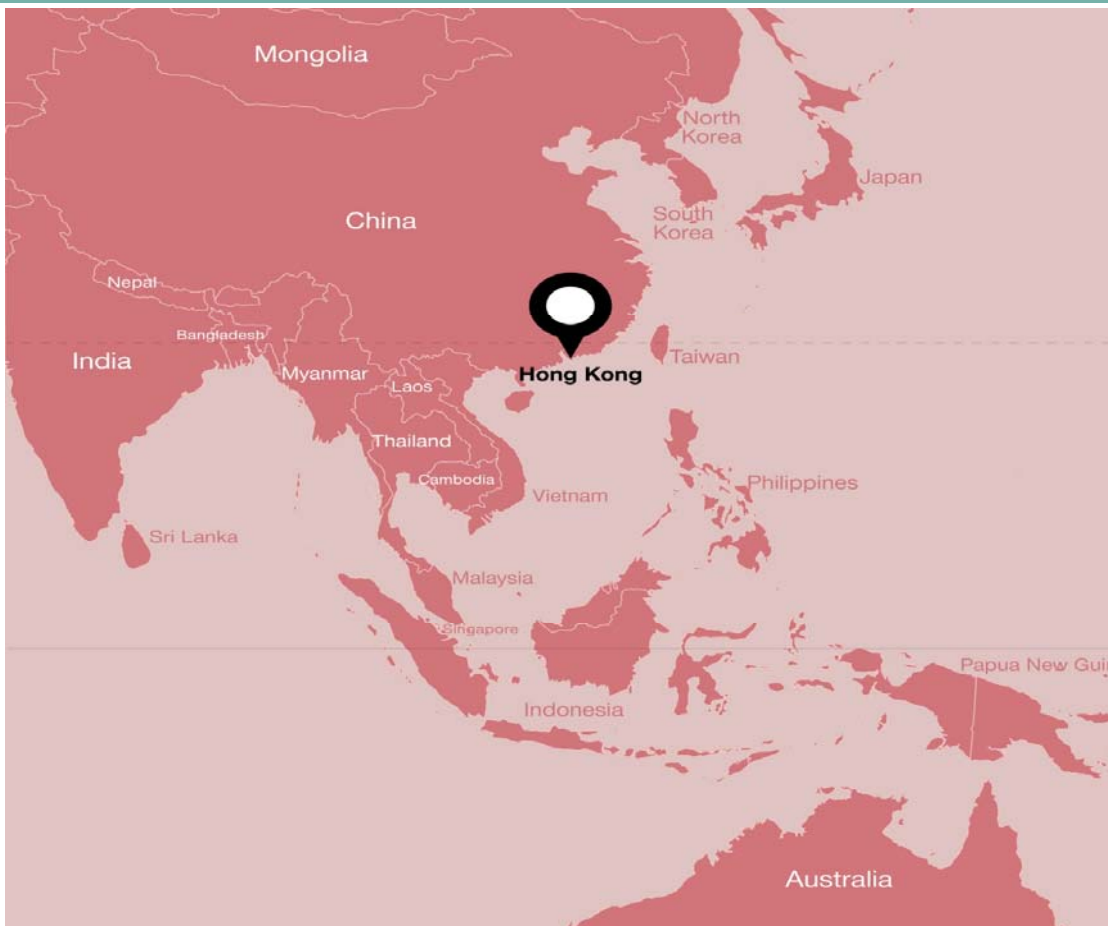




Technical Guideline on Retro-commissioning 2018 Edition

About Hong Kong, China



FACTS ABOUT HONG KONG, CHINA (1,106 sq km)



