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Caring Serving Co-creating

Renewable Energy and Feed-in Tariff

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機電工程署 EMSD

Content

1. Renewable Energy (RE)
2. Feed-in Tariff (FiT)
3. RE System Grid Connection
4. Solar PV Installations
5. Generating Facilities Registration

2

Renewable Energy

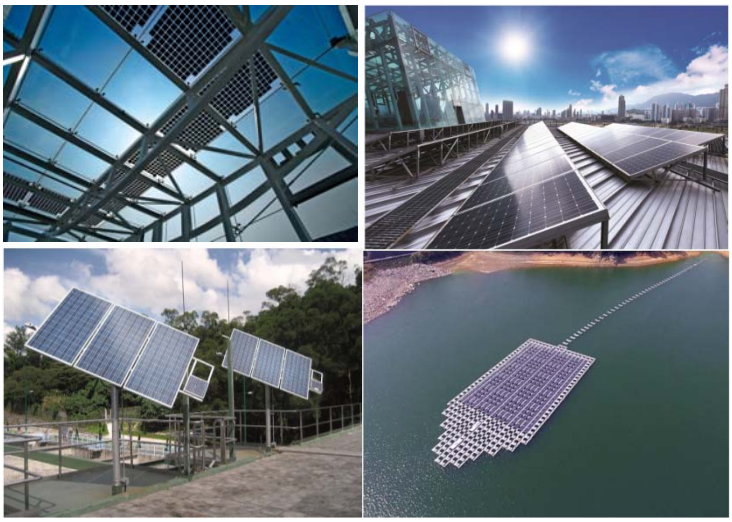
Renewable Energy (RE) is derived from natural processes that are replenished constantly according to "Renewable Energy Working Party of the International Energy Agency" definition.

Major RE are as follows:
- Solar
- Wind
- Biomass
- Hydropower
- geothermal
- ocean

3

Renewable Energy

Solar Power in Hong Kong



4

Renewable Energy

Wind Power in Hong Kong

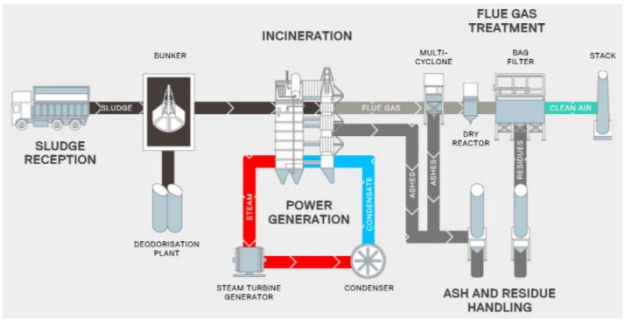
5

Renewable Energy

Waste-to-Energy in Hong Kong

T · PARK

When the two turbines in T · PARK are running at their full capacity, they can generate electricity and produce surplus power of up to 2 megawatts that can be exported to power up 4,000 households.

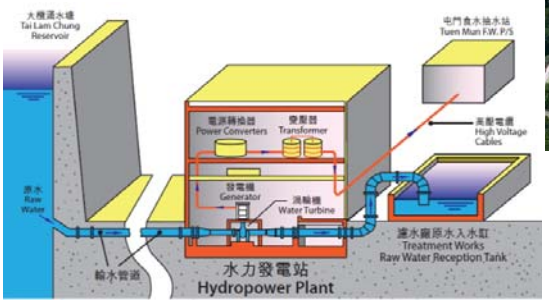


6

Renewable Energy

Hydropower in Hong Kong

By making use of the hydraulic pressure and flow of raw water in the aqueducts, electrical power can be generated through a set of turbine generators.



The hydropower plant at Tuen Mun will help the water treatment works save about 3 million kWh of electricity annually.

7

Feed-in Tariff (FiT)

Under the new Scheme of Control Agreements reached with the two power companies, the Government will introduce the **Feed-in Tariff (FiT)** to encourage the private sector and the community to consider investing in distributed Renewable Energy.

