

Building Energy Efficiency in Hong Kong: Case Study of a Commercial Building with BEAM Plus Provisional Platinum Rating (Existing Buildings)

Dr Carmen POON, Dr Effie HUI, Dr Veronica CHAN

World Sustainable Built Environment Conference 2017 Hong Kong

Session 1.4: Practices Review of High-Performance Green Buildings

5 June 2017

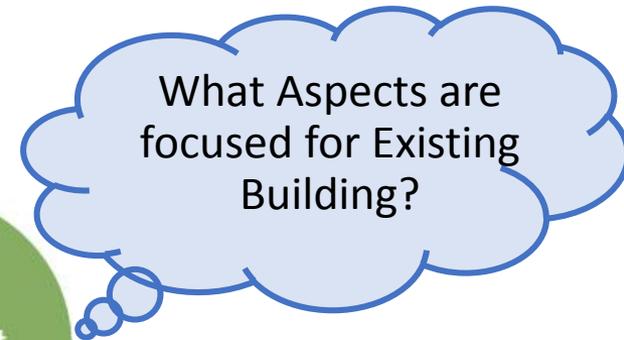
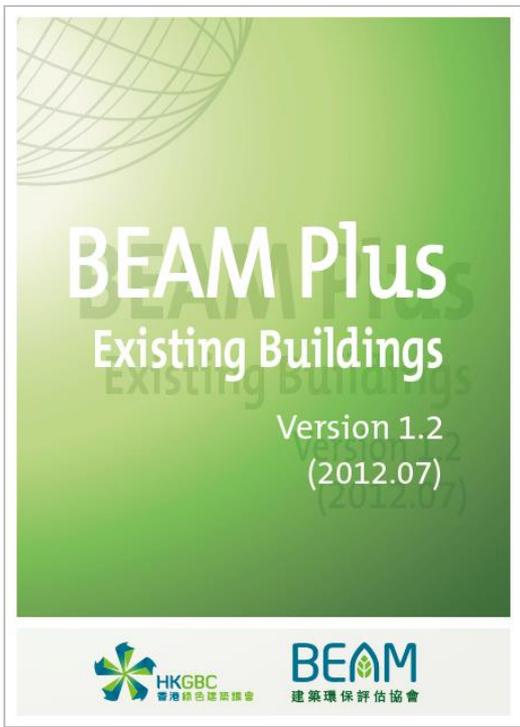
Session 1.4: Practices Review of High-Performance Green Buildings

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BEC –HQs Transformation | Energy Retrofit Measures | Driving Behavioural Changes | Achievement

