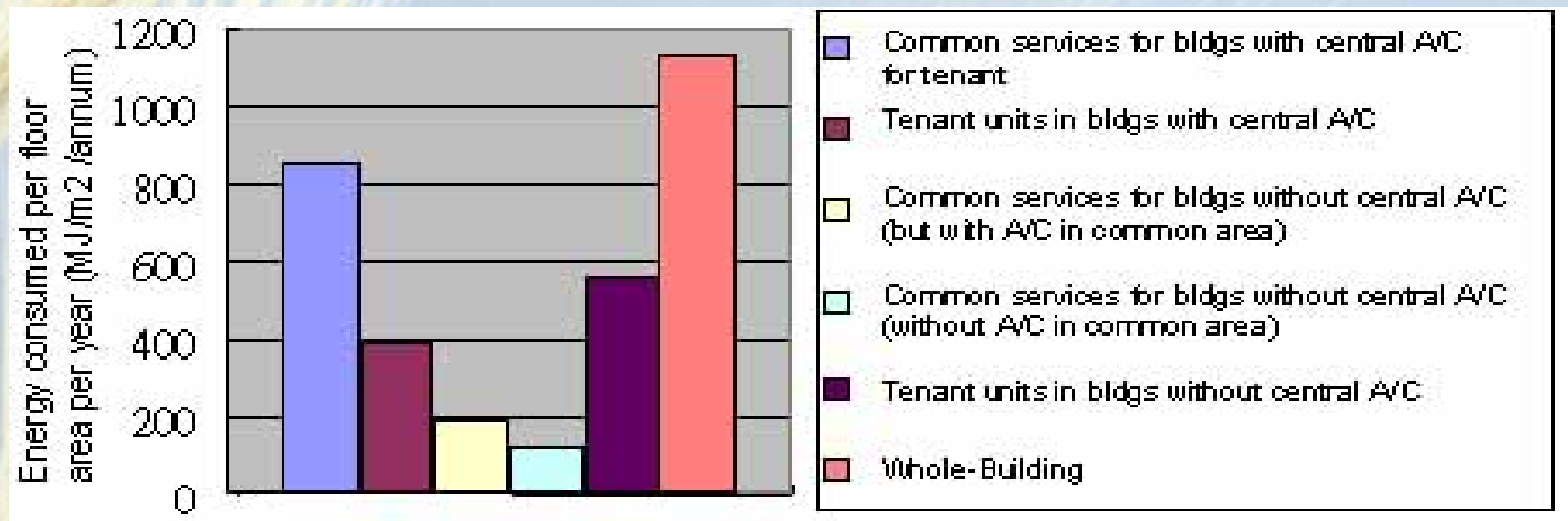
Hong Kong Energy End-use Database



- End-use consumption data for 4 sectors and 28 segments
- Data currently updated to year 2003
- Partial set of 2004 data will be available by Dec 2005
- Full 2004 data will be available by Sept 2006

Energy Consumption Indicators and Benchmarks

- ✦ Establish energy consumption indicators and benchmarks for selected energy-consuming groups
- ✦ Allow the general public to compare their energy or fuel consumption with other users and operators.



Education and Publicity

“EnergyLand”
educational website



International Conferences



“EnergyWits”
newsletter

Energy Saving Promotion Campaign

- **Government Sector**

- Energy Saving Programme

- EEO assisting government departments to reduce electricity consumption by 6% in 4 year

- Hong Kong Awards for Energy Efficiency & Conservation in Government

- **Private Sector**

- Hong Kong Energy Efficiency Awards



Energy Saving Promotion Campaign

- Public
 - Promotion of A/C Temperature Setting of 25.5°C





Renewable Energy Development in Hong Kong

Renewable Energy Study (1)

- **A study was commissioned in 2000 to investigate the feasibility of potential applications of new & renewable energy technologies in HK**
- **Recommendations were made for formulating an implementation strategy**