CLP 中電
燃點生活力量

港燈 HK Electric 125

8

Feed-in Tariff (FiT)

Any non-governmental bodies or individuals, who as customers of the relevant power company plan to install distributed RE systems at their premises in the respective power company's supply area with a generating capacity of up to **1 MW** are eligible for prescribed FiT rates.

FiT will be offered throughout the project life of the RE systems until end 2033.

9

Feed-in Tariff (FiT)

Interim Arrangement relating to Business Registration and Tax Return

As announced in the Policy Agenda under the 2018 Policy Address, it is proposed to support and facilitate participation of individuals in the development of RE. In this connection, the Environment Bureau proposes that individuals (not in the course of business) who install small-scale RE systems at their residential premises would be exempted from the requirement of applying for business registration and the payment of profits tax in respect of the FiT payments received through participation in the FiT Scheme.

https://www.ird.gov.hk/eng/tax/fit.htm

10

Feed-in Tariff (FiT)

Capacity (C)	FiT Rates (kWh)
C ≤ 10 kW	HK$ 5
10 kW < C ≤ 200 kW	HK$ 4
200 kW < C ≤ 1000 kW	HK$ 3

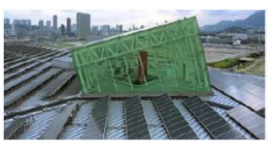
11

Feed-in Tariff (FiT)

- Example of capacity less than 10 kW (Village House roof PV system)

- Example of capacity greater than 10 kW but less than 200 kW (Airport Police Station roof PV system)

- Example of capacity over 200 kW but less than 1000 kW (EMSD Headquarters)



12

Feed-in Tariff (FiT)

可再生能源系統上網 須考慮電力容量

申請上網電價亦有基本門檻，須符合指定的安全、技術及容量要求，才可連網審批。

匯展科技發展有限公司是合資格的註冊電業承辦商，其處理的上網電價申請，有20多宗已成功接駁中電電網。該公司總經理米智杰稱，只要在申請前做定電力檢查及評估，基本上都可連網審批。「客戶想申請上網電價，我們要先幫他們做最基本的電力測試，了解其可再生能源系統的申請容量，有否超出現時電力公司供電予他們的容量。」

以700呎的村屋天台為例，他指，可申請的可再生能源系統容量一定在10千瓦以內，「就算客人想申請超過10千瓦的容量，都不太可行，因村屋天台面積有限，限制了太陽能板的安裝數目及電力容量。」

應由合資格人士評估安裝

試過有農地業主找他幫忙申請上網電價，惟實地視察後，才發現農地並不在現存電網的覆蓋範圍，即是本身連電都未有，他指，「業主一心以為農地夠大，便可申請大額容量，我只好建議他先向電力公司申請電力供應，才再考慮裝太陽能板。」

他更提醒有意申請上網電價的市民，應尋找合資格的註冊電業承辦商及工程人員，評估及安裝太陽能發電系統，「推出上網電價後，吸引了新人入行，他新承辦商未必有足夠專業知識，也不清楚電力容量，只是按客戶要求作出申請，做法並不妥當。」

中電每年亦會檢視不同地區及客戶對電力容量的需求，在可行的情況下，會適時進行電網提升工程，以增加電網容量，而上網電價的申請對電力容量的需求也是考慮因素之一。

中電收逾千上網電價申請
八成半獲批 工商住宅村屋俱全

Major concerns of the FiT application：

1. Outstanding information of FiT application such as REC contacts;
2. Apply capacity exceed the approved loading, increase in capacity or network reinforcement work is required;
3. Voltage level increase due to the FiT;
4. Apply location is outside the power network.

