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# EMSD Symposium 2011

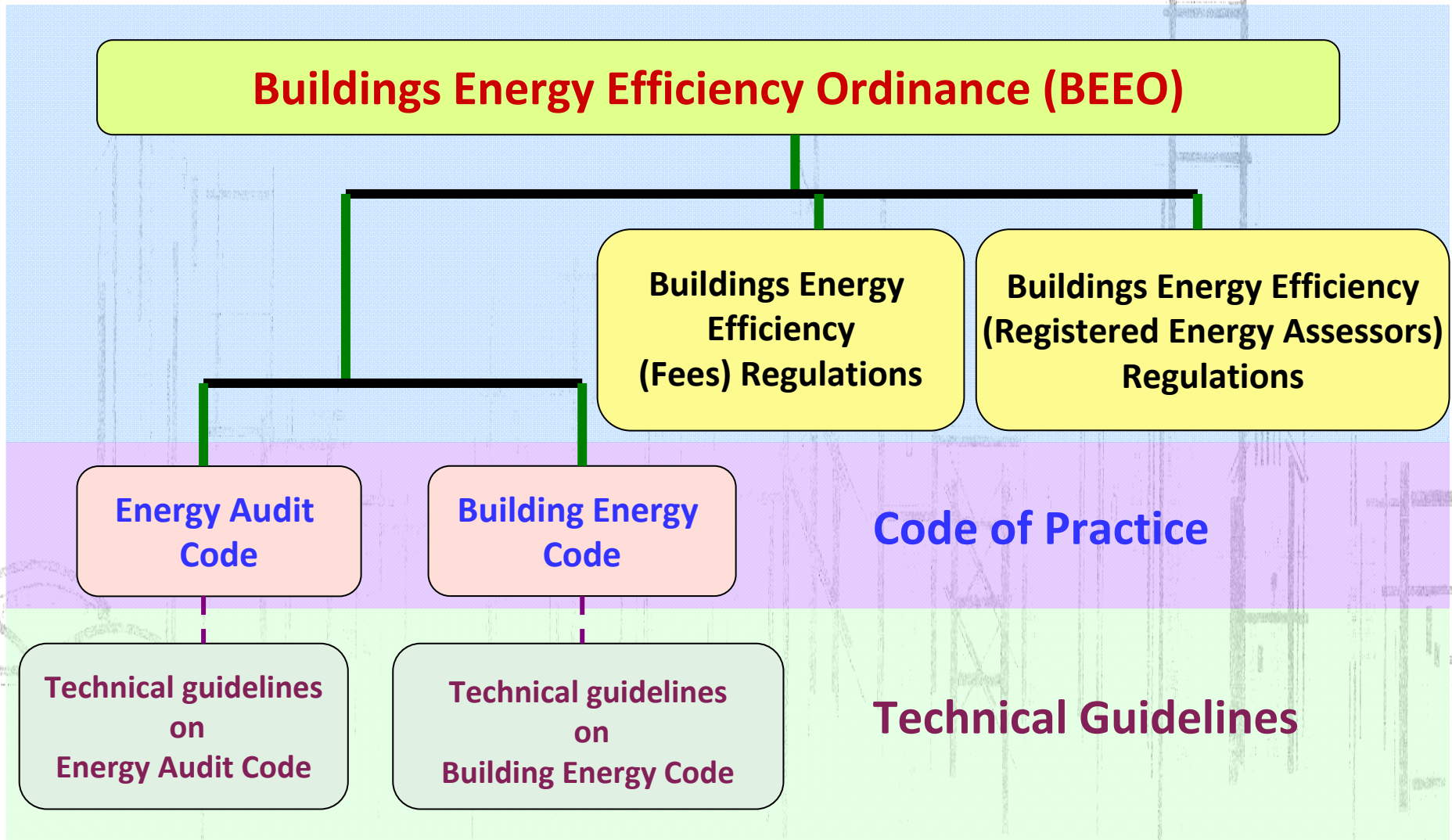
## Building Energy Code

### The Way Towards Low Carbon Building

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# Structure of Legislative Framework



# Milestones of Legislation Work

- The Buildings Energy Efficiency Bill was submitted to the Legislative Council in December 2009
- The Bill was passed by the Legislative Council in November 2010.
- The Bill was subsequently gazetted as the Buildings Energy Efficiency Ordinance (BEEO) in December 2010. There is a grace period to allow various stakeholders and public having ample time to be adapted to and familiarized with the requirements of the Ordinance. It is anticipated that the Ordinance will be fully implemented after mid-2012.



