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MARINA BAY SANDS, SINGAPORE

Presented by: Building and Construction Authority



FACTSHEET

BCA GREEN MARK & GREEN BUILDING MASTERPLAN

(as at 6 September 2013)

Background

The BCA Green Mark scheme was launched in 2005 as a yardstick to rate the environmental sustainability of buildings in the tropics. A comprehensive suite of initiatives was subsequently introduced through BCA's first Green Building Masterplan in 2006 and the second Green Building Masterplan in 2009 to stimulate the growth of green buildings.

Over the past few years, the Green Building Masterplan and its host of initiatives are continually reviewed and enhanced towards achieving the national target of greening at least 80% of the buildings in Singapore by 2030, and to maximise the potential for cost-effective energy savings in our built environment.

BCA Green Mark Schemes

The Green Mark scheme assesses buildings for:

- Energy Efficiency
- Water Efficiency
- Environmental Protection
- Indoor Environmental Quality
- Other Green Features and Innovation

There are four ratings under the scheme:

- Platinum
- Gold^{Plus}
- Gold
- Certified

During the first year, there were only 17 green building projects in Singapore. Now, eight years down the road, and with various green policies and incentives put in place by BCA, the number has grown to more than **1,650**. This translates to **about 48.7 million m²** of Gross Floor Area (or **21% of the total Gross Floor Area**) in Singapore.

As buildings account for about one-third of the total national electricity consumption, with existing buildings making up a large bulk of this stock, the 2nd Green Building Masterplan places special emphasis on the greening of these buildings. Besides commercial buildings, existing residential buildings, which contribute to more than half of the total Gross Floor Area in Singapore, is another area that BCA is focusing on.

Besides developing Green Mark schemes for buildings, BCA has also collaborated with various government agencies such as the National Parks Board (NParks) and the Land Transport Authority (LTA) to tailor Green Mark schemes to assess the environmental performance of areas beyond buildings, such as parks and rail transit systems. In addition, the Green Mark has been extended to other types of developments, sub-developments as well as multi-developments within a location.

The BCA Green Mark schemes now include the following 16 schemes:

BCA Green Mark Schemes for Buildings

- BCA Green Mark for New Non-Residential Buildings
- BCA Green Mark for Existing Non-Residential Buildings
- BCA Green Mark for New Residential Buildings
- BCA Green Mark for Existing Residential Buildings
- BCA Green Mark for Landed Houses
- BCA Green Mark for Existing Schools

BCA Green Mark Schemes (Beyond Buildings)

- BCA-NParks Green Mark for Existing Parks
- BCA-NParks Green Mark for New Parks
- BCA-LTA Green Mark for Rapid Transit System
- BCA Green Mark for Infrastructure
- BCA Green Mark for Districts

BCA Green Mark Schemes (User Centric)

- BCA Green Mark for Office Interior
- BCA Green Mark for Restaurants
- BCA Green Mark for Data Centres
- BCA Green Mark for Supermarkets and Retail
- BCA Green Mark Portfolio Programme

BCA Green Mark Incentives and Financing Scheme for Building Owners

To encourage building owners to build green buildings and to retrofit their existing buildings to achieve greater energy efficiency, BCA rolled out several incentive schemes for both new buildings and existing ones.

\$100 million Green Mark Incentive Scheme for Existing Buildings (GMIS-EB)

The \$100 million GMIS-EB provides:

(a) A cash incentive for upgrading and retrofitting scheme that co-funds up to 50% (capped at \$3 million for Green Mark Platinum projects) of the costs of energy efficient equipment installed to improve the energy efficiency of existing buildings, and;

(b) A 'health check' scheme, which is an energy audit to determine the efficiency of the air-conditioning plants. BCA will co-fund 50% of the cost for conducting this Health Check and the remaining 50% will have to be borne by the building owner.

Green Mark Gross Floor Area (GM GFA) Incentive Scheme

To encourage the private sector to develop buildings that attain higher Green Mark ratings (i.e. Green Mark Platinum or Green Mark Gold^{PLUS}), BCA and the Urban Redevelopment Authority (URA) introduced a set of Gross Floor Area (GFA) incentives in 2009. For developments attaining Green Mark Platinum or Gold^{PLUS}, URA will grant additional floor area over and above the Master Plan Gross Plot Ratio (GPR) control (up to 1% additional GFA for Gold Plus and up to 2% for Platinum).

\$5 million Green Mark Incentive Scheme – Design Prototype (GMIS-DP)

The GMIS-DP scheme is aimed at encouraging developers and building owners to strive for greater energy efficiency in buildings by placing more emphasis at the design stage. The scheme provides funding support for the engagement of Environmentally Sustainable Design (ESD) consultants to conduct collaborative design workshops and assist in simulation studies early in the project to achieve a breakthrough and optimal design for green buildings.

Building Retrofit Energy Efficiency Financing (BREEF) Scheme

BREEF is a financing programme designed to provide credit facilities for commercial building owners, MCSTs and Energy Services Companies (ESCOs) to carry out energy efficiency retrofits under an Energy Performance Contract (EPC) arrangement. The EPC can ensure that a minimum level of energy savings can be achieved. The scheme also provides credit facilities for the purchase and installation of energy efficient equipment. BCA will share 50% of the risk of any loan default with the participating financial institution issuing the loans.