BEAM Plus Existing Buildings V1.2

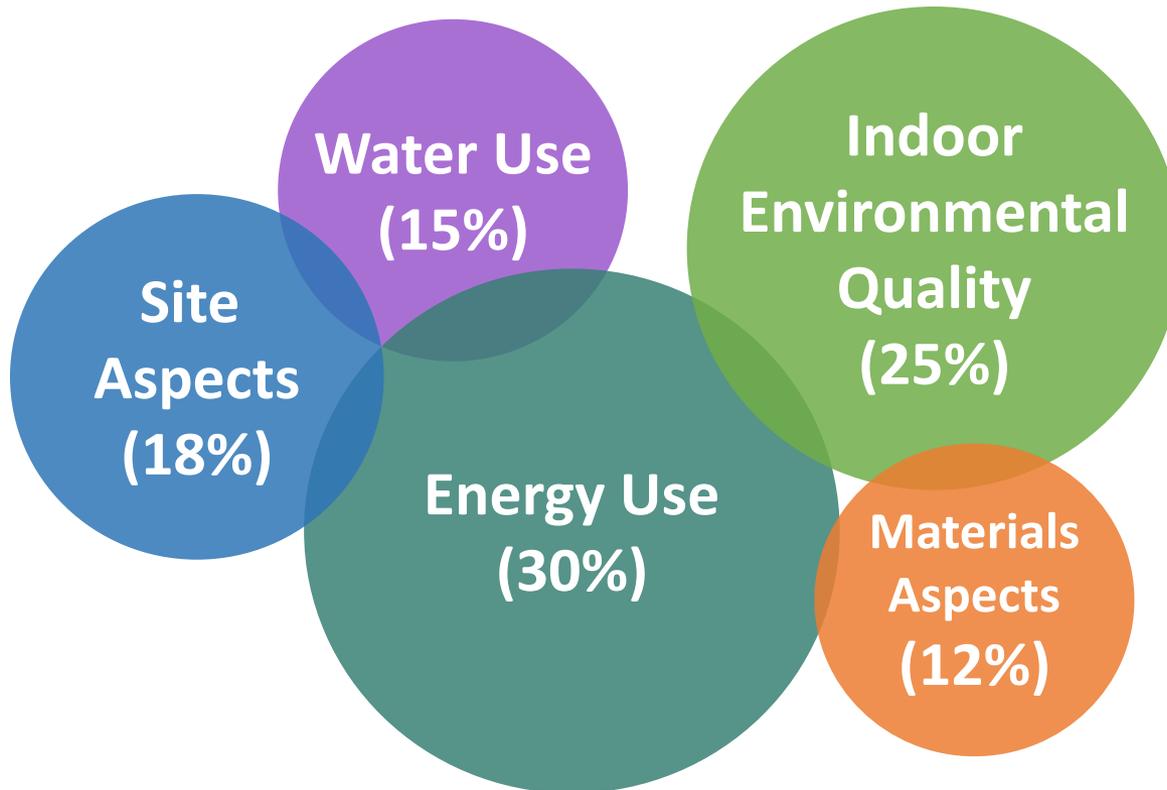


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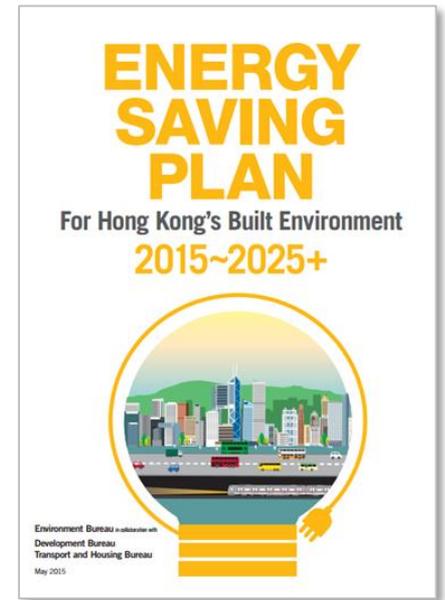
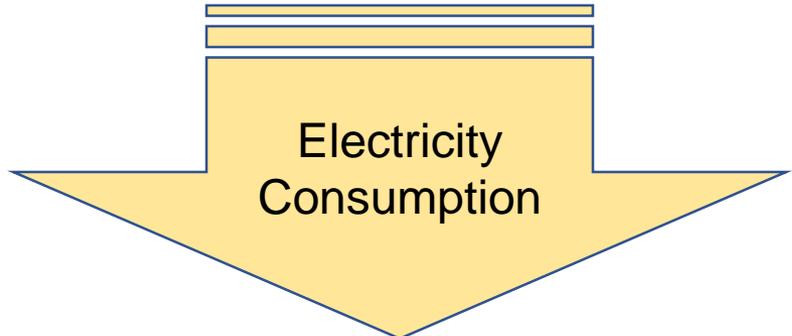
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Hong Kong has more than 42,000 existing buildings.



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Background of Building

- **Function:** Offices
- **Location:** Kowloon Tong, near the Kowloon Tong MTR station and a bus terminus
- **No. of floors:** 3 floors and a car park area at LG
- **Floor area:** Approx. 4,000 sq.m
- **Completion date:** September 1996



Organisers:



International Co-owners:

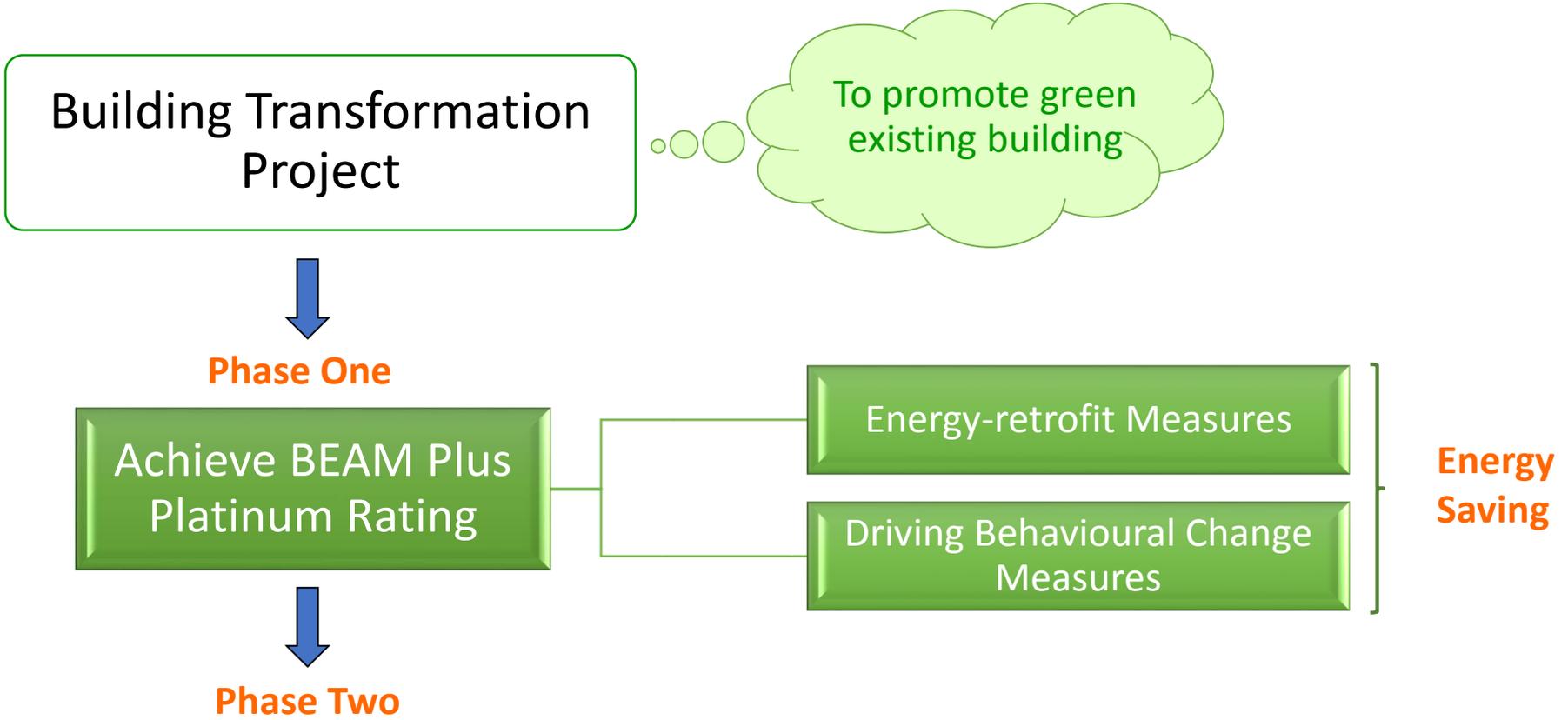




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Chiller Replacement

- New oil free variable speed air-cooled chiller



Organisers:



International Co-owners:



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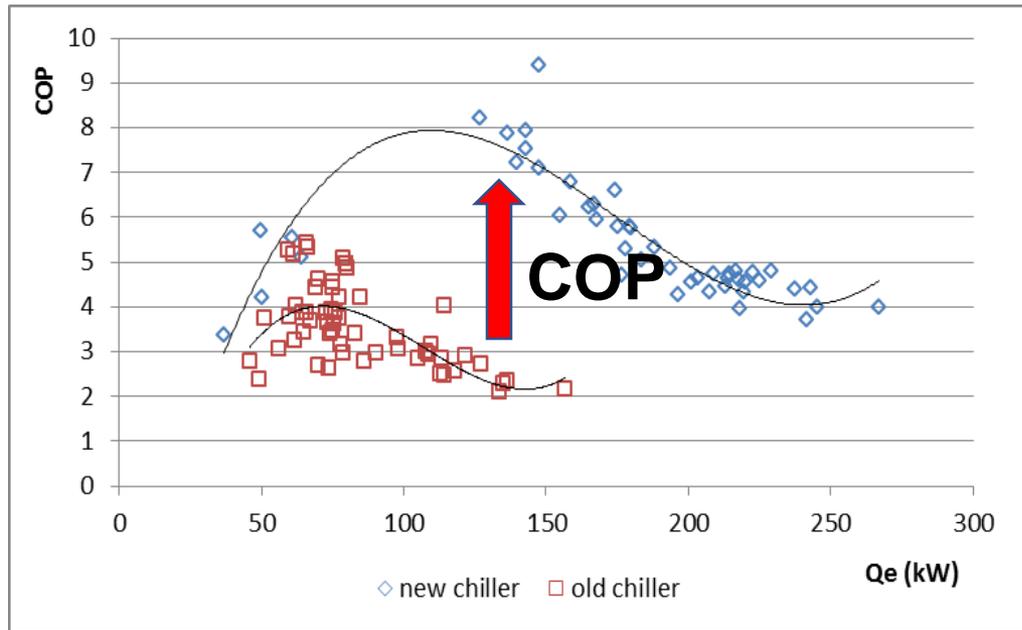
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Chiller Replacement

- Better COP & part load performance
- Energy Consumption of chilled water system reduced approximately **30%.**



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Lighting Upgrade



BEC Office	No. of Luminaire	Unit Power of Luminaire (W)	Annual Power Consumption (kWh)
T8 Florescent Tube	207	60	19,698
LED Panel	111	40	9,490
Improvement	96 Reduced	33% Reduced	52% Reduced



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Lighting Upgrade – Wide Adoption of LED



Office/Corridor



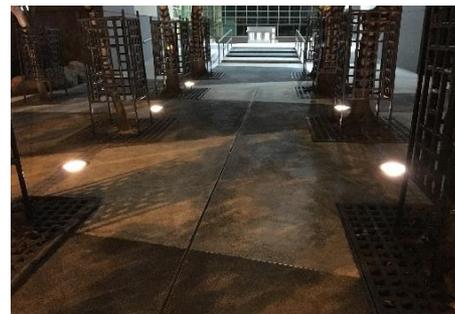
Lift



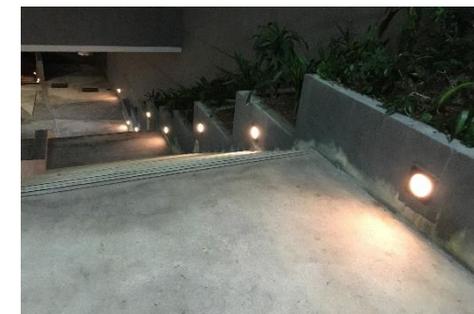
Indoor Staircases/
BOH Corridors



Exit Sign



Floor Light



External Staircases

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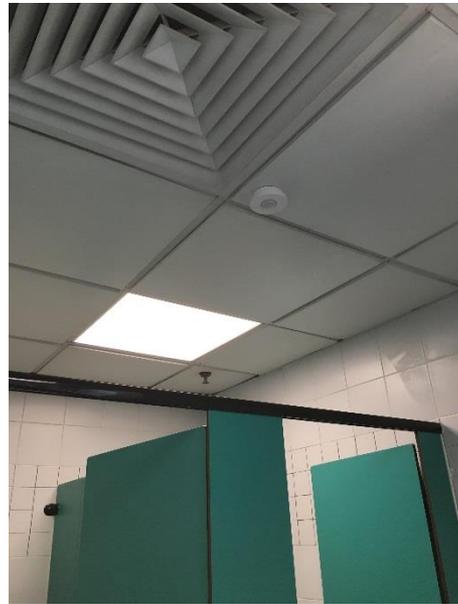


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Installation of Lighting Sensors