13

Feed-in Tariff (FiT)

CLP 中電
燃點生活力量

CLP Power Hong Kong Limited

Tel. : 2678 0322

E-mail : csd@clp.com.hk

Website : www.clp.com.hk

港燈 HK Electric 125

The Hongkong Electric Co., Limited

Tel. : 2843 3228

E-mail : RE@hkelectric.com

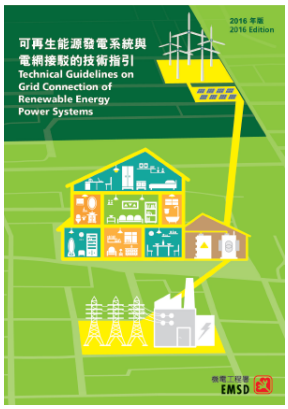
Website : www.hkelectric.com

14

Technical Guidelines on Grid Connection of Renewable Energy Power Systems (REPS)

Objectives

- Give an outline of the connection of REPS to the grid.
- Serve as a quick reference to establish the technical requirements for developing any prospective grid-connected REPSs proposals.
- Does not purpose to be a design manual.
- The final design details should be agreed by both the Owner and the Utility.

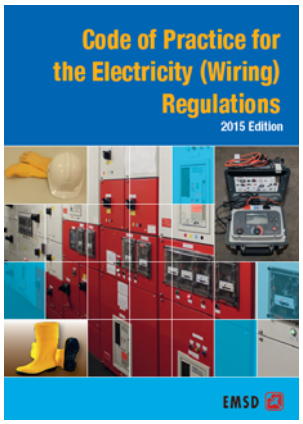


15

Technical Guidelines on Grid Connection of REPS

Regulatory Compliance

- ✓ Comply with all prevailing statutory requirements, such as the Electricity Ordinance and the Supply Rules.
- ✓ Code of Practice for the Electricity (Wiring) Regulations (COP).



16

Technical Guidelines on Grid Connection of REPS

Safety Consideration

- The REPS is a dual sources supply.
- May still supply electricity to the Grid under abnormal conditions such as supply power outage.
- Ensure such a connection would not create any safety problem to electrical workers carrying out works on related electrical installations both under normal and emergency situations.

17

Technical Guidelines on Grid Connection of REPS

Recommendations for a safety works

- ✓ Incorporate an anti-islanding function in the design of the REPS;
- ✓ Install a lockable switch at a readily accessible position;
- ✓ Display warning labels at all electrical equipment with dual power supply sources;
- ✓ Update circuit diagrams regularly and display them at appropriate locations;
- ✓ Establish a direct communication channel between the Owner and the Utility.

18

Technical Guidelines on Grid Connection of REPS

Testing & Commissioning

- To check that all potential levels of time delay settings are properly set and tested.
- To check the operation of the anti-islanding function.
- To check the operation at all isolation points.
- To check that all the warning labels, equipment labels and circuit diagrams are displayed in appropriate locations.
- To check and record the voltage and current output of the REPS including power factor, DC level and total harmonic distortion.

19

RE System Grid Connection

Solar PV Standards

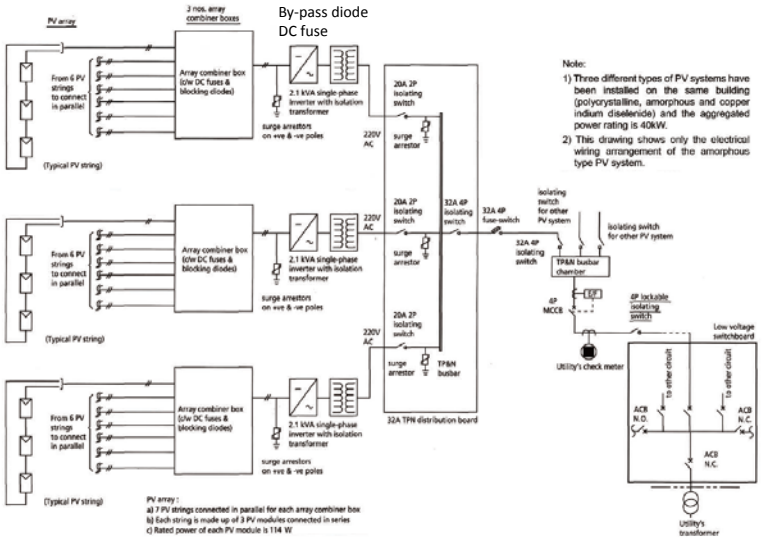
General technical standards recommendations:

• IEC 61215
Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval

• IEC 61730
Photovoltaic (PV) module safety qualification

20

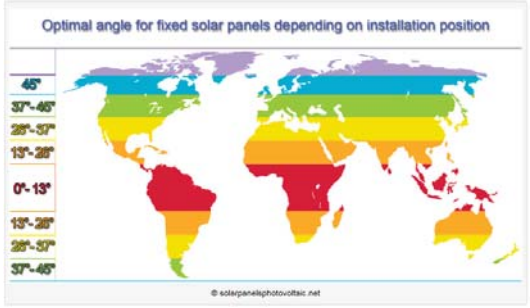
Technical Guidelines on Grid Connection of REPS

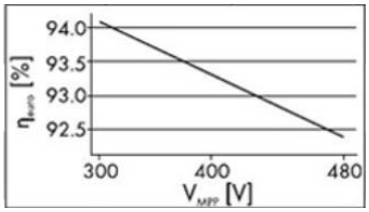


21

Design Consideration

- Shading Effect
- Tilting angle 14 – 22 degree facing South in Hong Kong
- Matching of PV modules and Inverter





22

Operation & Maintenance

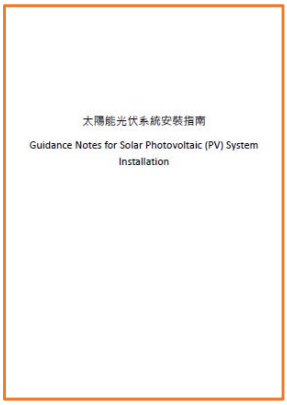
- ◆ Electricity Ordinance (Cap. 406) – maintain the generating facility in continuous safe working order.
- ✓ Routing cleaning;
- ✓ PV panel malfunction is not easy revealed by visual inspection;
- ✓ Provide a monitoring system to check the PV panel performance.

23

Solar PV Installations

香港可再生能源網
HK RE Net
https://re.emsd.gov.hk

Guidance Notes

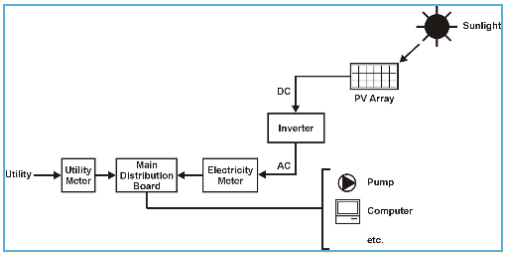


24

Guidance Notes for Solar PV System Installation

Objectives:

Provide general guidelines for intending purchasers, owners and installers of solar PV systems to understand the PV installation requirements and FiT application procedures associated with the installation, operation and maintenance of such systems.



25

Solar PV Installations (General)

Minor Works Control System

Minor works are classified into three classes according to their nature, scale and complexity and the risk to safety they posed.

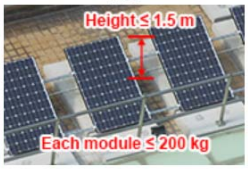
There are 126 minor works items. They can be carried out without the prior approval and consent from the Buildings Department.

https://www.bd.gov.hk/english/services/index_mwcs_introduction.html

26

Solar PV Installations (General)

Photovoltaic System

Class I	Class III
1.19	3.15
	
Erection/ Alteration	Erection/ Alteration/ Removal
• Height of structure **≤ 1.5m** • Designed for the photovoltaic system with at least 1 module **> 200kg**	• Height of structure **≤ 1.5m** • Designed for the photovoltaic system with module each **≤ 200kg**

27

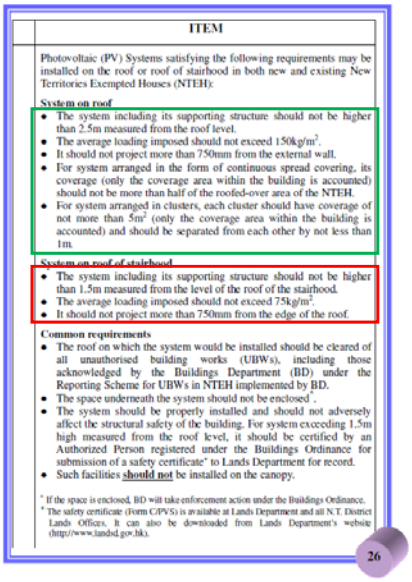
Solar PV Installations (General)