Public Sector Taking the Lead

The public sector will be leading the way to achieve the highest Green Mark Platinum accolade for all new public sector buildings. In addition, existing public sector buildings will be retrofitted to meet the Green Mark Gold^{PLUS} standard by 2020.

Higher Green Mark Standards for Government Land Sales Sites in Selected Strategic Areas

To maximise the potential for cost-effective energy savings in our built environment, projects developed on Government Land Sales (GLS) sites in Marina Bay and Downtown Core, Jurong Gateway in Jurong Lake District, Kallang Riverside and Paya Lebar Central are required to meet higher Green Mark standards as shown in the table below.

Selected Strategic Areas	Green Mark Certification for GLS Sites
Marina Bay	Green Mark Platinum
Downtown Core, including areas within the CBD located next to Marina Bay	Green Mark Gold ^{PLUS}
Jurong Lake District	
Kallang Riverside	
Paya Lebar Central	

Legislation on Environmental Sustainability of Buildings

Since 2008, BCA enhanced the Building Control Act and put in place the Building Control (Environmental Sustainability) Regulations, to require a minimum environmental sustainability standard that is equivalent to the Green Mark Certified level for new buildings and existing ones that undergo major retrofitting. In 2011, BCA announced that it was planning to extend minimum Green Mark standards to existing buildings as and when they are retrofitted, making Singapore one of the first few countries in the world to mandate such standards for existing buildings.

Besides meeting minimum standards, these buildings need to continue to operate at the optimum performance level, so that they will be able to reap the most benefits out of their retrofits. Therefore, there will also be a requirement for owners to conduct three-yearly audit on their building cooling systems in these buildings.

Despite the slew of initiatives, more would still have to be done to achieve the greater goal of greening Singapore's built environment. BCA requires the strong collaboration of government agencies and stakeholders – to develop resource-efficient new buildings and to provide best solutions to retrofit the existing stock of buildings to improve their energy efficiency.

Building a Green Workforce

To meet the increasing demand for green professionals and more advanced technologies in the oncoming years, BCA developed a holistic training framework to build up our capabilities in this area. BCA Academy, the training arm of BCA, has put in place a range of training and development programmes ranging from certification courses like the Green Mark Manager

Course and Green Mark Professional Course to post-graduate programmes offered in collaboration with renowned universities overseas.

The aim is to train some 18,000 to 20,000 green specialists at the PMET level by 2020, in the development, design, construction, operation and maintenance of green buildings. These professionals will be the core competency leading Singapore towards a more sustainable future.

Why Green Buildings?

So why should we green our buildings? As part of the global community, Singapore must play its role to reduce the overall carbon footprint, particularly in our buildings. This is also in line with our national objective to achieve a 35% improvement in energy efficiency from 2005 levels.

For the private sector, there is also strong business case and a string of long term benefits for green buildings, especially if an integrated design approach is adopted from Day One. In general, the cost premium of new green building projects over the past years is about 0 to 2% for basic Green Mark building and 3 to 5% for Green Mark Platinum building. This premium is gradually decreasing with some economy of scale and more familiarity in the industry with green building design. This cost premium can be easily recovered through energy savings with a payback period of 2.5 to 6.5 years.

For building owners and occupants, the benefits of green buildings are clear for all to see. Energy and water efficient buildings not only translate to higher cost savings but Green Mark certified buildings also provide better indoor air quality and environments.

Gaining International Recognition

In a short span of six years, BCA has put in place two Green Building Masterplans consisting of policy levers, initiatives and incentives to drive Singapore's green building movement and have developed South-East Asia's first Zero Energy Building, which was retrofitted from an existing building.

Internationally, BCA collaborated with United Nations Environmental Programme, to set up the first centre in Asia to build capacity in this region for sustainable buildings policy development, named as the "BCA Centre for Sustainable Buildings".

Our greening efforts and policies are not only known locally but are also lauded overseas. In 2010, BCA became the first government agency outside North America to be conferred the prestigious **Aspen Institute's Energy and Environment Award (Government)** for our comprehensive policies and programmes in steering the industry towards the development of green buildings and sustainable construction in Singapore.

In December 2011, BCA was conferred the inaugural **Regional Leadership Awards**, one of the six World Green Building Council Government Leadership Awards, for exceptional Green Building Master Plan, and efforts to steer the construction industry towards sustainable development in Singapore, and leadership in the green building movement in Asia Pacific.

Earlier in the same year, a study conducted by a private consultancy firm on Asia-Pacific cities also ranked Singapore first in green building policies, before advanced cities like Tokyo, Sydney and Seoul.

Come October 2013, the US-based energy efficiency coalition, Alliance to Save Energy, will confer on BCA the **International Star (I-Star) Award** in recognition of BCA's outstanding achievement in leading the green building movement and energy efficiency improvement. Singapore is the first country outside of America and Europe to receive this Award.

BCA's Green Mark scheme has also extended its reach beyond Singapore and is gaining popularity within the region. To date, **218 projects from 14 countries** including China, Malaysia, Vietnam, Brunei, India, Thailand, Indonesia, The Philippines and Tanzania have applied for the Green Mark certification.

More information on the Green Mark incentive schemes is available at
<http://www.bca.gov.sg/sustain/sustain.html>

More on the 2nd Green Building Masterplan is available at
<http://www.bca.gov.sg/GreenMark/others/gbmp2.pdf>