Daylight Sensor



Occupancy Sensor at Toilet & LG/F



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Installation of Power Meters

- Separately monitoring of power consumption
 - Chiller Plant
 - Air Handling Units
 - Lighting system
 - Lift Installation
 - Small power



Installation of Power Meter

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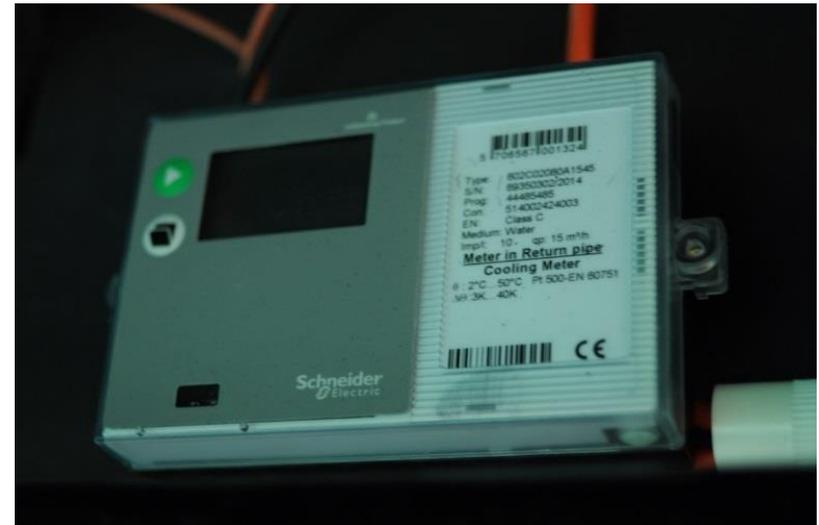
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Installation of Energy Meters

- To evaluate energy consumption of air-conditioning
- To be adopted as a factor of **Green Lease**



Energy Meter

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Retro-commissioning of BS Installations

