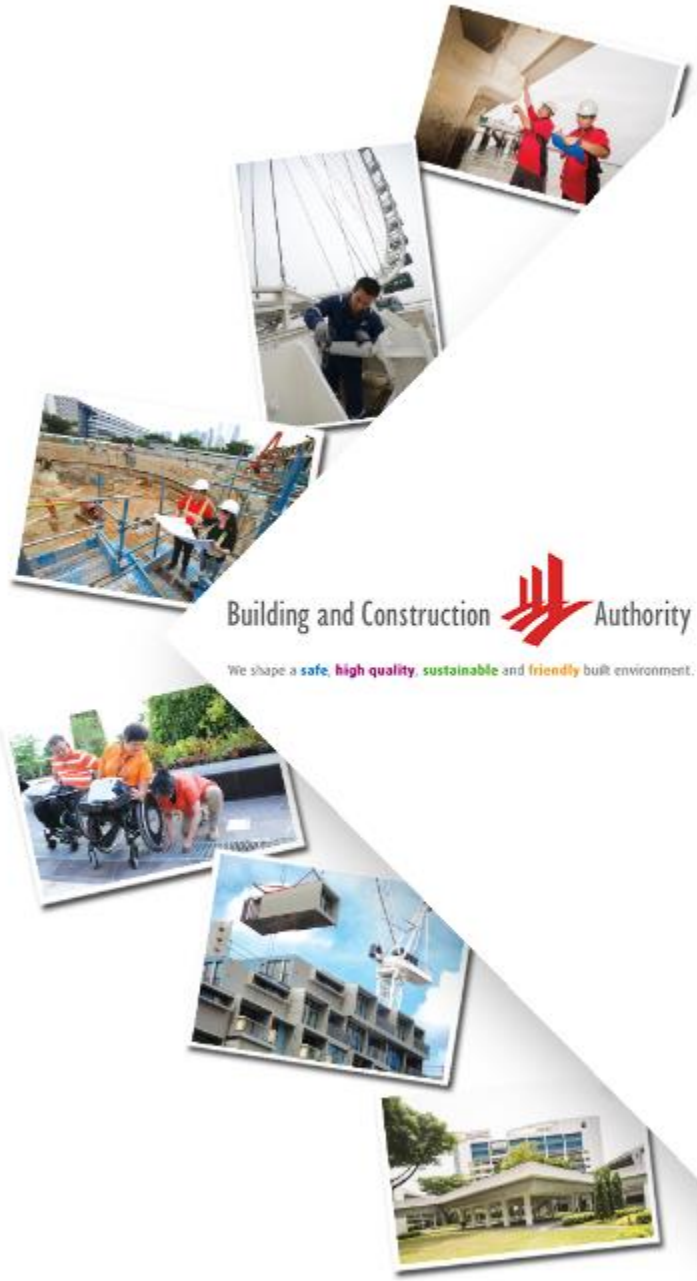
Singapore's Green Building Progress

For 20th Energy Conservation Workshop under the ASEAN-Japan Energy Efficiency Partnership (ECAP20)