Photovoltaic System

	Class I	Class II	Class III
Degree of Complexity and Risk	High	Medium	Low
Minor works items	44 Items	40 Items	42 Items
Appointed person to prepare and sign prescribed plans	Prescribed Building Professional and Prescribed Registered Contractor	Prescribed Registered Contractor	Prescribed Registered Contractor
Submit documents before commencement of works	Minimum 7 Days	Minimum 7 Days	Not required
Submit documents after completion of works	Within 14 Days	Within 14 Days	Within 14 Days

28

Solar PV Installations (Village House)



ITEM

Photovoltaic (PV) Systems satisfying the following requirements may be installed on the roof or roof of stairhood in both new and existing New Territories Exempted Houses (NTEH):

System on roof

- The system including its supporting structure should not be higher than 2.5m measured from the roof level.
- The average loading imposed should not exceed 150kg/m^2.
- It should not project more than 750mm from the external wall.
- For system arranged in the form of continuous spread covering, its coverage (only the coverage area within the building is accounted) should not be more than half of the roofed-over area of the NTEH.
- For system arranged in clusters, each cluster should have coverage of not more than 5m^2 (only the coverage area within the building is accounted) and should be separated from each other by not less than 1m.

System on roof of stairhood

- The system including its supporting structure should not be higher than 1.5m measured from the level of the roof of the stairhood.
- The average loading imposed should not exceed 75kg/m^2.
- It should not project more than 750mm from the edge of the roof.

Common requirements

- The roof on which the system would be installed should be cleared of all unauthorised building works (UBWs), including those acknowledged by the Buildings Department (BD) under the Reporting Scheme for UBWs in NTEH implemented by BD.
- The space underneath the system should not be enclosed*.
- The system should be properly installed and should not adversely affect the structural safety of the building. For system exceeding 1.5m high measured from the roof level, it should be certified by an Authorized Person registered under the Buildings Ordinance for submission of a safety certificate^ to Lands Department for record.
- Such facilities **should not** be installed on the canopy.

* If the space is enclosed, BD will take enforcement action under the Buildings Ordinance.
^ The safety certificate (Form CPVS) is available at Lands Department and all N.T. District Lands Offices. It can also be downloaded from Lands Department's website (http://www.landsd.gov.hk).

26

System on Roof

Height ≤ 2.5 m

Loading ≤ 150 kg/m^2

Extend from external wall ≤ 750 mm

(a) Continuous covering ≤ ½ roof area

(b) Each Cluster ≤ 5 m^2 and
Each separation ≥ 1 m

System on Roof of Stairhood

Height ≤ 1.5 m

Loading ≤ 75 kg/m^2

Extend from external Wall ≤ 750 mm

29

Fire Services Department Recommendations

- The solar PV system and associated supporting structure should not cause overloading to the building and not affect the means of escape in case of fire.
- A passageway with a width of not less than 1050mm* leading from the roof exit to that side of the roof should be maintained.
- A dry powder type fire extinguisher is provided for a small PV system.

*Reference is made to Table B2, Part B, Code of Practice for Fire Safety in Buildings 2011

https://www.bd.gov.hk/chineseT/documents/code/c_fs2011.htm

30

REMINDER

- The isolation transformer should be installed inside or outside the inverter helps to prevent the injection of DC into the distribution system；
- When purchasing inverters, intending purchasers, owners and installers should select the inverters designed and manufactured according to relevant national/ international standards or specifications
- Employ a Registered Electrical Contractor (REC) to carry out PV Installations works；
- the owner of the Renewable Energy Power System shall register the facility with the EMSD；
- Employ a REC to provide maintenance services for the PV system regularly.

31

Other RE Information

「FiT Hotline」: 6395 2930

Email: eepublic@emsd.gov.hk

Address: EMSD Headuarters 3 Kai Shing Street, Kowloon

Other Enquires: 1823

32

Thank!

33