Energy Performance Contracting

EMSD & IVE Seminar
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Hong Kong and the PRD

PRD sea level rise: 9-10Tcm by 2050
(Chinese Meteorological Administration)
A 65cm rise plus a historical high tide would flood 3,400km; a single-event economic loss of ~US$200 billion

- HK emitted 44.8 MT CO₂ in 2005 (~5.2% of global emissions)
- ~6.5 tonnes per capita (low - diverse fuel mix, great public transport, lighter manufacturing)
- However, this is not our total carbon footprint
- 2005 emissions 14% = 1990 levels, 2010 projection is 52 MT CO₂ (35% > 1990)
- Buildings ~10% of HK's total energy, 16% above global average

(Source: HKIIT, 2006)

The BEAM Green Building Label

“Whole-Life” Approach

Planning
Design
Construction
Commissioning
Completion
Operation
Maintenance
Management

- Endorsed by the Construction Industry Council as HK’s GBL
- Initiated by BEC and its members in 1996, governed by the non-profit HK-BEAM Society www.hk-beam.org.hk
- Industry-wide EsCo: BSOMES, BEC, CCC, CHHK, HKAPMC, HKCA, HKFEMC, IFMA-HK, PGBC (HKIA, HKIE, HKIL, HKIS, HKPI, REDA)

Operational Energy & BEAM

Energy
Materials
Site

Air Conditioning & Mechanical Ventilation

Variable speed pumps and fans drive temperature reset strategies
Optimal start-up of equipment free cooling by outside air
Dedicated refrigeration plant for chiller optimization systems

Lighting Systems

Electrical loads and central HVAC plant
Separate metering and monitoring of major electrical loads and central HVAC plant
Separate energy audit
Effective energy monitoring and targeting systems
Annual energy improvement budget
Energy management manual training
Separate energy charges among different users

Financial

Economical savings from the reduction of energy costs

2008-09 Budget proposals (20th Feb)

- 10% profits tax deduction for Capita on env’t friendly machinery
- 20% additional deduction period (from 25 to five yrs) for building installations
- R&D and EPD to announce the facilities that would qualify

EEB could reduce global carbon by 715 MT by 2010 (~27% of the projected GHG increase to that date)

Existing Buildings

- Existing buildings – overwhelmingly the biggest part of the energy inefficiency wastage problem
- 80% of the buildings we’ll be using 20 years from now already exist today
- Critical to achieve performance improvement especially via financial support, technology solutions and engineering expertise

Lighting electricity bills in Hong Kong cost more than $500,000,000 per year!!
Improving our energy / greenhouse gas benchmarks

- Voluntary rating, being initiated by BEC
  - actual emissions (kg CO2e/m²yr) associated with actual annual energy use
  - simple parameters: energy use, floor area, operating hours, number of occupants / computers
  - tenancy (corporate occupiers)
  - base building / central services (landlords, property / facility managers)
  - whole building (owners)
- Australian Building Greenhouse Rating (ABGR) System
- Over 36% of property by floor area rated in NSW, over 25% nationally
- Variation in energy costs between high and low base buildings can exceed HK$70/m² per annum
- It takes only 16m² of office space to match the annual greenhouse gas emissions of a typical Australian car

Are you going carbon neutral?

- Barclays UK (operations target 2010)
- Colleague (target 2008/2009)
- CIB Richard Ellis Group (target 2010)
- Credit Suisse (Switzerland area 2008)
- Expedia Corporate Travel (target 2007)
- Google (target 2007)
- HSBC (target 2008)
- P&G (Australia) (target 2008)
- Marks & Spencer (target 2010)
- National Australia Bank (target 2010)
- Nike (target 2012)
- Kibal Property Investments (Qatar)
- ST Microelectronics (target 2010)
- Verizon (target 2011)
- US Green Building Council (target 2007)
- World Bank (target 2006)
- Yoko Inc (target 2007)
- Source: Business for Social Responsibility

The Policy Address 2007/08

To further reduce greenhouse gas emissions, the Government will ask an example by conducting a Carbon Audit and implement an emissions reduction campaign in the new Central Government Complex at Tamar. I believe that the business sector will respond positively by implementing measures in suitable commercial buildings for this campaign.

- As an APEC member, Hong Kong will seek a reduction in energy intensity of at least 25% by 2020 (with 2005 as the base year)
- We will consult the public on the proposed mandatory implementation of the Building Energy Codes by means of legislation
- We will complete the legislative work related to the Energy Efficiency Labelling Scheme (1st phase) for household appliances early 2008 and start planning for the 2nd phase

Final Thoughts

- Mandatory BEC’s a step in the right direction but by no means on their own a silver bullet for our energy / climate change challenges (e.g. progressive tightening of standards required)
- Our overall push needs to be placed in the broader context of a carbon budget for Hong Kong
- Energy performance contracting has great potential for energy and cost savings, whilst enhancing building performance fulfilling our corporate commitments to carbon reduction
- Let’s not forget the wider opportunities for energy saving at the neighbourhood vs building level – distinct cooling, “carbon balancing” etc.