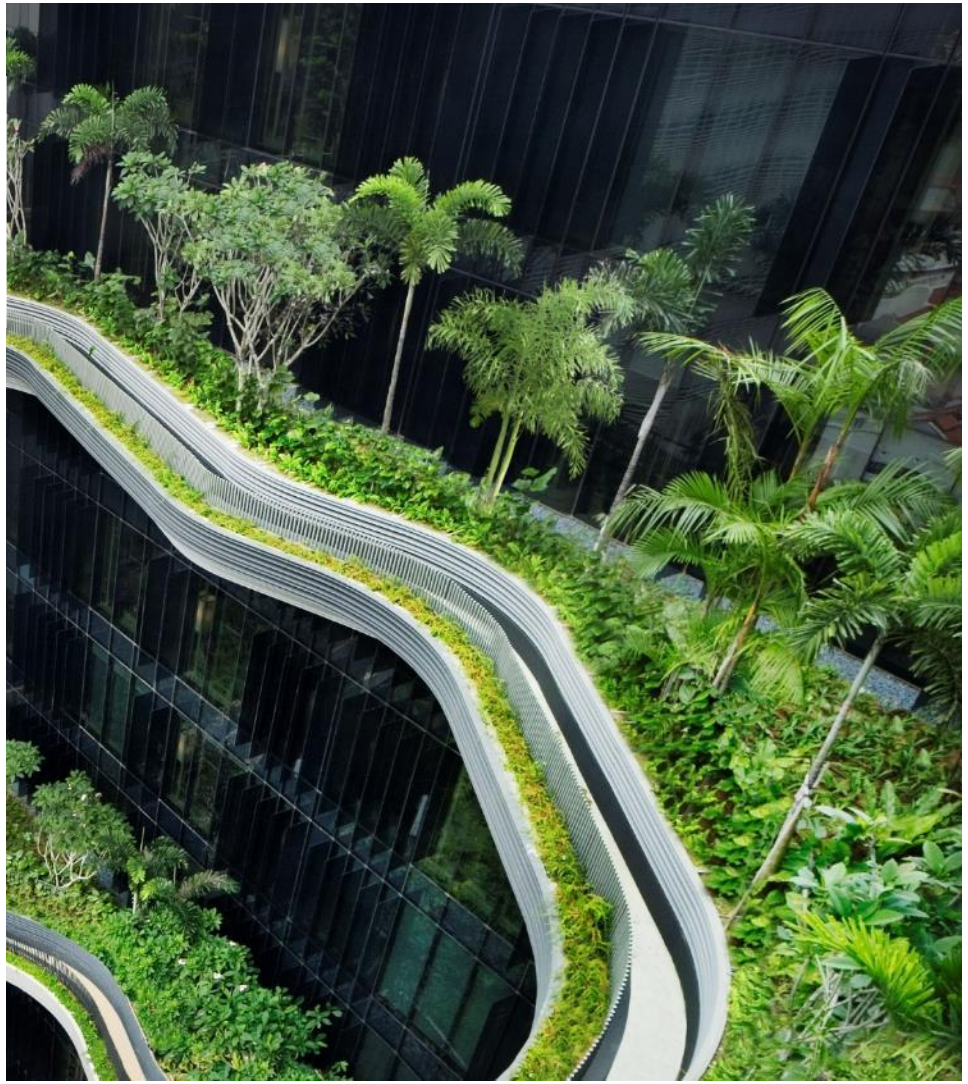


Toh Eng Shyan
Director, Green Mark for Existing Buildings
Building and Construction Authority,
Singapore

Outline

1. Singapore's Green Building Progress

2. Next Lap



Current Status

Focus
New Buildings

→

Focus
Existing Buildings

(early focus on commercial/ institutional buildings due to higher energy footprint)