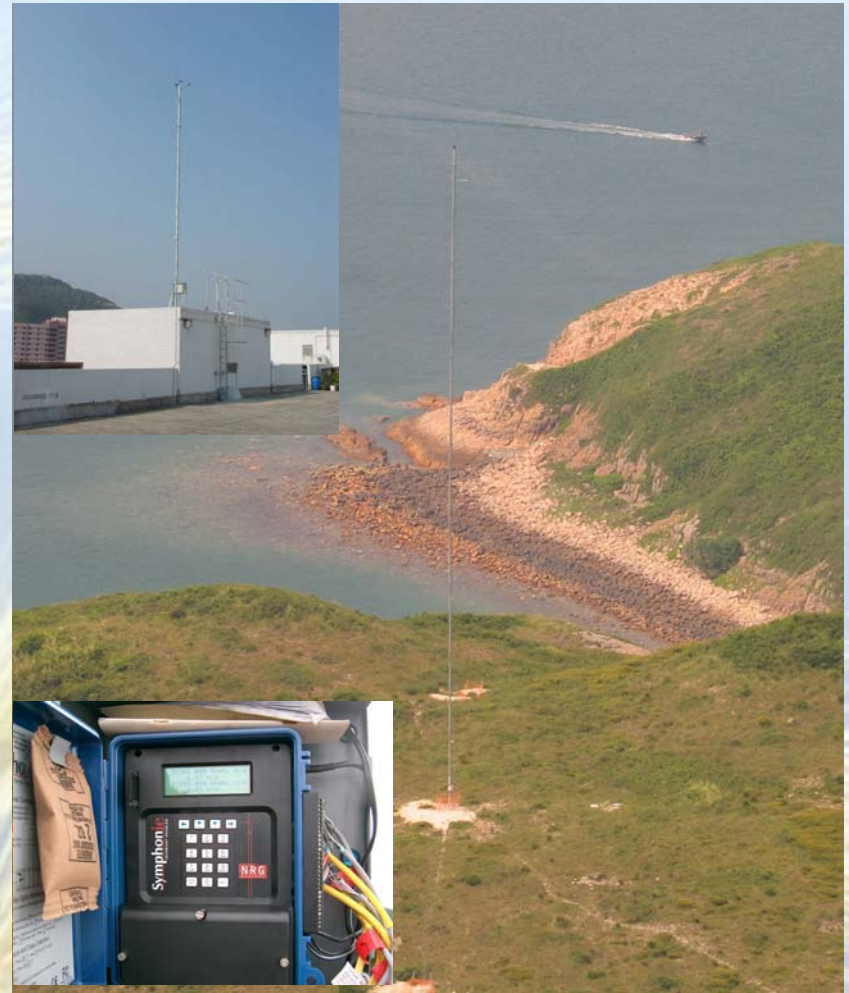
Renewable Energy Study (2)

- As part of the RE energy study, a pilot project to install a 55kW BIPV system at Wanchai Tower was also carried out
- To demonstrate to the general public the applicability of RE technologies in buildings