# Mandatory implementation of BEC

- Mainly control the design but not the daily operation and settings of the concerned building service installations
- No restriction on import and sale of any equipment in Hong Kong

# BEC – Key Energy Efficiency Requirements

## ➤ *Lighting Installation*

- Lighting power density
- Lighting control points



## ➤ *Air Conditioning Installation*

- Equipment COP
- Fan power per volume air flow
- Pipe frictional loss
- Thermal insulation
- Air-conditioning control
- Energy Metering



## ➤ *Electrical Installation*

- Motor efficiencies
- Power distribution loss
- Power quality
- Metering devices



## ➤ *Lift & Escalator Installation*

- Power demand of lifts/escalators
- Power quality
- Metering devices
- Lift decoration load
- Parking mode





# BEC - Key Energy Efficiency Requirements (cont'd)

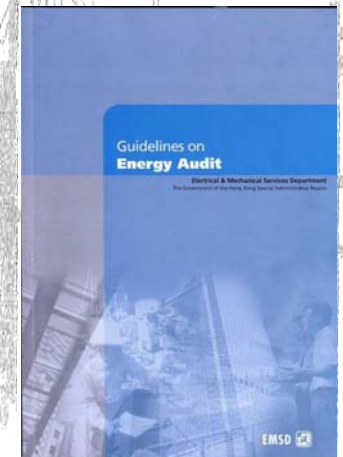
- Performance-based Building Energy Code
  - As an alternative route to comply with BEC
  - Total energy budget approach
    - Building energy analysis
    - Actual design against reference design

- Encourage use of
  - Energy efficient equipment
  - Innovative installations
  - Renewable Energy