→

Focus
Occupants and Tenants

→

Focus
Super Low Energy Buildings

OUTCOME FOR 2030

Green
80% GFA
by 2030

NEW BUILDINGS

2005

Launched BCA Green Mark Scheme

2006

1st GREEN BUILDING MASTERPLAN

2008

Legislation for New Buildings

EXISTING BUILDINGS

2009

2nd GREEN BUILDING MASTERPLAN

2012

Legislation for Existing Buildings

OCCUPANTS AND TENANTS

2014

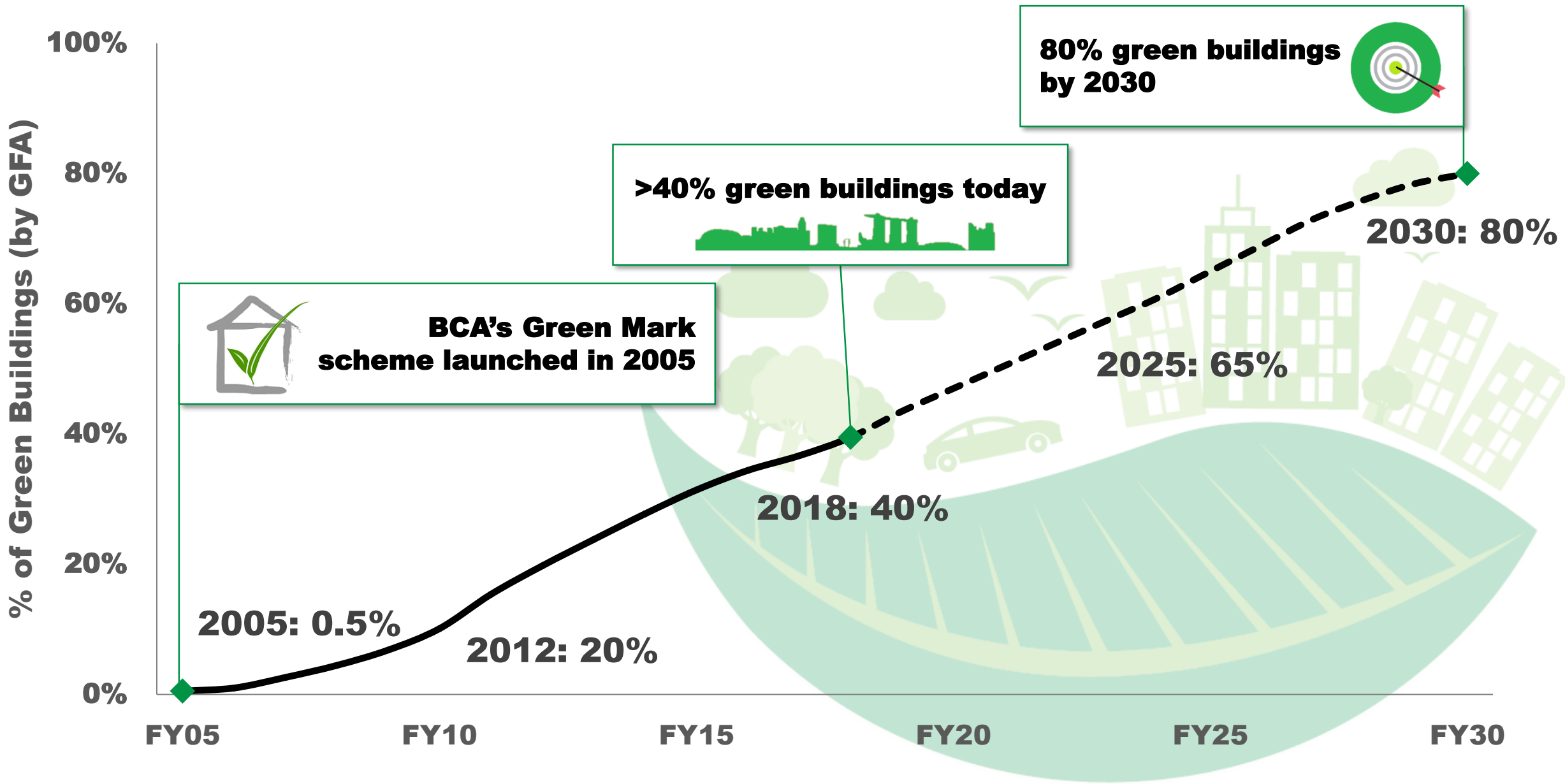
3rd GREEN BUILDING MASTERPLAN

2017

Mid-term Review of 3rd GBMP

2005	2010	Sept 2019	2020	2030
< 0.1% Green Buildings	> 13% Green Buildings	>40% Green Buildings	>50% Green Buildings	>80% Green Buildings

Current Status



Going Forward » Mandatory Disclosure

2013

Phase 1A
Legislation on Mandatory Submission

2014

Phase 1B
Naming of Top 10 Commercial Buildings in BCA BEBR

2016

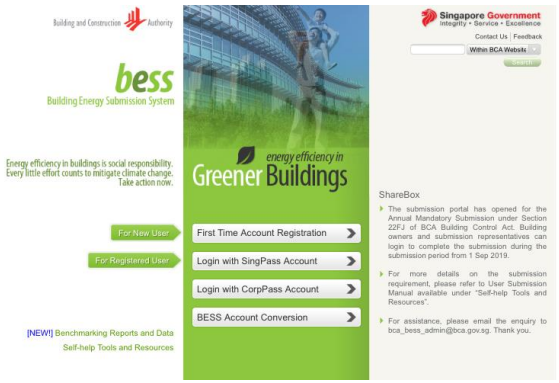
Phase 2A
Anonymised Disclosure of Building Energy Performance Data