- Optimise system performance

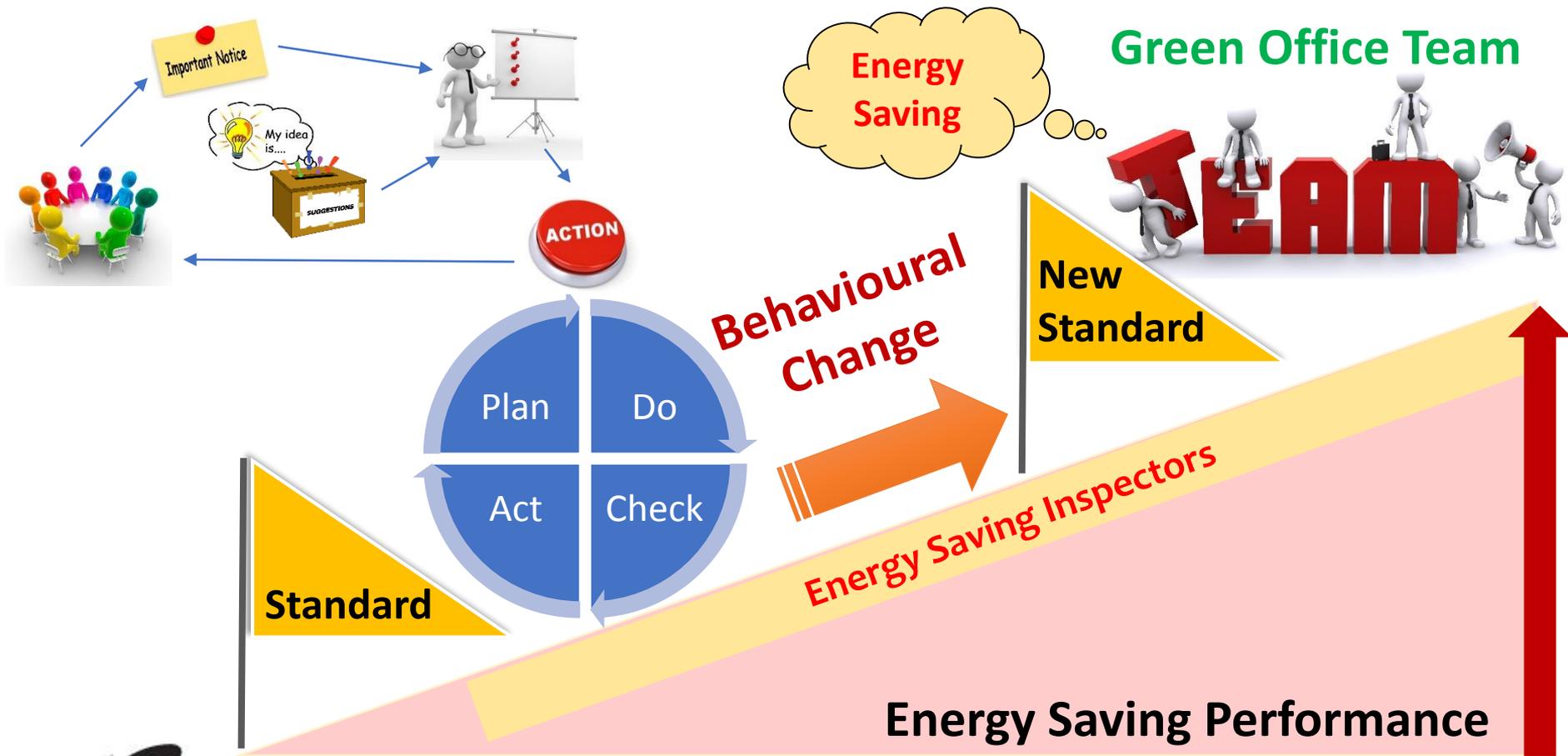


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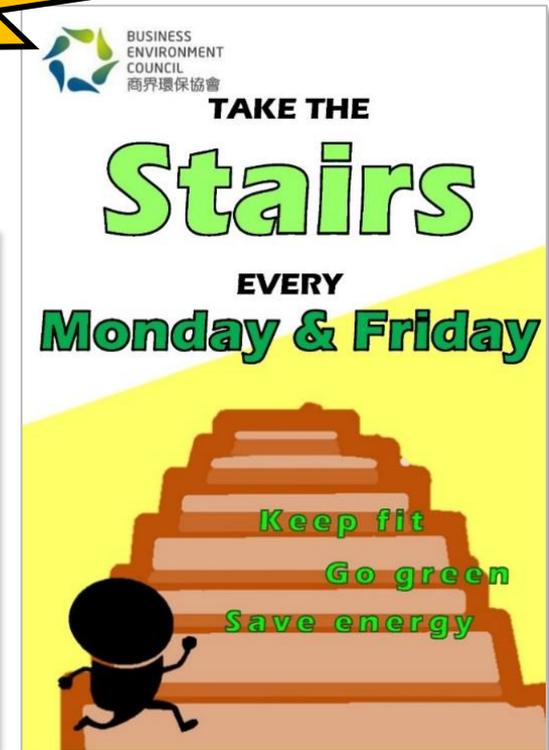


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Stairs Days

1. Stair Friday
2. Stair Monday & Friday
3. Invite tenants to participate

5% daily lift electricity consumption is saved.



Organisers:



International Co-owners:



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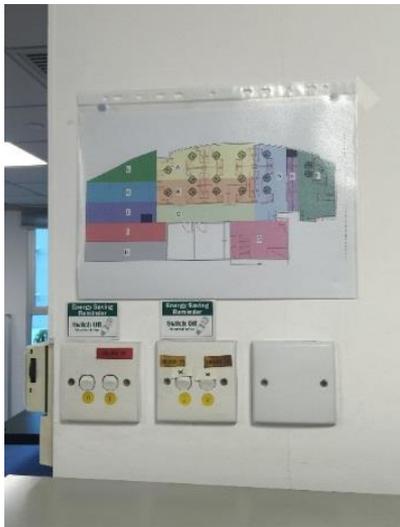
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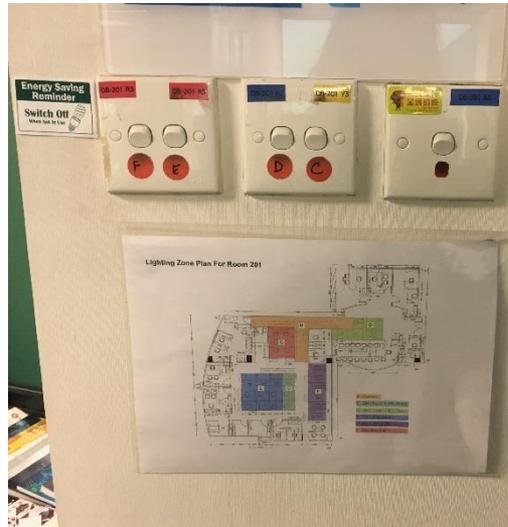
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Lighting Energy Saving Measures