Humid tropical climate

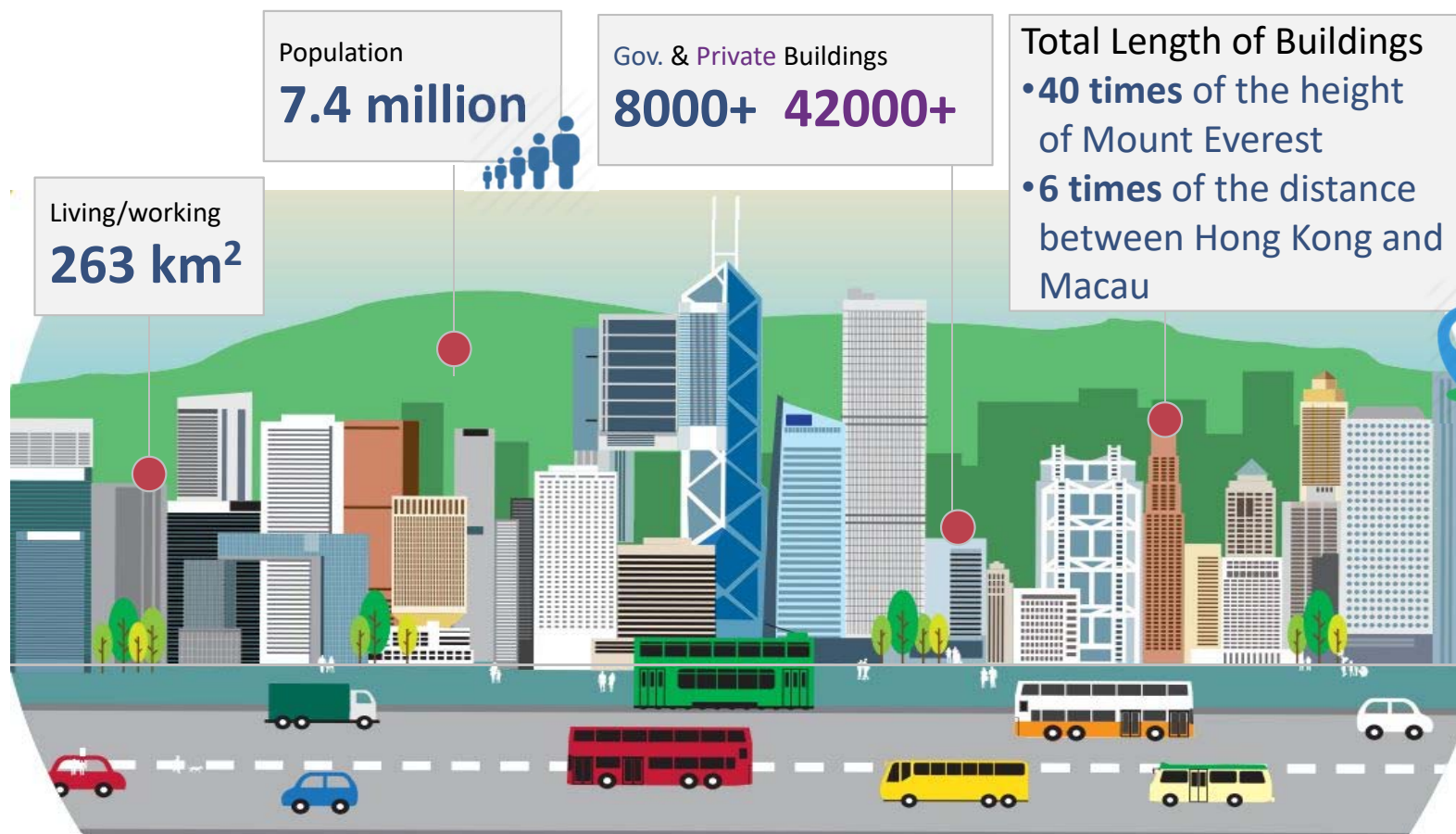


Extreme high density

Population: 7.4 million (mid 2017)