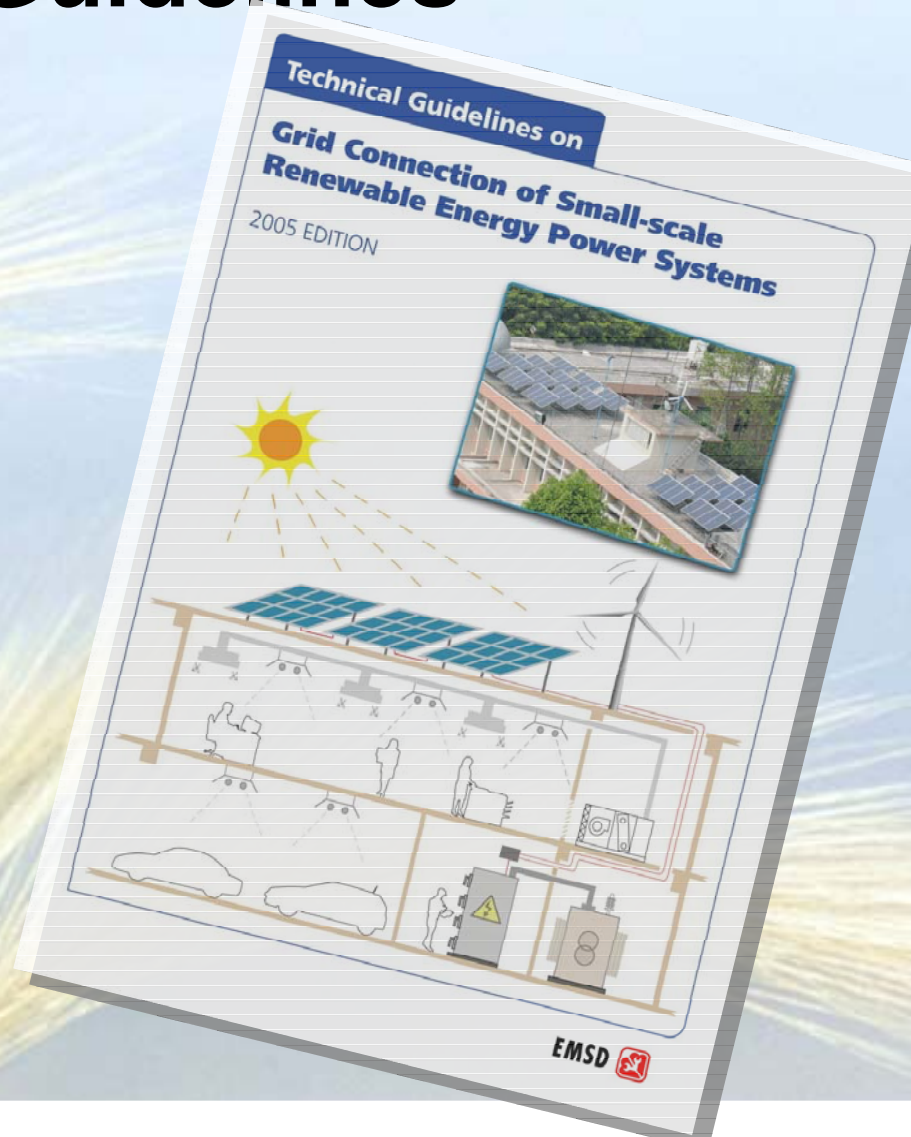
Wind Energy Study

- 5 wind monitoring stations installed since 2004
- To collect wind resources data to facilitate a better understanding of wind resources on eastern side of Hong Kong



Technical Guidelines

- Published in May 2005
- Addresses the technical issues relating to grid connection of RE power systems up to 200kW
- Tools to facilitate wider adoption of small-scale RE systems



A First Sustainable Development Strategy for Hong Kong

- **Published in May 2005**
- **Set a target of 1% to 2% of Hong Kong's total electricity supply be met by RE sources by 2012**



Major RE Installations in HK

Technology	Total Capacity	Annual Electricity Generation
Landfill gas power generation	7.4 MW	13 GWh
PV system	750 kW	0.85 GWh
Solar water heating system	659 kW	1.15 GWh [^]
Wind power	800 kW	1 GWh
	Total	16 GWh

[^] avoided electricity consumption

RE Installations in EMSH HQs



- **The largest grid-connected BIPV installation in Hong Kong with output capacity of 350kW**
- **A 1kW micro-wind turbine was installed for demonstration purpose**

Power Companies' Wind Power Demonstration Project

- **HEC's 800kW wind turbine installation at Lamma Island already completed**
- **CLPP will soon commence wind resource monitoring in two sites with a view to install a commercial scale wind turbine by end 2007**



Adoption of RE Technologies in Government Projects

- A technical circular on “Adoption of Energy Efficiency Features and RE Technologies for Government Projects and Installations” was issued
- To encourage works departments to adopt RE installations in new and retrofit projects





