

Sustainable Electrical and Mechanical Services

Vision with Action

Ir CHEUNG Kwok-fai (Assistant Director)

Ir Dr. WONG Kam-hay, Arthur (Chief Engineer)

Ir CHAN Ming-yee (Senior Engineer)

Electrical and Mechanical Services Department

Government of the HKSAR



Organisers:



International Co-owners:



Contents

- Our plan, our commitment
- Application of technology
- Innovation
- Sustainable green operation
- Ways ahead



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Electrical and Mechanical Services Trading Fund

- ✓ An executive arm of EMSD of the HKSAR Government established in 1996.
- ✓ Diversified services for more than 100 clients.
- ✓ In 2015/16, annual business turnover around HK\$5.7 billion (US\$730 million).



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Global Alliance
For Buildings and
Construction

Electrical and Mechanical Services Trading Fund



http://www.emsd.gov.hk/en/20thAnniversary/emstf_milestones/index.html



Organisers:



International Co-owners:



Our Plan, Our Commitment

- 1st 5-Year Strategic Plan
- 2013/14 – 2017/18
- Support corporate goal
- 5 strategies and 18 initiatives
 - Sustainable (green & energy conservation)
 - Reliable (security and health of assets)



Organisers:

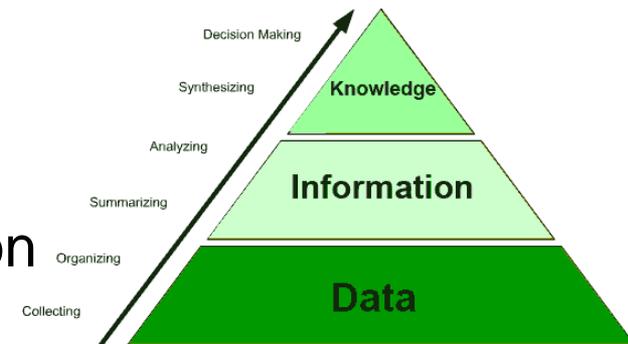
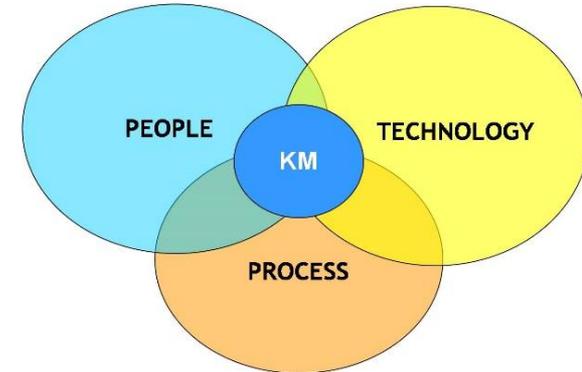


International Co-owners:



Knowledge Management

- A strong foundation of the strategic plan for sustainable development
- EMSTF developed a well structured knowledge portal for sustainable development
 - Application of technology
 - Encouragement of innovation
 - Enrichment to work practices
 - Continuous actions on green operation
 - Strengthen capability for sustainable development



Organisers:

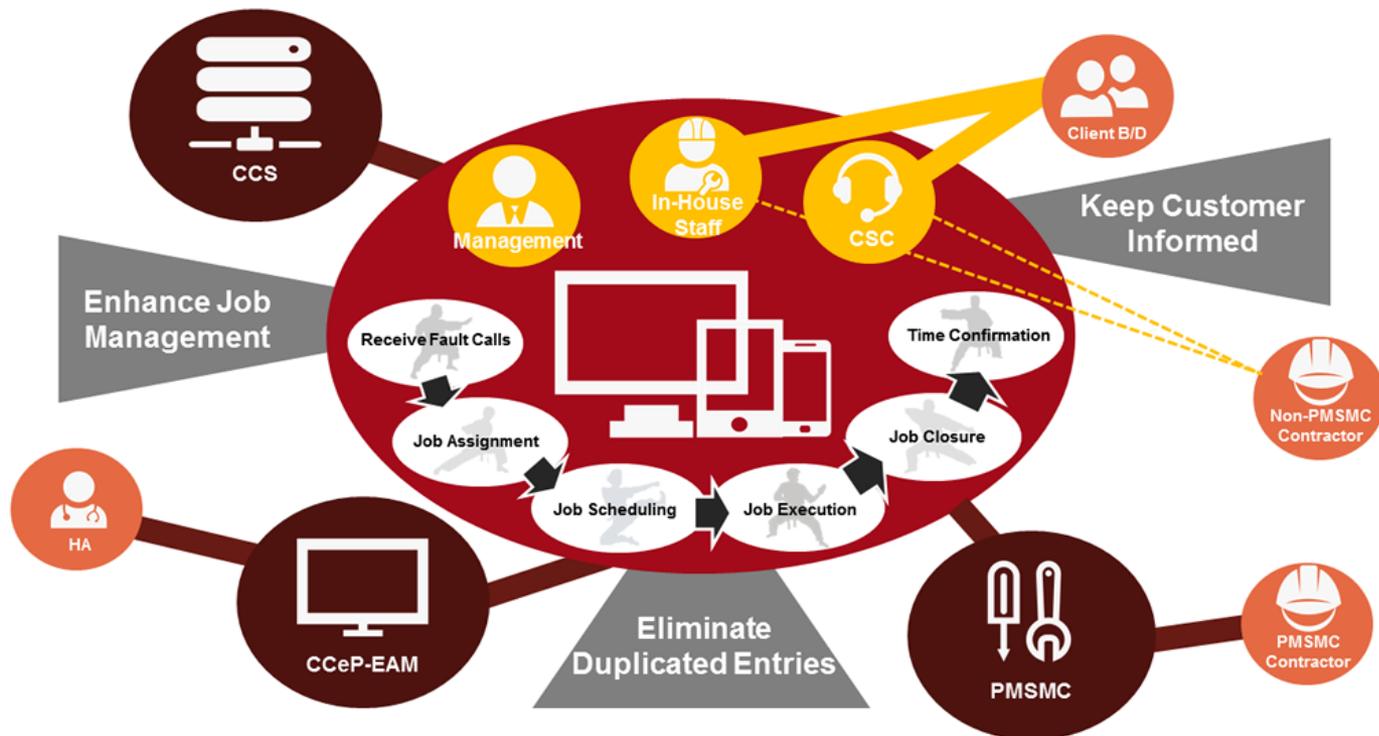


International Co-owners:



Application of technology

- ✓ Better informing the customer through a customer centric e-platform
 - Sharing of information with stakeholders on a common platform



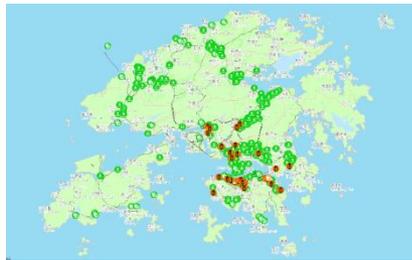
Application of technology

- ✓ Public services availability
 - Remote monitoring and pre-alarm alert → Integrated Building Management System (iBMS)



Application of technology

Geographic Information System (GIS)



Instant display of fault locations



GIS server



Router



Remote monitoring unit



Tunnel lighting



Traffic Light



Escalator



E&M at Public Transfer Interface

Application of technology

- ✓ Application of energy saving technologies and E&M equipment using renewable energy



Organisers:

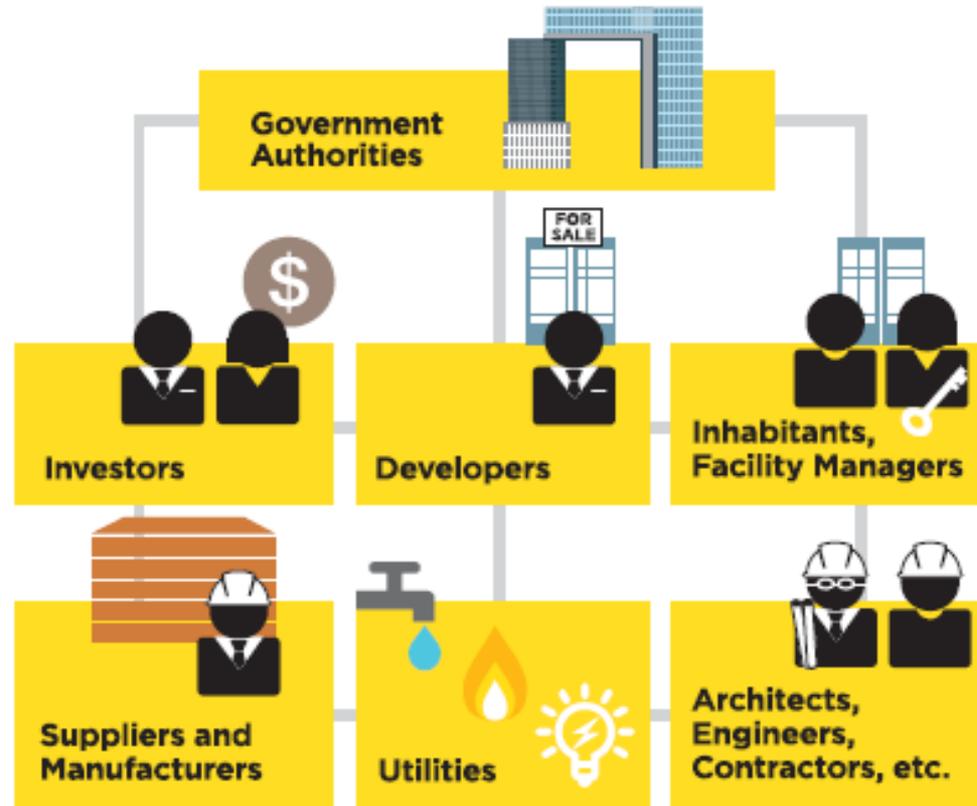
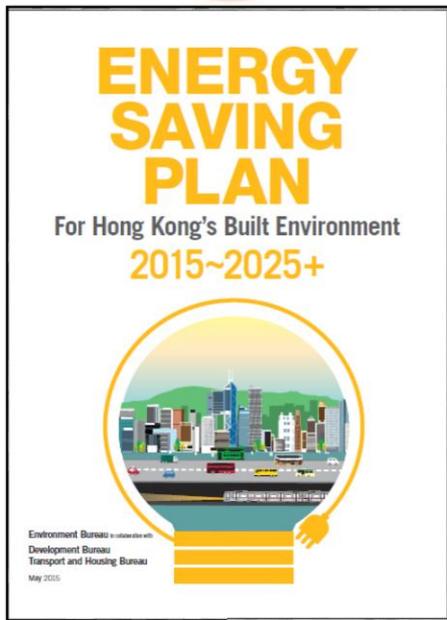


International Co-owners:



Innovation

Green Sustaining Operation of Existing Buildings



Organisers:



International Co-owners:



Innovation

Green Sustaining Operation of Existing Buildings

全民
節能

ENERGY SAVING PLAN

For Hong Kong's Built Environment
2015~2025+



Environment Bureau in collaboration with
Development Bureau
Transport and Housing Bureau
May 2015

Retro-commissioning and retrofitting of buildings

Most of the existing buildings were designed and built at a time when energy saving was not a foremost consideration. Nevertheless, many of the commercial and institutional buildings built in the past two decades were designed to meet various standards and had equipment built-in. When they were first built, there should have been a commissioning process to test performance.

Retro-commissioning is a cost-

effective systematic process to periodically check an existing building's performance. The process identifies operational improvements that can save energy and thus lower energy bills. The process can be performed alone or with a retrofit project, such as replacing less energy efficient appliances with more efficient ones (e.g. chillers, pumps, elevators, lights etc) and fitting meters to measure operations.

Global experience shows that even buildings that are just a few years old can benefit from retro-commissioning because it can still help to identify unnecessary energy losses, such as leakage in the building envelope, where energy management systems need to be reprogrammed, controls that are out of calibration or fault in equipment.