Hong Kong Situation



Buildings Stock in Hong Kong



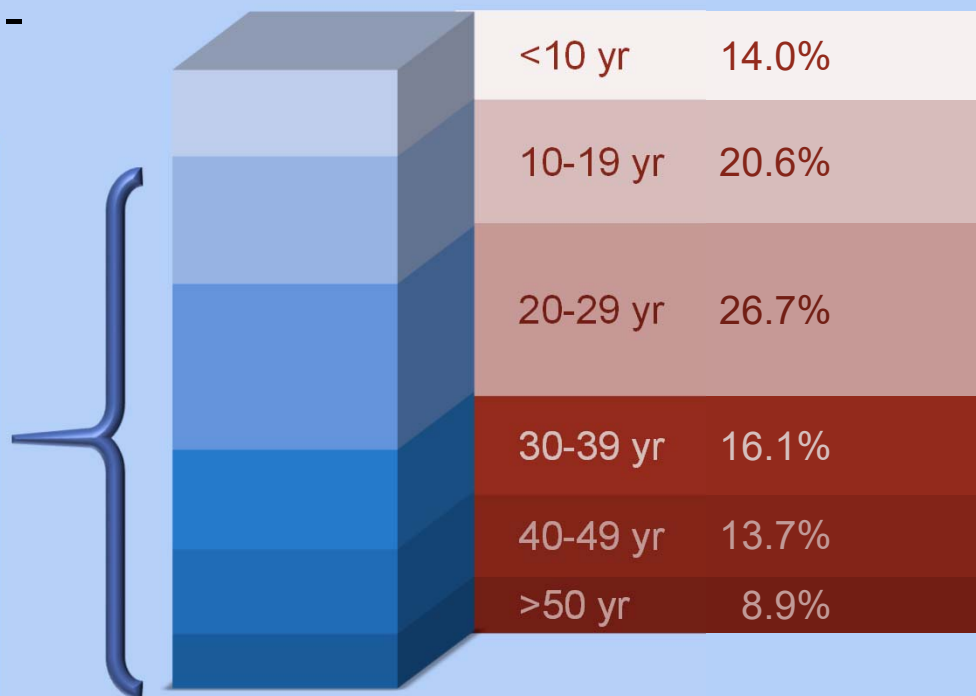
New Buildings:-
300-500 buildings/year



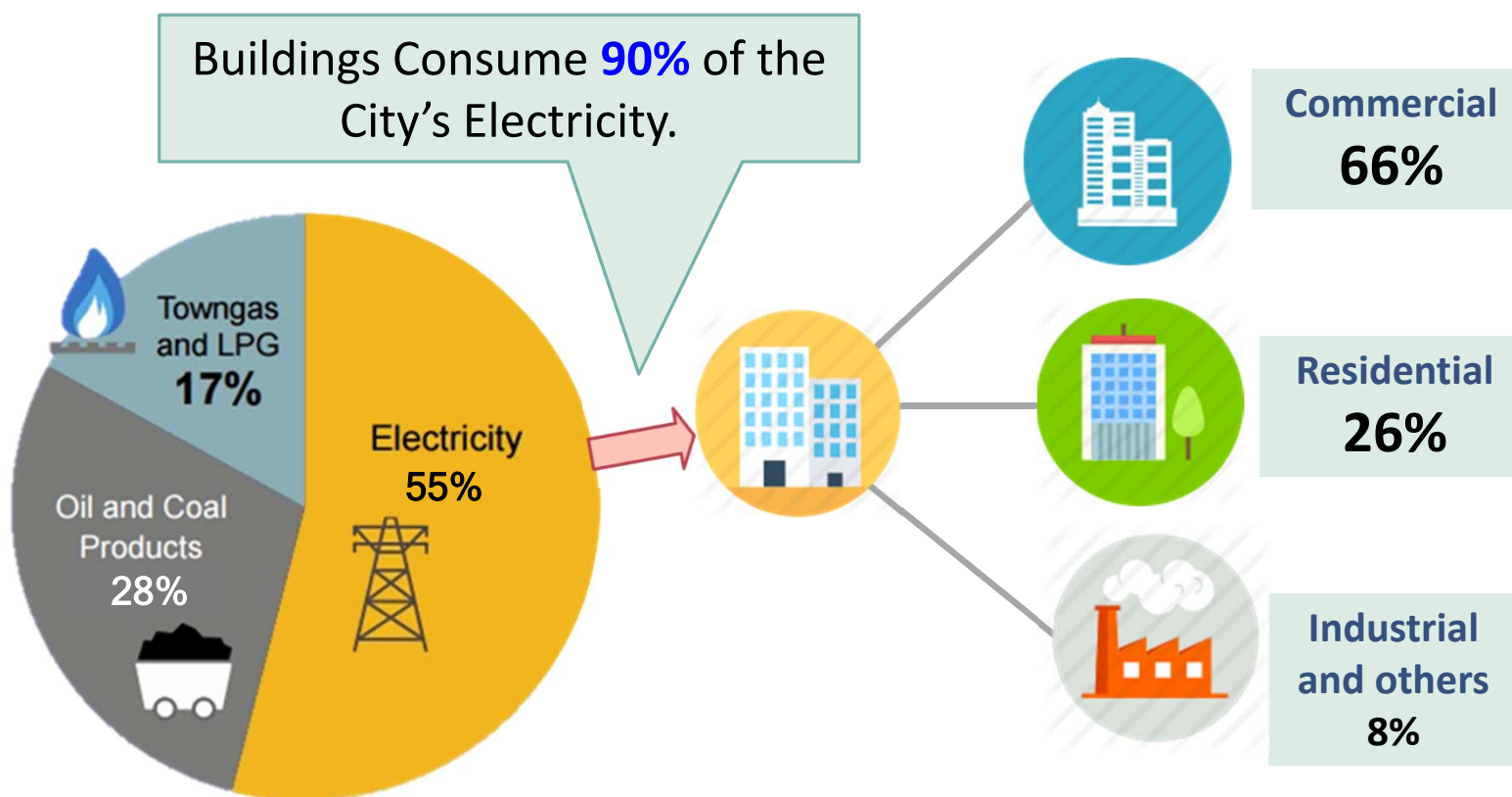
Existing Buildings:-
42,000 buildings



Buildings with
age over 10
>85%



Energy Consumption in Hong Kong



Source: Hong Kong End-use Data 2017, EMSD

Migration Action in Hong Kong



ENERGY INTENSITY

-40%

Year 2025



CARBON INTENSITY

65-70%

Year 2030

4Ts & Partnership



DEEPENING ENERGY SAVING IN EXISTING BUILDINGS IN HONG KONG THROUGH '4Ts' PARTNERSHIP

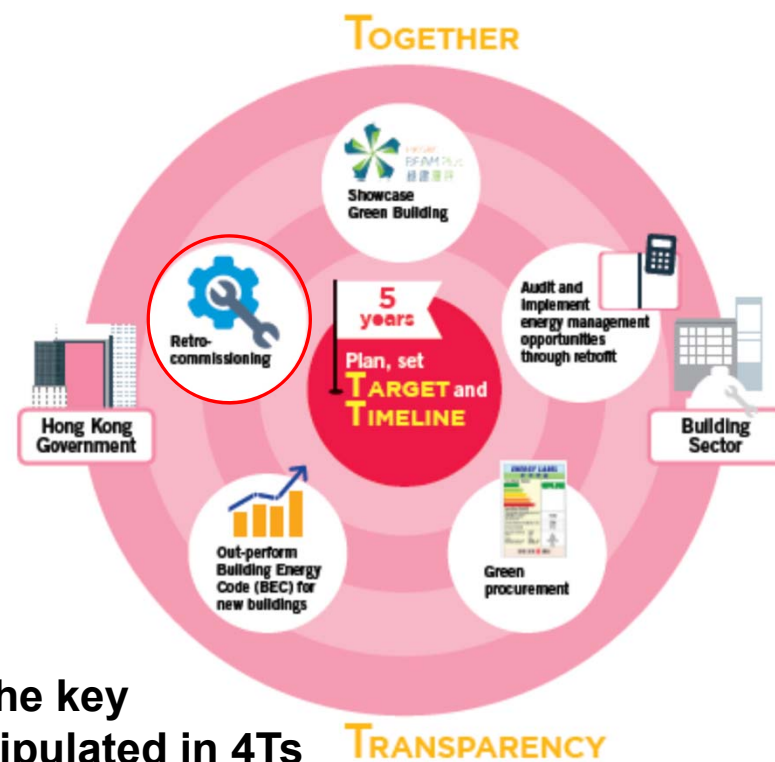
- Timeline
- Target
- Transparency
- Together



Environment Bureau

June 2017

FIGURE 6 4Ts partnership between Government and Building Sector



RCx is one of the key initiatives as stipulated in 4Ts framework



Retro-commissioning (RCx) is

- A cost-effective and systematic process to periodically check an existing building's performance.
- The process identifies operational improvements that can effectively reduce energy consumption, lower energy bills and improve indoor environment
- The process can be performed alone or along with other retrofit project

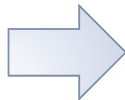


Why Retro-commissioning (RCx)?



Buildings often get out of tune...