Future Plans for EMSD on RE Promotion

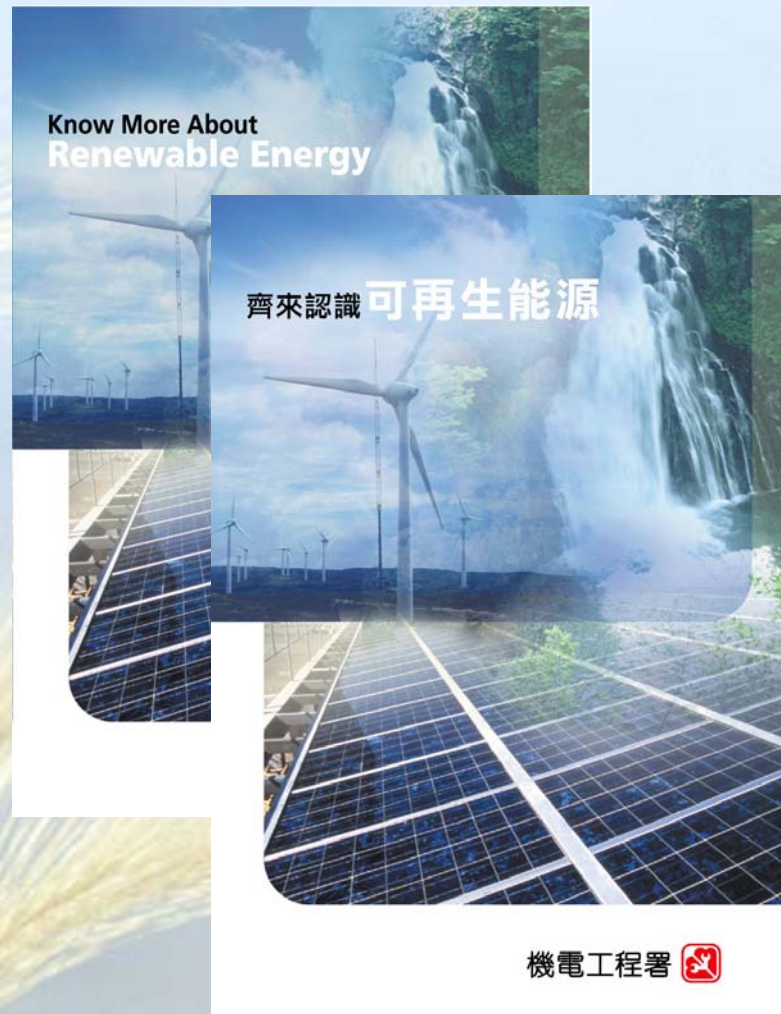
Performance Monitoring of RE Installations

- A 12-month performance monitoring is being carried out for the BIPV installation in EMSD HQ



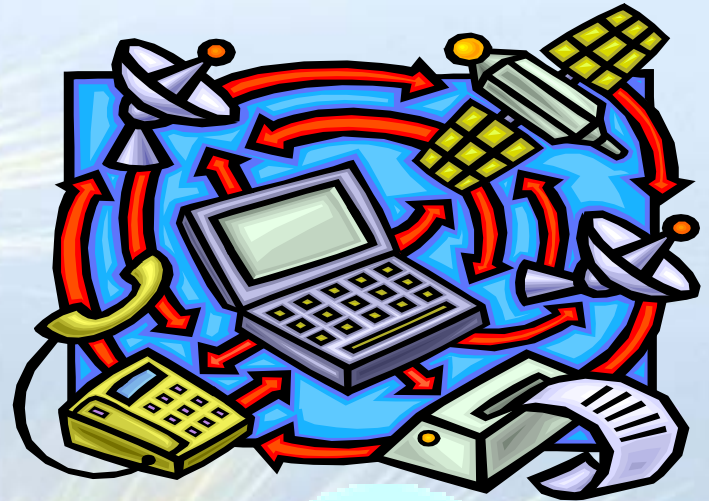
Publication of Information Leaflets

- Publish more information leaflets to raise public support on the use of RE



Internet Platform on RE

- To establish an internet platform on RE to disseminate information on RE to the general public



Publicity Activities (1)

- Invite professional groups to visit EMSD HQs and use the BIPV system installed as a showcase example for experience sharing
- Invite school students to visit the “Education Path” in EMSD HQs



Publicity Activities (2)

- **Collaborate with the power companies to promote wind power following the establishment of the first commercial scale wind turbine in Hong Kong**



Thank you
Hotline: 1823
Website: www.emsd.gov.hk