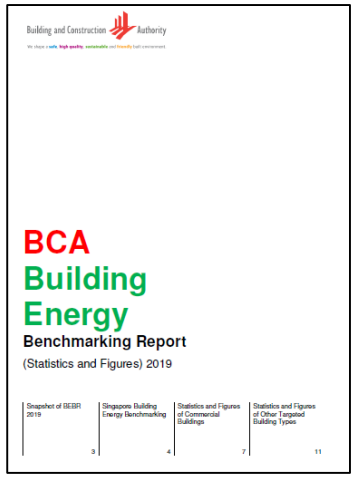
2017

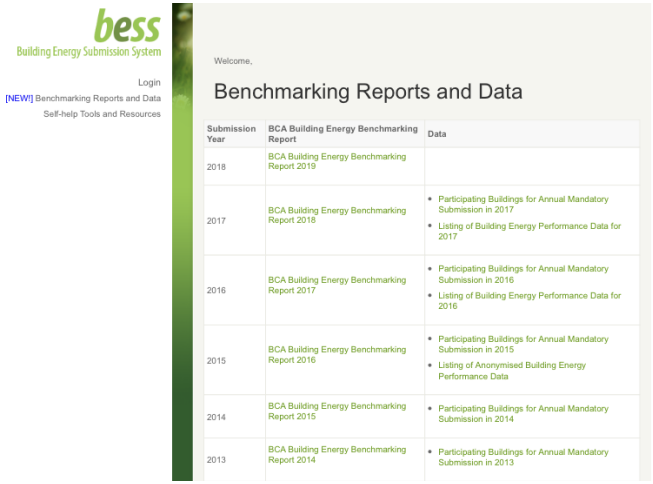
Phase 2B
Voluntary Disclosure of Building Energy Performance Data