- Changes induced by addition, alterations and improvement works
- Drift off control set points
- Drop in accuracy or sensitivity of sensors and sub-optimal maintenance



- Outdated control system
- Unsatisfactory performance of building
- Unnecessary energy losses



Pilot RCx Projects in Government Buildings



Item	Pilot Project
1	New Territories South Regional Police Headquarters
2	Kowloon Tong Education Services Centre
3	Smithfield Municipal Services Building
4	Hung Hom Municipal Services Building
5	Queensway Government Offices
6	North Point Government Offices



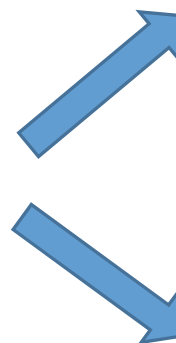
**5%
Energy
Savings**



TG on RCx 2018 Edition



- Making reference to:
 - a) Recognized **international standards** from other countries;
 - b) RCx experience from **government pilot project**
 - c) Aspiration from the **stakeholders**



Changing Summary of TG on RCx 2018



- 1) Pre-RCx Recommendation
- 2) Include data management and CCMS requirements
- 3) Enrich the content in M&V methodology
- 4) Introduce KPIs for monitoring



Preparation of RCx



- Firstly, owner **review their in house O&M staff capability** before carrying out RCx



- **Further training can be considered** to enhance capability of in house O&M staff



- If **in house O&M staff is not suitable** to carry out RCx, it **may consider to engage external RCx service provider**



Data Management and CCMS Requirements



- Suggestion of different sets data point, **recommended data point and data point for advanced level control**, for data analysis
- **Recommended data point collection** is responsible for data analysis related to **monitoring of plant efficiency**
- **Data point collection for advanced level control** is responsible for data analysis related to the **optimization of equipment operation**



Agreement of M&V Method for ESOs



- Make reference to **international standard** (EVO 10000-1:2014-IPMVP, ISO17741:2016, ASHRAE Guideline 14:2014)
- List out **working example to explain different approach M&V methodology (Option A, B, C & D)** for better understanding



KPIs for Continuous Monitoring



Introduce three (3) nos. KPI with worked example

- **Plant efficiency** is to monitor the building energy consumption in the basis of **central A/C chiller plant**
- **Degrading chilled water plant delta T** is to monitor **A/C system performance**
- **Electricity bill** is to monitor the building energy consumption in the basis of **whole building/ ESO implementation**



Other RCx Promotion Plan



1. RCx in Government Buildings



Major government buildings would implement RCx



Government Buildings/Facilities



2. RCx Training



- RCx training by EMSD and HKGBC with support by professional institutions / organizations;

(Alphabetical order)

- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) – HK Chapter
- Association of Energy Engineers (AEE) - HK Chapter
- Building Services Operation and Maintenance Executives Society (BSOMES)
- Chartered Institution of Building Services Engineers (CIBSE) - HK Branch
- Hong Kong Institution of Engineers (HKIE)
- Other

- The training courses are designed to suit engineers, operating staff and stakeholders



Successful Case Sharing from Practitioners

- Swire Properties Limited
- Link Asset Management Limited
- Sun Hung Kai Properties Group
- JLL
-