Organisers:



International Co-owners:



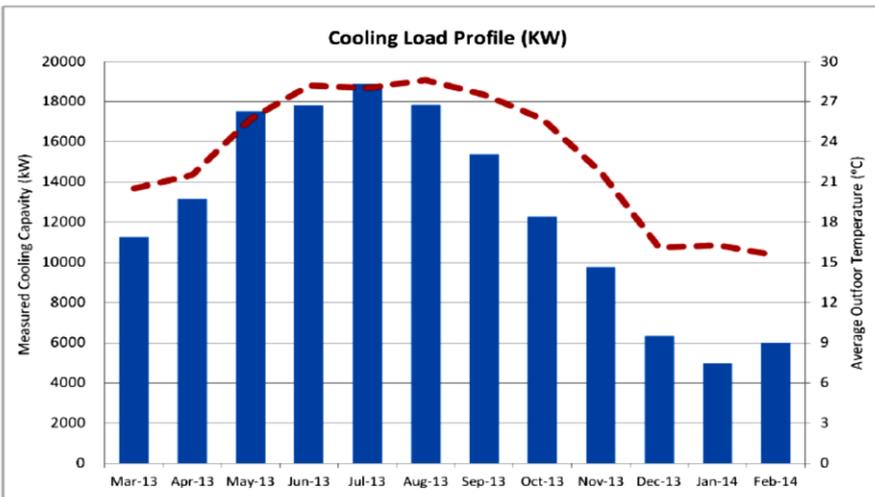
Innovation

Green Sustaining Operation of Existing Buildings

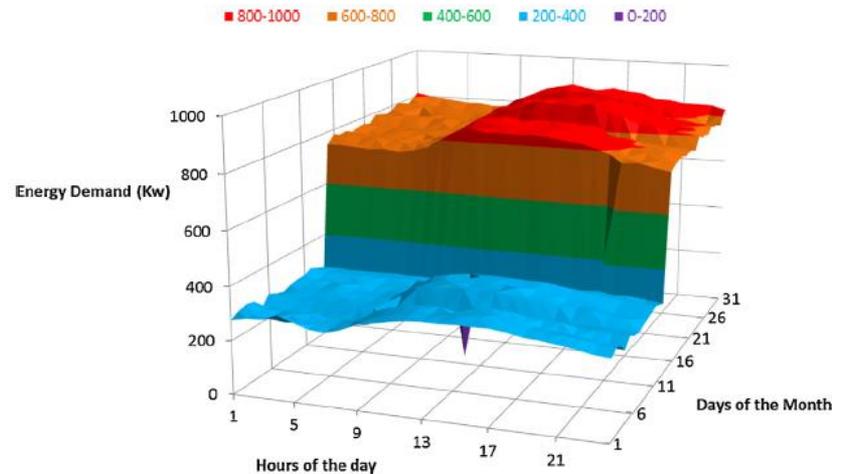


- ✓ Environmental Data (Indoor and Outdoor)
- ✓ Building Operations Data
- ✓ E&M System Operation Data