Beyond 2020

Phase 3
Mandatory Disclosure



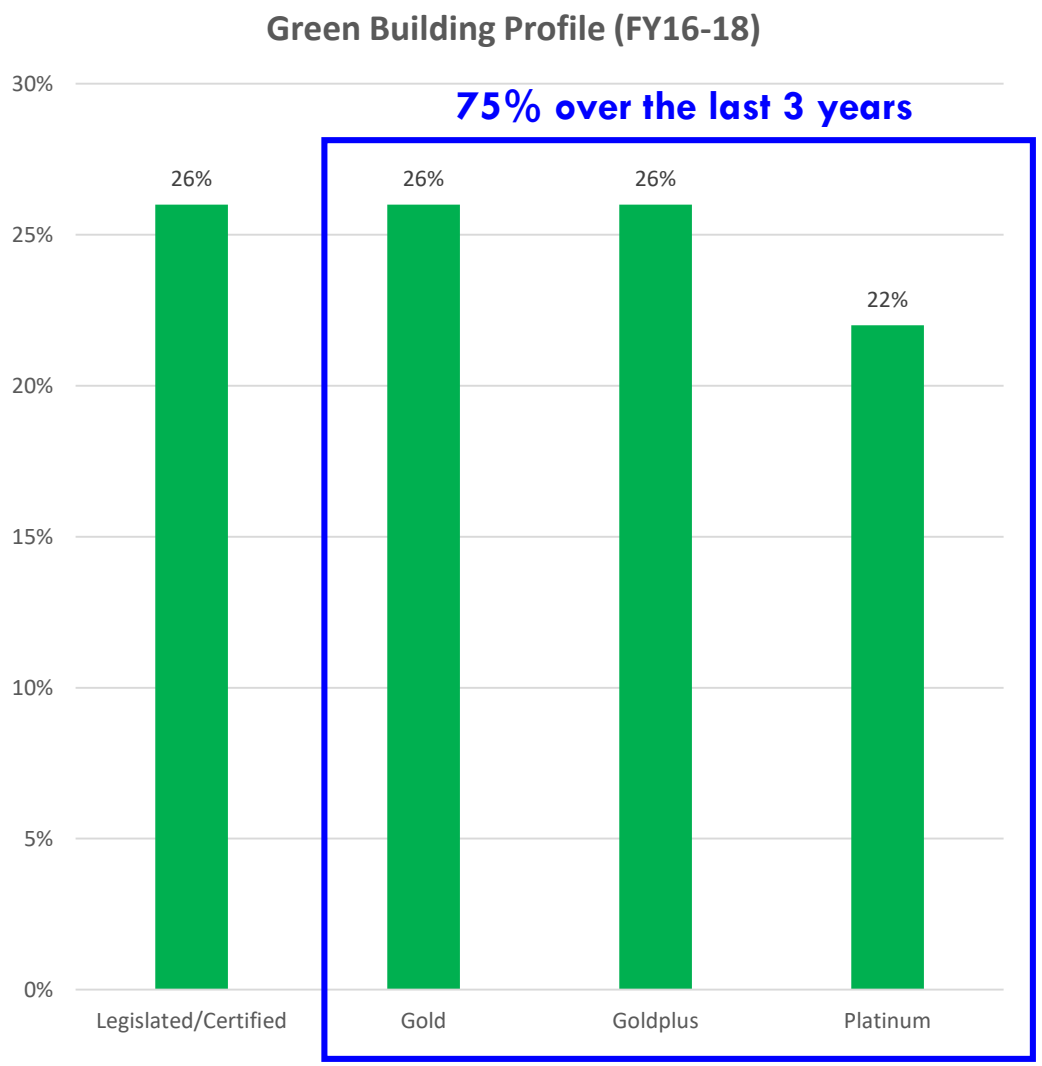




Upcoming

Going Forward

Embrace Higher Standards



POTENTIAL TO RAISE MINIMUM STANDARDS

Key analysis from the green building profile in the last 3 years

- ✓ Majority has gone beyond the legislative standards to higher standards (i.e. Green Mark)
- ✓ High-tier take-up rate mainly attributed to PSTLES, GLS and GM GFA levers
- ✓ In particular, Non-Residential Buildings have shown strong adoption rate for Platinum standard → potential to strive for SLE

Business Case to Raise Minimum Standards

Result from Independent Review of Green Mark Schemes

- Green Mark buildings reap net positive savings over their lifecycle
- Strong case to raise minimum standards

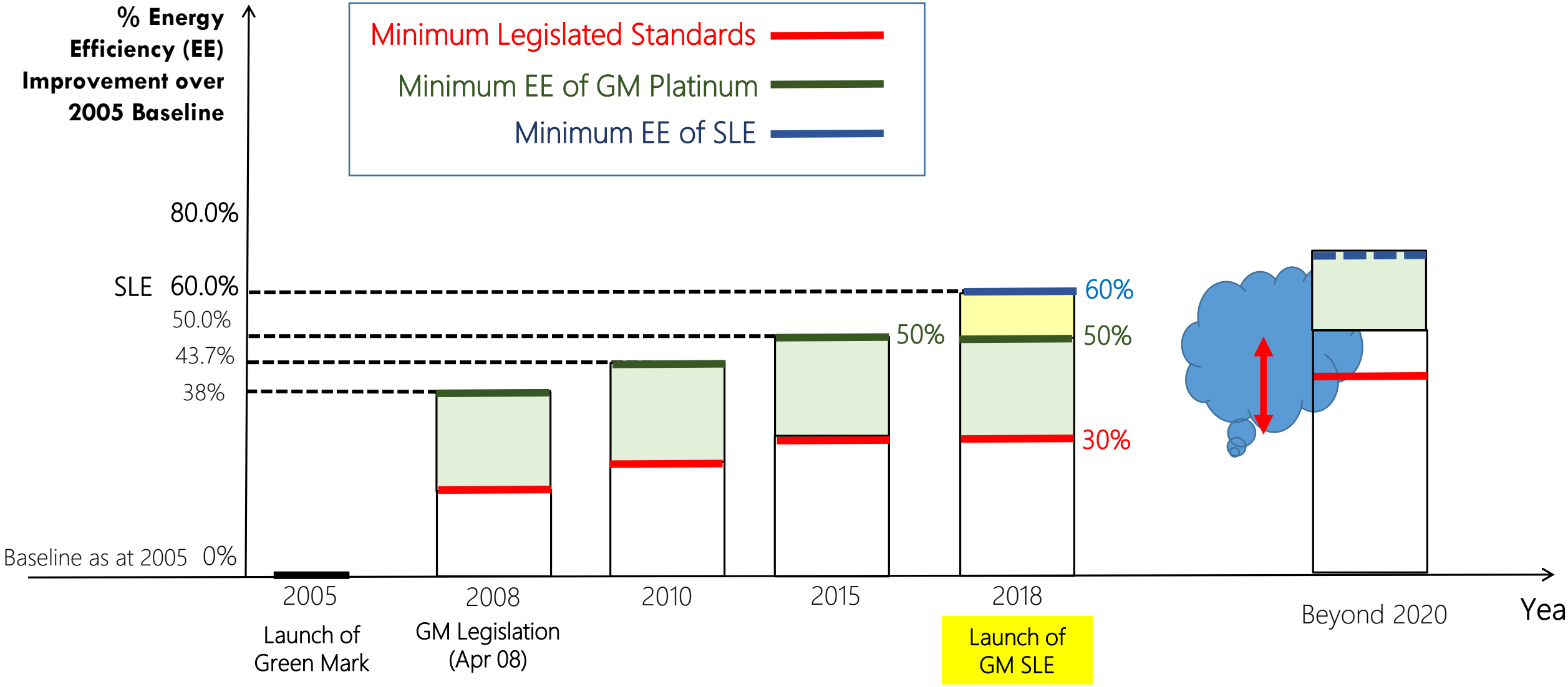
Green Mark Rating	Green Cost Premium[1]	Simple Payback (years)
Platinum	1.00 % - 4.40%	2.3 – 5.8
Gold^{PLUS}	0.70% - 1.87%	1.9 – 3.6
Gold	0.12% - 1.80%	0.8 – 2.5