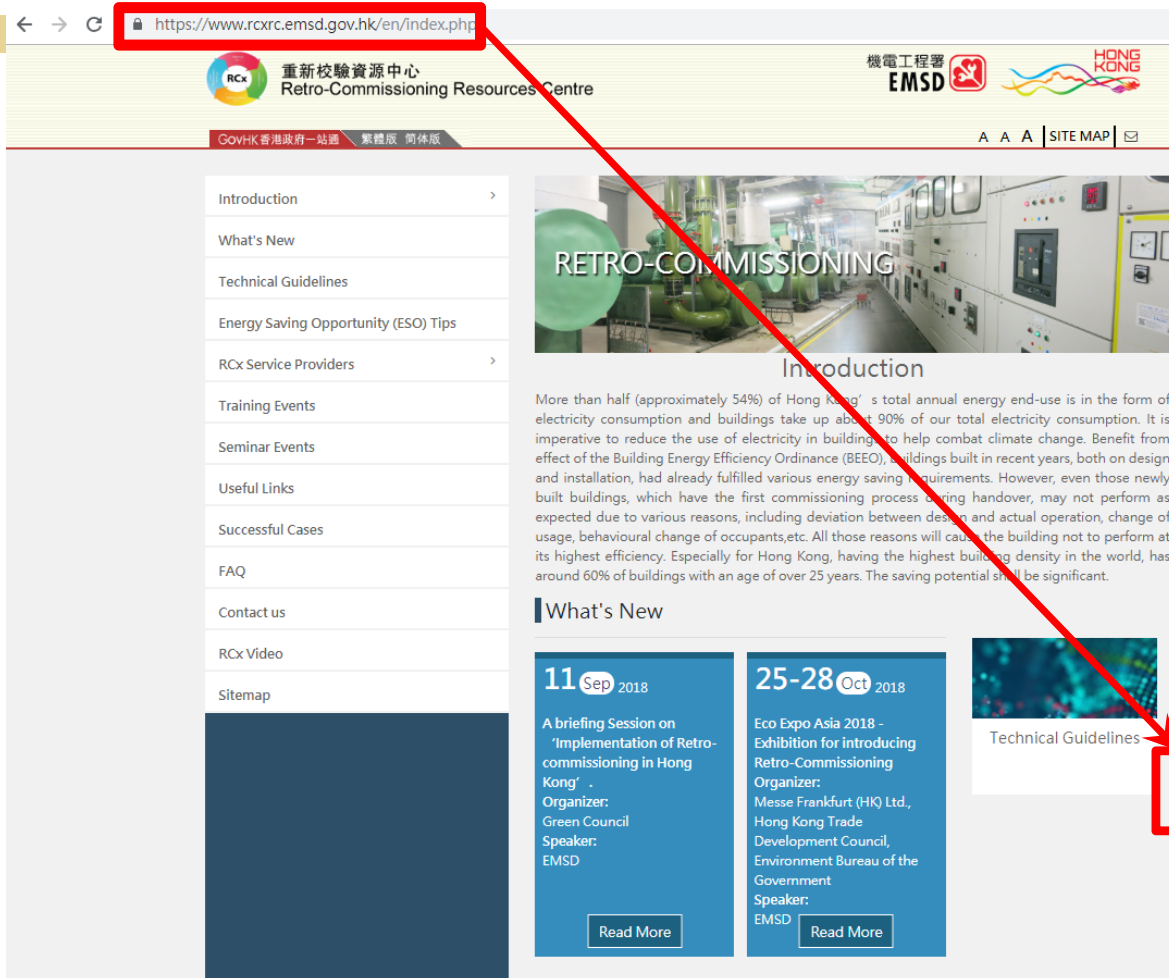
3. Directory of RCx Services Provider



Invite RCx Services Provider to provide relevant information for public:-

- Company information & contact person
- Company job reference in RCx
 - Summary of RCx project conducted (achieved energy saving, etc.)

4. Online Resources Centre



Introduction

What's New

Technical Guidelines

Energy Saving Opportunity (ESO) Tips

RCx Service Providers

Training Events

Seminar Events

Useful Links

Successful Cases

FAQ

Contact us

RCx Video

Sitemap

RETRO-COMMISSIONING

Introduction

More than half (approximately 54%) of Hong Kong's total annual energy end-use is in the form of electricity consumption and buildings take up about 90% of our total electricity consumption. It is imperative to reduce the use of electricity in buildings to help combat climate change. Benefit from effect of the Building Energy Efficiency Ordinance (BEEO), buildings built in recent years, both on design and installation, had already fulfilled various energy saving requirements. However, even those newly built buildings, which have the first commissioning process during handover, may not perform as expected due to various reasons, including deviation between design and actual operation, change of usage, behavioural change of occupants, etc. All those reasons will cause the building not to perform at its highest efficiency. Especially for Hong Kong, having the highest building density in the world, has around 60% of buildings with an age of over 25 years. The saving potential shall be significant.

What's New

11 Sep 2018

A briefing Session on 'Implementation of Retro-commissioning in Hong Kong' -
Organizer:
Green Council
Speaker:
EMSD

[Read More](#)

25-28 Oct 2018

Eco Expo Asia 2018 -
Exhibition for introducing Retro-Commissioning
Organizer:
Messe Frankfurt (HK) Ltd.,
Hong Kong Trade Development Council,
Environment Bureau of the Government
Speaker:
EMSD

[Read More](#)

[Technical Guidelines](#)

Check our website here:



<https://www.rcxrc.emsd.gov.hk/>

5. Financial Support



- Eco building fund from CLP



- Smart Power Building Fund (SPBF) from HKE





Let us work together
to save energy

An aerial photograph of a dense urban skyline, likely Hong Kong, featuring numerous high-rise buildings in various colors and heights. A semi-transparent grey rectangular box is centered over the image, containing the text "Thank You" in a white, sans-serif font.

Thank You