Cooling Load Profile



Cooling load vs Outdoor Temperature



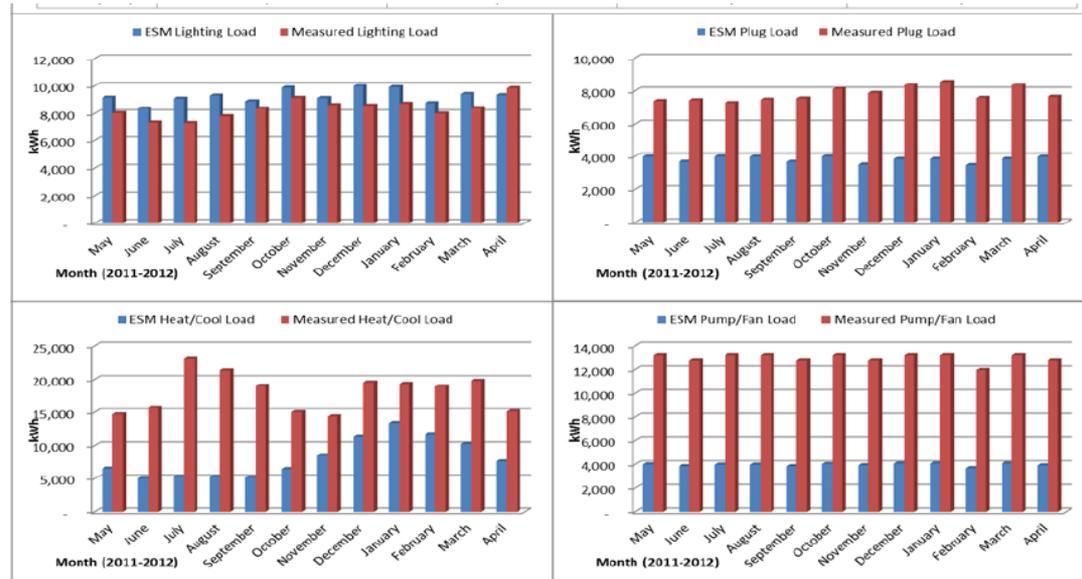
Daily, Monthly and Yearly Energy Demand

Innovation

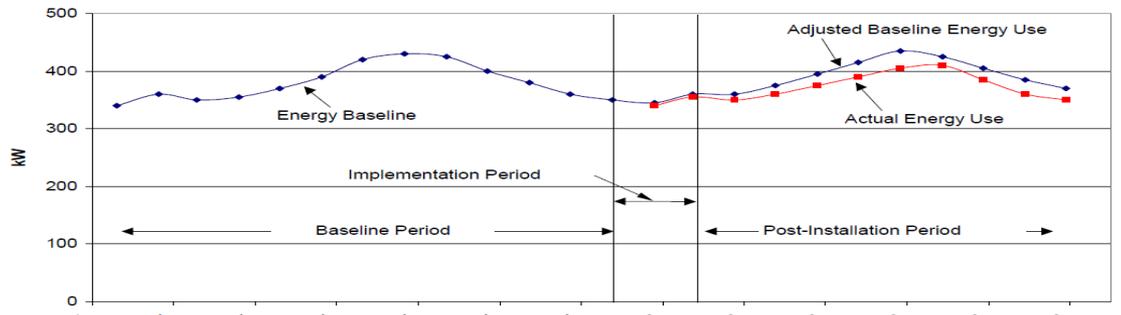
Green Sustaining Operation of Existing Buildings

▶ Objectives

- ✓ Collect the existing operations data
- ✓ Identify the gaps
- ✓ Develop a **GREEN OPERATIONS**



Simulated Load Demand vs Measured Load Demand



Sustain Green Operation



Face Lift



Former Air Cargo Terminal Building

Year 2005 – EMSD Headquarters

Conservation

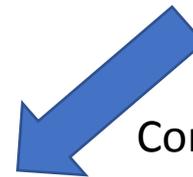
Waste Reduction

Greening

Green Power

Asset Management

Technology



Continuous Evolution / Transformation



Organisers:



International Co-owners:



Sustain Green Operation

BEAM Plus Online Exhibition

Transformation of EMSD Headquarters into a Green Building

Electrical and Mechanical Services Department, 3 Kai Shing Street, Kowloon, Hong Kong

Outlook of New Piazza of EMSD Headquarters 2

PLATINUM
鉑金級 ND 社區
Pilot 2016
HKGBC
BEAM Plus
綠建環評

Neighbourhood (Pilot Version)
Platinum

CA I.P.S.
DEQ SA
WA MA
EA

EMSD HQs will be a showcase for energy efficiency applications; as it will be the first existing building to change to use district cooling system. Furthermore, pedestrian-oriented transport planning measures and design will be integrated with renewable energy features for promotion of energy efficiency technologies.