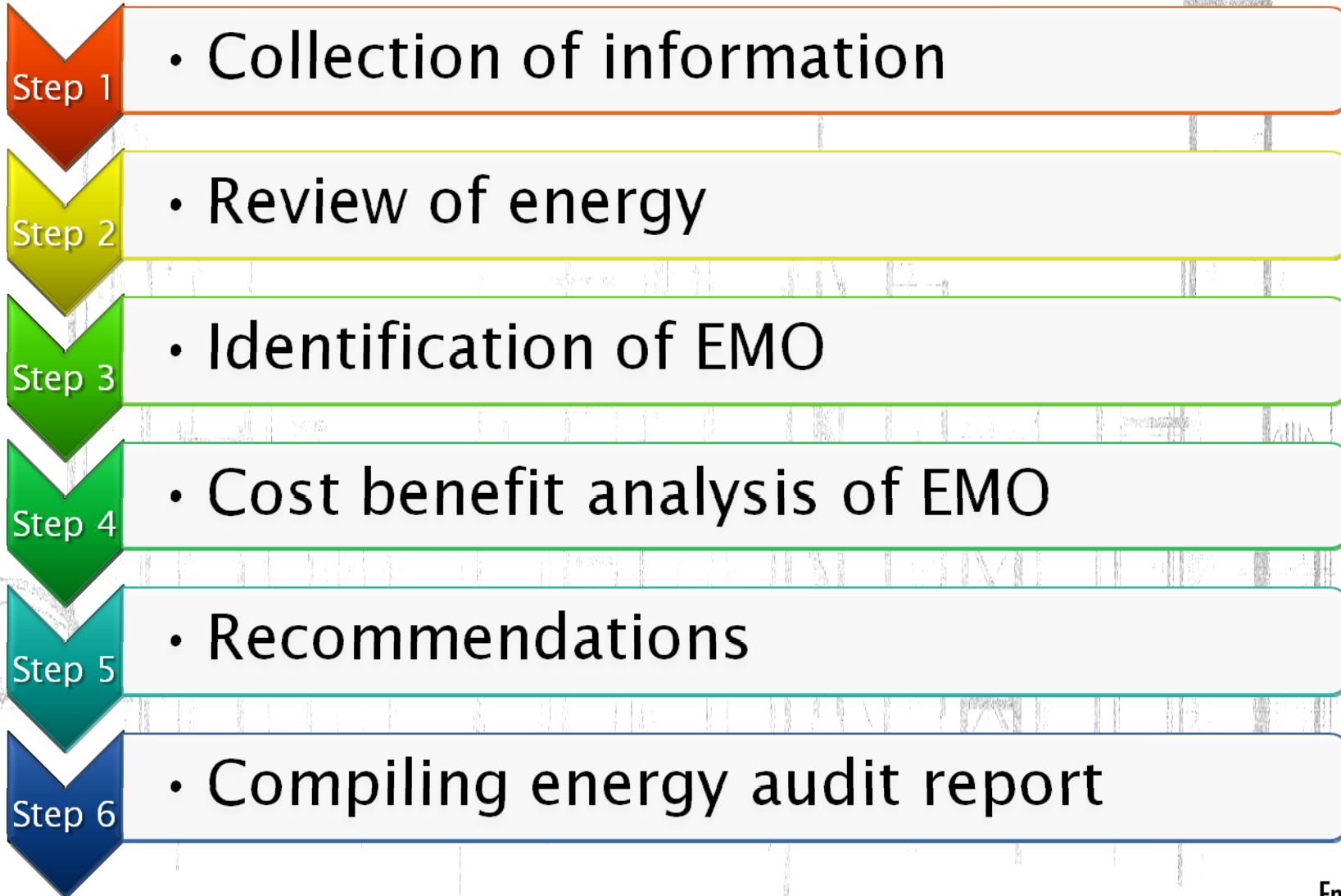


# Energy Audit Code (EAC)

- Objective: systematic review of the energy consuming equipment/systems in a building to identify energy management opportunities (EMO), which provides useful information for the building owners to decide and implement energy saving measures for environmental consideration and economic benefits
- Totally independent from BEC, not a checking for BEC-compliance
- Implementation of EMO not mandatory



# Key Steps of Energy Audit





# Coverage - Prescribed Buildings (Schedule 1 of the BEEO)

- Commercial building
- Hotel & guesthouse
- Composite building: non-residential & non-industrial portion, and common area
- Residential building and industrial building: both common area only
- Educational building
- Community building (e.g. community center, elderly home, youth centre etc)
- Municipal building (e.g. market, library etc)
- Medical and health care services building (e.g. hospital, rehabilitation centre etc)
- Government building  
(e.g. government office building, police station, fire station etc)
- Airport passenger terminal building
- Railway station



# Exclusion (Part 1 of the BEEO)



- Buildings with the main electrical switch at approved loading  $\leq 100A$ , 1-phase or 3-phase
- Small buildings  $\leq$  specified dimensions
- Declared or proposed monument or historical buildings
- Buildings that will be demolished or redeveloped within 12 months



# Exclusion

- BS installations for the following special purposes (*Schedule 2 of the BEEO*) -
  - solely for fire suppression or extinguishing or a combination of the above;
  - solely for surgical operation, clinical treatment, blood processing or providing or maintaining appropriate environmental settings for life protection, or any combination of the above;
  - in a construction site for construction work only;
  - solely for industrial manufacturing;
  - solely for research in education institution;
  - lighting solely for exhibit illumination, product display, decoration or visual production;
  - solely for air traffic regulation, safety or control;
  - solely for railway traffic regulation, safety or control
- Special exemption on individual BS installations granted by EMSD upon receiving written applications with justifications (*Clause 15 of the BEEO*)



# Overview of Control Regimes

Different regulatory mechanism for “**Post-enactment**” buildings and “**Pre-enactment**” buildings

“**Post-enactment**” building – buildings having obtained the **consent to the commencement of building works for superstructure construction** from Building Authority after the legislation comes into operation

“**Pre-enactment**” building – buildings that are not “**Post-enactment**”: having obtained the **consent** on or before the legislation comes into operation