- Reduce excessive lighting



Lighting zones



Light Off during Lunch

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Energy Saving Reminder



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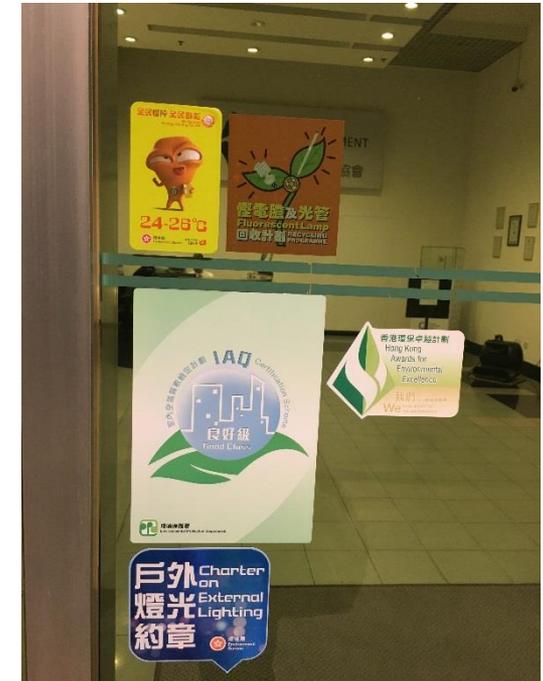
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Supporting to Government Initiatives

- Charter on External Lighting
- Energy Saving Charter



**WE
PROMISE!**



International Co-owners:

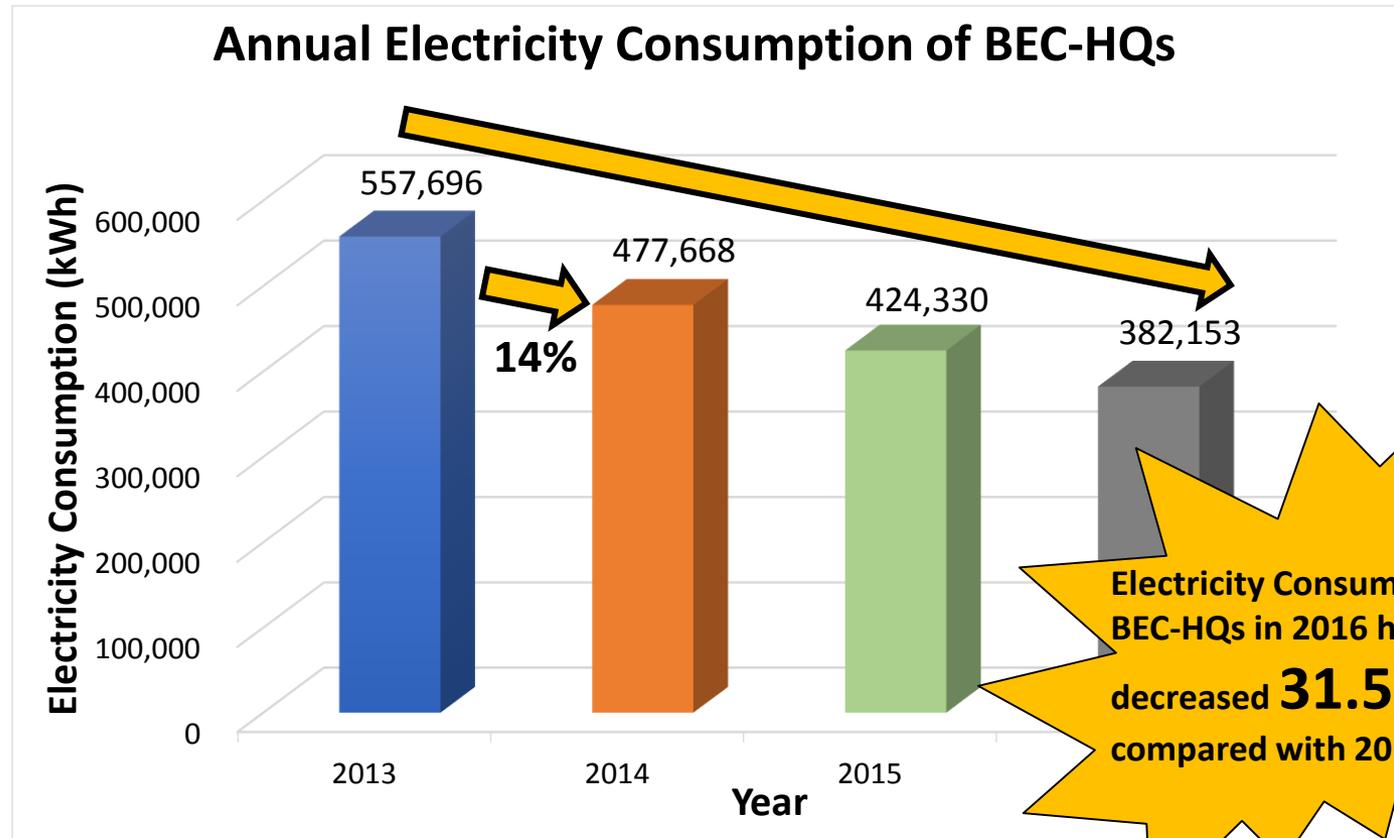


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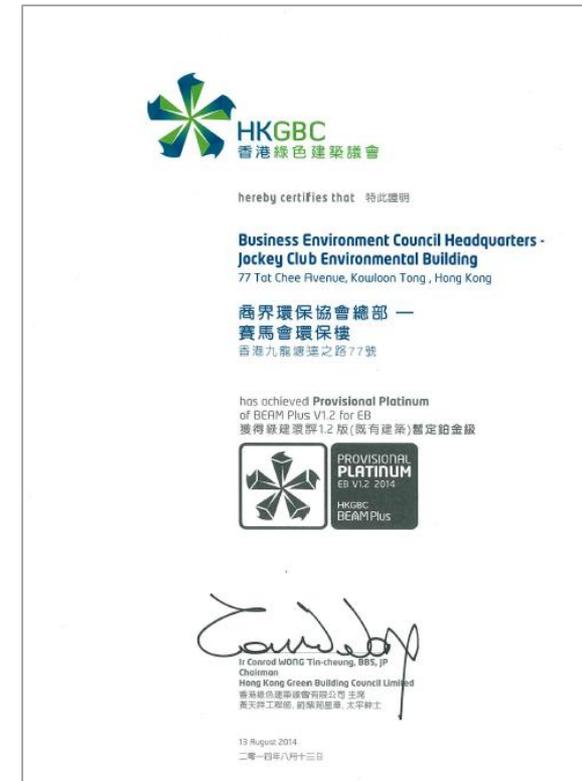


BEC –HQs Transformation | Energy Retrofit Measures | Driving Behavioural Changes | **Achievement**

BEAM Plus Achievement

Category	Weighting (%)	Credits Achieved
Site Aspects	18	16
Materials Aspects	12	4.4
Energy Use	30	24.4
Water Use	15	10.7
Indoor Environmental Quality	25	19.2
Innovations and Additions	-	5
Total		79.7

Achieved the Platinum Rating of Provisional Assessment under the BEAM Plus Existing Buildings (V1.2)



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Conclusion

- Significant reduction on electricity consumption
- Showcase of green building transformation
- Continual improvement



Organisers:



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