The Education Path will be revamped to showcase and encourage sustainable lifestyle to the public. The visiting flexibility of the Education Path will be enhanced by transforming the visiting mode from guided-tour to self-guided tour. The Main Entrance of the EMSD HQs will be transformed as the starting / end point of the Education Path. Together with the café operated by a social



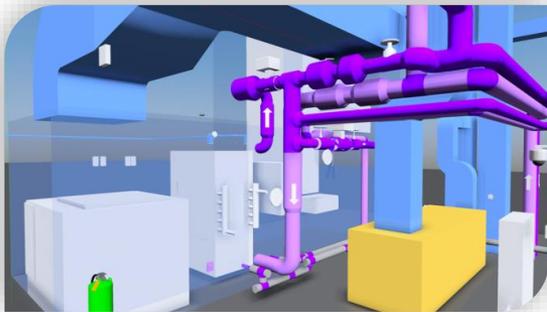
BEAM Plus Green Building



BEAM Plus Green Neighborhood



Sustain Green Operation



Organisers:



International Co-owners:



EMSTF STRATEGIC PLAN

What are our changes ?



Establish

- Customer Centric e Platform
- New customer service centre



Construct

- Integrated building management system
- Remote monitoring unit
- Geographic Information System

Strengthen

- Outsource and contract management
- E&M asset management

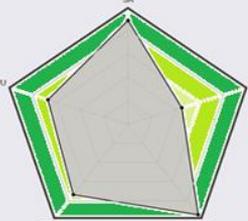


Implement

- Competence matrix
- Caring culture
- Knowledge management

Advocate

- Green operations
- Green building
- Lead by example



- Strengthen green
- Reliable partner
- Promote image



Sharing information
Green operation
Professional service



Simplify process
Green technology
Strength green power

Organisers:

International Co-owners:

Call for action



Source: <http://www.info.gov.hk/gia/general/201701/20/P2017012000736.htm>



Organisers:



International Co-owners:



Call for action



Enhancing Liveability

Develop Hong Kong into a smart city, protect and enhance our environment, combat climate change

Investing for the Future

Developing infrastructure to meet social and economic needs of Hong Kong

The annual expenditure on capital works projects will reach **\$86.8 billion** in 2017-18



Public Finance: Objectives and Approach



Developing the Economy
Proactively foster diversified development of the economy, strengthen the competitiveness of and explore new markets for the pillar industries; help industries which we have advantages as well as emerging industries so that our young people will have better job opportunities and a platform to realise their dreams



Improving Livelihood
Government resources ought to be used for the people, and be allocated according to need and priority to cater for the needy groups

A Sound and Progressive Fiscal Policy Making Good Use of Financial Resources



- Take into account source and nature of surplus, economic situation, future social needs and community's expectations to make optimal allocation of resources; maintain strict fiscal discipline to ensure expenditure of new measures are affordable in the long run
- Maintain healthy public finances to cope with the challenges posed by ageing population and to strengthen resilience to withstand economic fluctuations in order to maintain international confidence in Hong Kong
- Set up a tax policy unit to comprehensively study ways from a macro perspective to foster development of industries through tax measures; to strengthen Hong Kong's international competitiveness, and to enhance our tax regime

Investing for the Future

Developing infrastructure to meet social and economic needs of Hong Kong

The annual expenditure on capital works projects will reach **\$86.8 billion** in 2017-18



Nurture talent for a knowledge-based society and promote high value-added economic development



Enhancing Liveability

Develop Hong Kong into a smart city, protect and enhance our environment, combat climate change

Upholding Social Justice and Sharing Fruits of Success

Allocate resources to render assistance to people in need; share the fruits of economic advancement with people

These measures involve an additional recurrent government expenditure of about **\$9 billion** per year on average over the next 10 years



Living Allowances

Enhance the Old Age Living Allowance, about 500 000 elderly persons will be benefited in the first year upon full implementation



Health Care vouchers

Lower eligibility age for Elderly Health Care vouchers to 65 so that about 400 000 more elderly persons will be benefited



Source: <http://www.budget.gov.hk/2017/eng/pb.html>



International Co-owners:



Thank you



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Global Alliance
for Buildings and
Construction