[1] *Analysis based on Non-Residential Buildings (NRB)*

Independent consultancy study on BCA Green Mark Scheme by Squire Mech, BSD, RSP Architect, Arcadis.

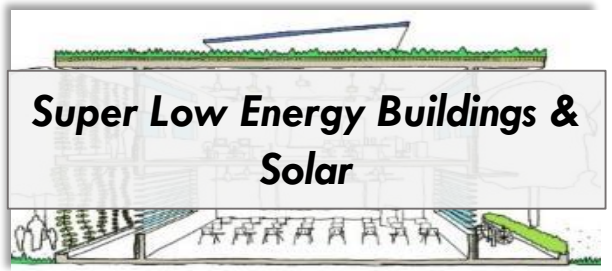
Going Forward

EE Standards for New Non-Residential Buildings



Focus Areas Identified

Key Focus Area 1



Reducing energy demand through Super Low Energy (SLE) Programme and increasing energy supply through solar deployment

Key Focus Area 2

Sustaining optimum performance of well-designed green buildings through good quality facilities management (FM)

Tripartite FM implementation committee (FMIC)

FM Implementation Committee (FMIC)

A1 Design for Maintainability (DfM)

- DfM Guide — May 2019
- Maintainable Design Assessment System (MiDAS)
- GM-MiDAS

A2 Smart FM

- Guide to Smart FM — Oct 2019
- Ops-Tech Roadmapping (OTR) — Oct 2019

B Procurement

- Tender Evaluation framework
- Procurement Guide
- FMC Registration (for public sector)

C Manpower & Industry Development

- FMC Certification
- FM Skills Framework

Next Lap for Green Buildings

Raising the Efficiency Standards for VRF and Aircon Plant

Minimum Energy Performance Standards (MEPS)

Raise average energy efficiency of products n the market

Extending the minimum energy performance standards to include Variable Refrigerant Flow (VRF) air-conditioners

Mandatory Energy Labelling Scheme (MELS)

Helps consumers make informed purchasing decisions

Display of energy label on Variable Refrigerant Flow (VRF) air-conditioners products and all publicity materials

Minimum Energy Efficeincy Standards (MEES)

Set standards for Water-Cooled Chilled Water Systems in industrial facilities

Any industrial facility that has an electrically driven water-cooled chilled water system and conduct yearly reporting

BCA GREEN MARK

Building and Construction Authority