- Post-enactment buildings only - required to submit self-declaration, certified by a registered energy assessor, to EMSD & then obtain **Certificate of Compliance Registration** from EMSD
- Units or common areas in both post-enactment & pre-enactment buildings – required to engage a registered energy assessor for certification & then obtain **Form of Compliance** issued by him/her, upon completion of major retrofitting works
- Commercial buildings and commercial portions of composite buildings – required to engage a registered energy assessor to conduct **energy audit** every 10 years

# Post-enactment Buildings (Part 2 & 3 of the BEEO)

Post-enactment buildings	Central BS installations	Other BS installations serving an individual unit	
		with internal floor area < 500 m <sup>2</sup>	with internal floor area ≥ 500 m <sup>2</sup>
		Need to comply with the Building Energy Code?	✓
Need to obtain a Certificate of Compliance Registration from EMSD?	✓ (occupation approval stage)	✓ (occupation approval stage, only for installations provided by developers)	✓ (occupation approval stage, only for installations provided by developers)
	✓ (10-year renewal)	✗ (10-year renewal)	✗ (10-year renewal)
Need to obtain a Form of Compliance from registered energy assessor ?	✓ (for major retrofitting works of main components only)	✗	✓ (for major retrofitting works only, also applicable to common area ≥ 500 m <sup>2</sup> )

# Pre-enactment Buildings (Part 3 of the BEEO)

Pre-enactment buildings	Central BS installations	Other BS installations serving individual unit	
		with internal floor area < 500 m <sup>2</sup>	with internal floor area ≥ 500 m <sup>2</sup>
Need to comply with the Building Energy Code?	✓ (for major retrofitting works only)	✗	✓ (for major retrofitting works only)
Need to obtain a Form of Compliance from registered energy assessor ?	✓ (for major retrofitting works of main components only)	✗	✓ (for major retrofitting works only, also applicable to common area ≥ 500 m <sup>2</sup> )



# Major Retrofitting Works (Schedule 3 of the BEEO)

- Works involving addition/replacement of a BS installation specified in BEC and the works covering one or more places with a total floor area  $\geq 500 \text{ m}^2$  under the same series of works within **12 months** in a unit / common area of a prescribed building.

OR

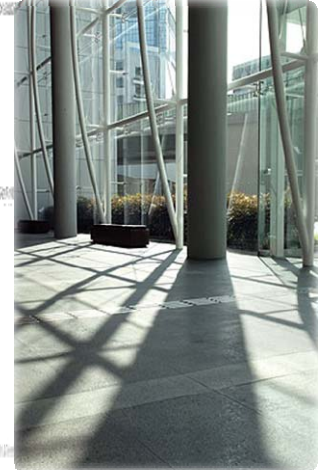
- Addition/replacement of a main component of a central BS installation, incl. –
  - a complete electrical circuit at rating  $\geq 400\text{A}$ ; or
  - a unitary air-conditioner or a chiller at rating  $\geq 350\text{kW}$  (cooling or heating); or
  - motor drive + mechanical drive of a lift, escalator or passenger conveyor.

# Energy Audits

## (Schedule 4 and Part 4 of the BEEO)

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- Only applicable to central BS installations of –
  - Commercial buildings
  - A portion of a composite building that is for commercial use
- Not applicable to buildings that will cease to fall within the above building categories within 12 months



# Registered Energy Assessor

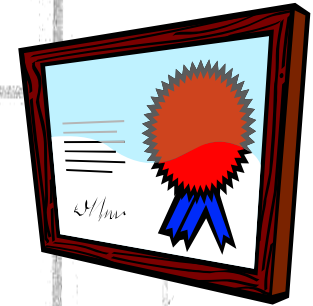
## (Buildings Energy Efficiency (Registered Energy Assessors) Regulations)

- **Registered Professional Engineer** under Engineers Registration Ordinance – electrical, mechanical, building services or environmental discipline
  - $\geq 2$  years post-qualification experience

Or

- **Corporate member of HKIE** in electrical, mechanical, building services or environmental discipline or such equivalent
  - $\geq 3$  years post-qualification experience

Both need to demonstrate experience & knowledge thro' assessment by EMSD or any other means accepted by EMSD





# Energy Efficiency Office

## 能源效益事務處

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**Thank You!**

**多謝!**